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All inquiries should be addressed to
TURKISH JOURNAL OF COLORECTAL DISEASE
Address: Latilokum Sk. Alphan İşhanı No: 3 Kat: 2 Mecidiyeköy Şişli, İstanbul, Turkey
Phone: +90 212 356 01 75-76-77 Gsm: +90 532 300 72 36 Fax: +90 212 356 01 78
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Aims and Scope

Turkish Journal of Colorectal Disease is an official journal of the Turkish Society of Colon and Rectal Surgery to provide epidemiologic, pathologic, diagnostic and therapeutic studies relevant to the management of small intestine, colon, rectum, anus and pelvic floor diseases. It was launched in 1991. Although there were temporary interruptions in the publication of the journal due to various challenges, the Turkish Journal of Colorectal Disease has been published continually from 2007 to the present. It is published quarterly (March, June, September and December) as hardcopy and an electronic journal at http://www.turkishjcrd.com/

The target audience of Turkish Journal of Colorectal Disease includes surgeons, pathologists, oncologists, gastroenterologists and health professionals caring for patients with a disease of the colon and rectum.

The Turkish name of the journal was formerly Kolon ve Rektum Hastalıkları Dergisi and the English name of the journal was formerly Journal of Diseases of the Colon and Rectum.

Turkish Journal of Colorectal Disease is indexed in **TÜBİTAK/ULAKBİM, Directory of Open Access Journals (DOAJ), CINAHL Ultimate, British Library, Root Indexing, Academic Keys, Idealonline, Turkish Citation Index** and **TurkMedline**.

The aim of Turkish Journal of Colorectal Disease is to publish original research papers of the highest scientific and clinical value at an international level. Furthermore, review articles, case reports, technical notes, letters to the editor, editorial comments, educational contributions and congress/meeting announcements are released.

Turkish Journal of Colorectal Disease is an independent open access peer-reviewed international journal printed in Turkish and English languages. Manuscripts are reviewed in accordance with "double-blind peer review" process for both referees and authors. The Editorial Board of the Turkish Journal of Colorectal Disease endorses the editorial policy statements approved by the WAME Board of Directors. The journal is in compliance with the uniform requirements for manuscripts submitted to biomedical journals published by the International Committee of Medical Journal Editors (NEJM 1997;336:309-315, updated 2001).

Open Access Policy

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. Open Access Policy is based on rules of Budapest Open Access Initiative (BOAI) http://www.budapestopenaccessinitiative.org/.

Permission Requests

Instructions for Authors

Instructions for authors are published in the journal and at www.turkishjcrd.com

Material Disclaimer

Authors are responsible for the manuscripts they publish in Turkish Journal of Colorectal Disease. The editor, editorial board, and publisher do not accept any responsibility for published manuscripts.

If you use a table or figure (or some data in a table or figure) from another source, cite the source directly in the figure or table legend.

The journal is printed on acid-free paper.

Financial expenses of the journal are covered by Turkish Society of Colon and Rectal Surgery.

Editorial Policy

Following receipt of each manuscript, a checklist is completed by the Editorial Assistant. The Editorial Assistant checks that each manuscript contains all required components and adheres to the author guidelines, after which time it will be forwarded to the Editor in Chief. Following the Editor in Chief's evaluation, each manuscript is forwarded to the Associate Editor, who in turn assigns reviewers. Generally, all manuscripts will be reviewed by at least three reviewers selected by the Associate Editor, based on their relevant expertise. Associate editor could be assigned as a reviewer along with the reviewers. After the reviewing process, all manuscripts are evaluated in the Editorial Board Meeting.

Turkish Journal of Colorectal Disease's editor and Editorial Board members are active researchers. It is possible that they would desire to submit their manuscript to the Turkish Journal of Colorectal Disease. This may be creating a conflict of interest. These manuscripts will not be evaluated by the submitting editor(s). The review process will be managed and decisions made by editor-in-chief who will act independently. In some situation, this process will be overseen by an outside independent expert in reviewing submissions from editors.

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Amaç ve Kapsam

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahi Derneği'nin resmi dergisidir. Bu dernek; ince barsak, kolon, rektum, anüs ve pelvik taban hastalıkları gibi hastalıkların yönetimi ile ilişkili epidemiyoloijk patolojik, tanısal ve tedavi edici çalışmalar yapar. Derneğimiz 1991'de kurulmuştur. Çeşitli zorluklar nedeniyle geçici aksaklıklar olsa da Türk Kolon ve Rektum Hastalıkları Dergisi 2007'den bu yana aralıksız olarak basılmaktadır ve 3 ayda bir olmak üzere (Mart, Haziran, Eylül, Aralık) basılı dergi ve elektronik olarak (http://www.turkishjcrd.com/) yayımlanır.

Derginin hedef kitlesini; cerrahlar, patologlar, onkologlar, gastroenterologlar ve kolorektal hastalarına hizmet veren profesyoneller oluşturur. Derginin amacı; uluslararası düzeyde en yüksek bilimsel ve klinik değeri olan orijinal çalışmaları yayınlamaktır. Bunlara ek olarak derleme (review) makaleleri, olgu sunumları, teknik notlar, editöre mektuplar, editöryal yorumlar, eğitim yazıları ve kongre/toplantı duyuruları yer almaktadır.

Derginin Türkçe eski adı; Kolon ve Rektum Hastalıkları Dergisi ve İngilizce eski adı; Journal of Diseases of the Colon and Rectum'dur.

Kolon ve Rektum Hastalıkları Dergisi, **TÜBİTAK/ULAKBİM, Directory of Open Access Journals (DOAJ), CINAHL Ultimate, British Library, Root Indexing, Academic Keys, Idealonline, Türk AtıfDizini** ve **TürkMedline**'de indekslenmektedir.

Türk Kolon ve Rektum Hastalıkları Dergisi, İngilizce ve Türkçe olarak yayımlanan; bağımsız, hakemli, uluslararası bir dergidir. Eserler, hem hakemler hem de otörler tarafından "çift kör hakem denetimi (peer review)" yöntemi ile değerlendirilir. Türk Kolon ve Rektum Hastalıkları Dergisi'nin Editör Kurulu, World Association of Medical Editors (WAME) politikalarına bağlı olarak yürütülmektedir. Bu dergi, Uluslararası Tıp Dergisi Editörler Komitesi (NEJM 1997;336:309-315, updated 2001) tarafından bildirilen, biyomedikal dergilere gönderilen makalelerin uyması gereken standartlara uygunluk göstermektedir.

Açık Erişim Politikası

Bu dergi bilginin yer değiştirmesi ve toplum içinde bilgiye özgürce ulaşma olanağı sağlamak üzere açık erişime imkan vermektedir. Açık Erişim İlkesi "Budapeşte Açık Erişim Girişimi (BOAI)" http://www.budapestopenaccessinitiative.org/ kurallarına dayanmaktadır.

İzinler

Derginin mali giderleri Türk Kolon ve Rektum Cerrahi Derneği tarafından karşılanmaktadır.

Yazarlar için Kılavuz

Yazarlar için kılavuz hem yayınlanan dergide hem de "http://www.turkishjcrd.com" web sayfasında bulunmaktadır.

Telif Hakkı Devri

Yazarlar Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınladıkları yazılardan kendileri sorumludurlar. Editör, editör kurulu ve yayıncı hiçbir sorumluluk kabul etmemektedir. Başka bir kaynaktan tablo ya da figür (veya tablo/figürden bir veri) kullandıysanız, direkt olarak tablo ya da figürü kaynak gösteriniz.

Dergi asitsiz kağıda basılmaktadır.

Derginin mali giderleri Türk Kolon ve Rektum Cerrahi Derneği tarafından karşılanmaktadır.

Editöryal Politika

Her yazının alınmasını takiben, bir kontrol listesi Editör Yardımcısı tarafından tamamlanır.

Editör yardımcısı, her yazıyı gerekli öğeleri sağladığı ve yazar kılavuzuna uyumu açısından kontrol eder, ardından editöre iletir. Editör değerlendirmesinin ardından her bir yazı için editör yardımcısı tarafından gözlemciler (reviewers) belirlenir. Genelde, her bir yazıyı ilgili uzmanlıkları göz önüne alınarak atanmış en az 3 gözlemci inceler. Yardımcı editör de diğer gözlemcilerle birlikte gözlemci olarak atanabilir. Gözlemci incelemesinin ardından yazılar editör kurul toplantısında değerlendirilir.

Türk Kolon ve Rektum Hastalıkları Dergisi'nin editör ve editör kurulu üyeleri aktif araştırmacılardır. Kendi araştırmalarının da Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınlanmasını pek ala arzu edebilirler. Bu durum çıkar sorunları doğurabilir. Bu yazılar, yazıyı yazan editör(ler) tarafından değerlendirilemez. Bu gibi durumlarda bu süreç, (editörlerin yazı başvurularında) yazıların uzman olan bağımsız kişiler tarafından incelenmesiyle aşılabilir.

Abonelik Bilgileri

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahisi Derneği üyelerine, Dünya'da ve Türkiye'deki kütüphanelere ücretsiz dağıtılmaktadır. Yayınlanmış tüm sayılar ücretsiz olarak şu linkte mevcuttur (http://www.turkishjcrd.com/).

Adres: Latilokum Sok. Alphan İşhanı No: 3 Kat: 2, Şişli, İstanbul, Türkiye
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Instruction for Authors

GENERAL INFORMATION

Turkish Journal of Colorectal Disease (TJCD) is the journal of Turkish Society of Colon and Rectal Surgery. The mission of the Journal is to advance knowledge of disorders of the small intestine, colon, rectum, anus and pelvic floor. It publishes invited review articles, research articles, brief reports and letters to the editor, and case reports that are relevant to the scope of the journal, on the condition that they have not been previously published elsewhere. Basic science manuscripts, such as randomized, cohort, cross-sectional, and case control studies, are given preference. Invited reviews will be considered for peer review from known experts in the area.

Manuscripts should be prepared according to ICMJE guidelines (www.icmje.org). All manuscripts are subject to editorial revision to ensure they conform to the style adopted by the journal. There is a double blind kind of reviewing system.

Reviewed and accepted manuscripts are translated from Turkish to English by the Journal through a professional translation service. Prior to printing, the translations are submitted to the authors for approval or correction requests, to be returned within 7 days. If no response is received from the corresponding author within this period, the translation is checked and approved by the editorial board.

Accepted manuscripts are published in both Turkish and English languages.

All manuscripts submitted to the Turkish Journal of Colorectal Disease are screened for plagiarism using the 'iThenticate' software. Results indicating plagiarism may result in manuscripts being returned or rejected.

Turkish Journal of Colorectal Disease does not charge any article submission or processing charges.

The abbreviation of the Turkish Journal of Colorectal Disease is "TJCD", however, it should be denoted as "Turk J Colorectal Dis" when referenced.

EDITORIAL POLICIES

All manuscripts will be evaluated by the scientific board for their scientific contribution, originality and content. Authors are responsible for the accuracy of the data. The journal retains the right to make appropriate changes on the grammar and language of the manuscript. When suitable the manuscript will be sent to the corresponding author for revision. The manuscript, when published, will become the property of the journal and copyright will be taken out in the name of the journal

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In the cover letter the authors should state if any of the material in the manuscript is submitted or planned for publication elsewhere in any form including electronic media. A written statement indicating whether or not "Institutional Review Board" (IRB) approval was obtained or equivalent guidelines followed in accordance with the Helsinki Declaration of 2013 update on human experimentation must be stated; if not, an explanation must be provided. The cover letter must contain address, telephone, fax and the e-mail address of the corresponding author.

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The ORCID (Open Researcher and Contributor ID) number of the correspondence author should be provided while sending the manuscript. A free registration can create at http://orcid.org.

Online Submission

Only online submissions are accepted for rapid peer-review and to prevent delay in publication. Manuscripts should be prepared as word document (*.doc) or rich text format (*.rtf). After logging on to the web www. journalagent.com/krhd double click the "submit an article" icon. All corresponding authors should be provided a password and an username after providing the information needed. After logging on the article submission system with your own password and username please read carefully the directions of the system to provide all needed information in order not to delay the processing of the manuscript. Attach the manuscript, all figures, tables and additional documents. Please also attach the cover letter with "Assignment of Copyright and Financial Disclosure" forms.

Manuscript Preparation Guidelines

Turkish Journal of Colorectal Disease follows the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (International Committee of Medical Journal Editors: Br Med J 1988;296:401-5).

Upon submission of the manuscript, authors are to indicate the type of trial/research and statistical applications following "Guidelines for statistical reporting in articles for medical journals: amplifications and explanations" (Bailar JC III, Mosteller F. Ann Intern Med 1988;108:266-73).

Preparation of research articles, systematic reviews and meta-analyses must comply with study design guidelines:

CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group. The CONSORT statement revised recommendations for improving the quality of reports of parallel group randomized trials. JAMA 2001; 285:1987-91) (http://www.consort-statement.org/);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009; 6(7): e1000097.) (http://www.prisma-statement.org/);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA,

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Glasziou PP, Irwig LM, et al., for the STARD Group. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. Ann Intern Med 2003;138:40-4.) (http://www.stard-statement.org/);

STROBE statement, a checklist of items that should be included in reports of observational studies (http://www.strobe-statement.org/);

MOOSE guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting Meta-analysis of observational Studies in Epidemiology (MOOSE) group. JAMA 2000; 283: 2008-12).

Text Formatting

Manuscripts should be submitted in Word.

Use a normal, plain font (e.g., 10-point Times Roman) for text.

Use the automatic page numbering function to number the pages.

Do not use field functions.

Use tab stops or other commands for indents, not the space bar.

Use the table function, not spreadsheets, to make tables.

Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Title Page

All manuscripts, regardless of article type, should start with a title page, containing:

The title of the article;

The short title of the article

The initials, names and qualifications of each author;

The main appointment of each author;

The name(s) of the institution(s) of each author;

The name and email address of the corresponding author;

Full disclosures of potential conflicts of interest on the part of any named author, or a statement confirming that there are no conflicts of interest;

The word count excluding abstract, references, tables, figures and legends;

The place and date of scientific meeting in which the manuscript was presented and it's abstract published in the abstract book, if applicable.

Article Types

Original Articles

This category includes original research including both clinical and basic science submissions. The work must be original and neither published, accepted, or submitted for publication elsewhere. Any related work, either SUBMITTED, in press, or published from any of the authors should be clearly cited and referenced.

All clinical trials must be registered in a public trials registry that is acceptable to the International Committee of Medical Journals Editors (ICMJE). Go to (http://www.icmje.org/faq.html). Authors of randomized controlled trials must adhere to the CONSORT guidelines, available at: www.consort-statement.org, and provide both a CONSORT checklist and flow diagram. We require that you choose the MS Word template at www.consort-statement.org for the flow chart and cite/upload it in the manuscript as a figure. In addition, submitted manuscripts must include the unique registration number in the Abstract as evidence of registration.

All authors are expected to abide by accepted ethical standards for human and animal investigation. In studies that involve human subjects or laboratory animals, authors must provide an explicit statement in Materials and Methods that the experimental protocol was approved by the appropriate institutional review committee and meets the guidelines of their responsible governmental agency. In the case of human subjects, informed consent, in addition to institutional review board approval, is required.

Original Articles should not exceed 3000 words (excluding abstract, references, tables, figures and legends) and four illustrations.

Original Articles should be organized as follows:

Abstract: The abstract must contain fewer than 250 words and should be structured as follows:

Aim: What was the purpose of the study?

Method: A brief description of the materials - patients or subjects (i.e. healthy volunteers) or materials (animals) - and methods used.

Results: What were the main findings?

Conclusion: What are the main conclusions or implications of the study?

Keywords: Below the abstract provide up to 6 key words or short phrases. Do not use abbreviations as keywords.

Introduction: State concisely the purpose and rationale for the study and cite only the most pertinent references as background.

Materials and Methods: Describe your selection of the observational or experimental subjects clearly (patients or experimental animals, including controls). Provide an explicit statement that the experimental protocols were approved by the appropriate institutional review committee and meet the guidelines of the responsible governmental agency. In the case of human subjects, state explicitly those subjects have provided informed consent. Identify the methods, apparatus/product** (with manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well known, describe substantially modified methods, including statistical methods, give reasons for using them, and evaluate their limitations;

Results: Present the detailed findings supported with statistical methods. Figures and tables should supplement, not duplicate the text; presentation of data in either one or the other will suffice. Emphasize only your important observations; do not compare your observations with those of others. Such comparisons and comments are reserved for the discussion section.

Discussion: State the importance and significance of your findings but do not repeat the details given in the Results section. Limit your opinions to those strictly indicated by the facts in your report. Compare your finding with those of others. No new data are to be presented in this section.

Acknowledgments: Only acknowledge persons who have made substantive contributions to the study. Authors are responsible for obtaining written permission from everyone acknowledged by name because readers may infer their endorsement of the data and conclusions. Begin your text of the acknowledgment with, "The authors thank…".

Authorship Contributions: The journal follows the recommendations of the ICMJE for manuscripts submitted to biomedical journals. According to these, authorship should be based on the following four criteria:

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; and

Drafting the work or revising it critically for important intellectual content; and

Final approval of the version to be published; and

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

All other contributors to the paper should be credited in the 'Acknowledgments' section.

References: The author should number the references in Arabic numerals according to the citation order in the text. Put reference numbers in parenthesis in superscript at the end of citation content or after the cited author's name. Use the form of "Uniform Requirements for manuscript abbreviations in Turk Bilim Terimleri" (http:/www.bilimterimleri.com).

Journal titles should conform to the abbreviations used in "Cumulated Index Medicus".

Journals; Last name(s) of the author(s) and initials, article title, publication title and its original abbreviation, publication date, volume, the inclusive page numbers.

Example: 1. Dilaveris P, Batchvarov V, Gialafos J, Malik M. Comparison of different methods for manual P wave duration measurement in 12-lead electrocardiograms. Pacing Clin Electrophysiol 1999;22:1532-1538.

Book chapter; Last name(s) of the author(s) and initials, chapter title, book editors, book title, edition, place of publication, date of publication and inclusive page numbers of the extract cited.

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Example: 1. Schwartz PJ, Priori SG, Napolitano C. The Long QT Syndrome. In: Zipes DP, Jalife J, eds. Cardiac Electrophysiology. From Cell to Bedside. Philadelphia; WB Saunders Co. 2000:597-615.

Tables: All tables are to be numbered using Arabic numerals. Tables should always be cited in text in consecutive numerical order. For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption. Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Figures: Figures should work under "Windows". Color figures or grayscale images must be at least 300 dpi. Figures using "*.tiff", "*.jpg" or "*.pdf" should be saved separate from the text. All figures should be prepared on separate pages. They should be numbered in Arabic numerals. Each figure must have an accompanying legend defining abbreviations or symbols found in the figure. Figures could be submitted at no additional cost to the author.

Units of Measurement and Abbreviations: Units of measurement should be in Systéme International (SI) units. Abbreviations should be avoided in the title. Use only standard abbreviations. If abbreviations are used in the text, they should be defined in the text when first used.

Permissions: Authors wishing to include figures, tables, or text passages that have already been published elsewhere are required to obtain permission from the copyright owner(s) and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors.

Invited Review Articles

Abstract length: Not to exceed 250 words.

Article length: Not to exceed 4000 words.

Reference Number: Not to exceed 100 references.

Reviews should include a conclusion, in which a new hypothesis or study about the subject may be posited. Do not publish methods for literature search or level of evidence. Authors who will prepare review articles should already have published research articles on the relevant subject. The study's new and important findings should be highlighted and interpreted in the Conclusion section. There should be a maximum of two authors for review articles.

Case Reports

Abstract length: Not to exceed 100 words.

Article length: Not to exceed 1000 words.

Reference Number: Not to exceed 15 references.

Case Reports should be structured as follows:

Abstract: An unstructured abstract that summarizes the case.

Introduction: A brief introduction (recommended length: 1-2 paragraphs).

Case Report: This section describes the case in detail, including the initial diagnosis and outcome.

Discussion: This section should include a brief review of the relevant literature and how the presented case furthers our understanding to the disease process.

References: See under 'References' above.

Acknowledgments.

Tables and figures.

Technical Notes

Abstract length: Not to exceed 250 words.

Article length: Not to exceed 1200 words.

Reference Number: Not to exceed 15 references.

Technical Notes include description of a new surgical technique and its application on a small number of cases. In case of a technique representing a major breakthrough one case will suffice. Follow-up and outcome need to be clearly stated.

Technical Notes should be organized as follows:

Abstract: Structured "as above mentioned".

Indications

Method

Comparison with other methods: advantages and disadvantages, difficulties and complications.

References, in Vancouver style (see under 'References' above).

Acknowledgments.

Tables and figures: Including legends.

Letters to the Editor

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 10 references

We welcome correspondence and comment on articles published in Turkish Journal of Colorectal Disease. No abstract is required, but please include a brief title. Letters can include 1 figure or table.

Video Article

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 5 references

Briefly summarize the case describing diagnosis, applied surgery technique and outcome. Represent all important aspects, i.e. novel surgery technique, with properly labelled and referred video materials. A standalone video vignette, describing a surgical technique or interesting case encountered by the authors.

Requirements: The data must be uploaded during submission with other files. The video should be no longer than 10 minutes in duration with a maximum file size of 350Mb and 'MOV, MPEG4, AVI, WMV, MPEGPS, FLV, 3GPP, WebM' format should be used. Documents that do not exceed 100 MB can be uploaded within the system. For larger video documents, please contact iletisim@galenos.com.tr All videos must include a narration in English. Reference must be used as it would be for a Figure or a Table. Example: ".....To accomplish this, we developed a novel surgical technique (Video 1)." All names and institutions should be removed from all video materials. Video materials of accepted manuscripts will be published online.

Letters to the Editor

Article length: Not to exceed 500 words.

Reference Number: Not to exceed 10 references

We welcome correspondence and comment on articles published in Turkish Journal of Colorectal Disease. No abstract is required, but please include a brief title. Letters can include 1 figure or table.

Editorial Comments

Article length: Not to exceed 1000 words.

Reference Number: Not to exceed 10 references.

Editorials are exclusively solicited by the Editor. Editorials should express opinions and/or provide comments on papers published elsewhere in the same issue. A single author is preferred. No abstract is required, but please include a brief title. Editorial submissions are subject to review/request for revision, and editors retain the right to alter text style.

Ethics

This journal is committed to upholding the integrity of the scientific record. As a member of the Committee on Publication Ethics (COPE) the journal will follow the COPE guidelines on how to deal with potential acts of misconduct.

Authors should refrain from misrepresenting research results which could damage the trust in the journal, the professionalism of scientific authorship, and ultimately the entire scientific endeavor. Maintaining integrity of the research and its presentation can be achieved by following the rules of good scientific practice, which include:

The manuscript has not been submitted to more than one journal for simultaneous consideration.

The manuscript has not been published previously (partly or in full), unless the new work concerns an expansion of previous work (please provide transparency on the re-use of material to avoid the hint of text-recycling ("self-plagiarism").

A single study is not split up into several parts to increase the quantity of submissions and submitted to various journals or to one journal over time (e.g. "salami-publishing").

No data have been fabricated or manipulated (including images) to support your conclusions.

No data, text, or theories by others are presented as if they were the author's own ("plagiarism"). Proper acknowledgments to other works must be given (this includes material that is closely copied (near verbatim), summarized and/or paraphrased), quotation marks are used for verbatim copying of material, and permissions are secured for material that is copyrighted.

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Consent to submit has been received explicitly from all co-authors, as well as from the responsible authorities - tacitly or explicitly - at the institute/organization where the work has been carried out, before the work is submitted.

Authors whose names appear on the submission have contributed sufficiently to the scientific work and therefore share collective responsibility and accountability for the results.

In addition: Changes of authorship or in the order of authors are not accepted after acceptance of a manuscript.

Requesting to add or delete authors at revision stage, proof stage, or after publication is a serious matter and may be considered when justifiably warranted. Justification for changes in authorship must be compelling and may be considered only after receipt of written approval from all authors and a convincing, detailed explanation about the role/deletion of the new/deleted author. In case of changes at revision stage, a letter must accompany the revised manuscript. In case of changes after acceptance or publication, the request and documentation must be sent via the Publisher to the Editor-in-Chief. In all cases, further documentation may be required to support your request. The decision on accepting the change rests with the Editor-in-Chief of the journal and may be turned down. Therefore authors are strongly advised to ensure the correct author group, corresponding author, and order of authors at submission.

Upon request authors should be prepared to send relevant documentation or data in order to verify the validity of the results. This could be in the form of raw data, samples, records, etc.

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If the article is still under consideration, it may be rejected and returned to the author.

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The author's institution may be informed.

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Statement on the welfare of animals: The welfare of animals used for research must be respected. When reporting

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experiments on animals, authors should indicate whether the international, national, and/or institutional guidelines for the care and use of animals have been followed, and that the studies have been approved by a research ethics committee at the institution or practice at which the studies were conducted (where such a committee exists).

For studies with animals, the following statement should be included in the text before the References section:

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If articles do not contain studies with human participants or animals by any of the authors, please select one of the following statements:

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Informed Consent

All individuals have individual rights that are not to be infringed. Individual participants in studies have, for example, the right to decide what happens to the (identifiable) personal data gathered, to what they have said during a study or an interview, as well as to any photograph that was taken. Hence it is important that all participants gave their informed consent in writing prior to inclusion in the study. Identifying details (names, dates of birth, identity numbers and other information) of the participants that were studied should not be published in written descriptions, photographs, and genetic profiles unless the information is essential for scientific purposes and the participant (or parent or guardian if the participant is incapable) gave written informed consent for publication. Complete anonymity is difficult to achieve in some cases, and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of participants is inadequate protection of anonymity. If identifying characteristics are altered to protect anonymity, such as in genetic profiles, authors should provide assurance that alterations do not distort scientific meaning.

The following statement should be included: Informed Consent: "Informed consent was obtained from all individual participants included in the study."

If identifying information about participants is available in the article, the following statement should be included:

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Turkish Journal of Colorectal Disease does not charge any article submission or processing charges.

THE REVIEW PROCESS

Each manuscript submitted to The Turkish Journal of Colorectal Disease is subject to an initial review by the editorial office in order to determine if it is aligned with the journal's aims and scope, and complies with essential requirements. Manuscripts sent for peer review will be assigned to one of the journal's associate editors that has expertise relevant to the manuscript's content. All accepted manuscripts are sent to a statistical and English language editor before publishing. Once papers have been reviewed, the reviewers' comments are sent to the Editor, who will then make a preliminary decision on the paper. At this stage, based on the feedback from reviewers, manuscripts can be accepted, rejected, or revisions can be recommended. Following initial peer-review, articles judged worthy of further consideration often require revision. Revised manuscripts generally must be received within 2 months of the date of the initial decision. Extensions must be requested from the Associate Editor at least 2 weeks before the 2-month revision deadline expires; The Turkish Journal of Colorectal Disease will reject manuscripts that are not received within the 3-month revision deadline. Manuscripts with extensive revision recommendations will be sent for further review (usually by the same reviewers) upon their re-submission. When a manuscript is finally accepted for publication, the Technical Editor undertakes a final edit and a marked-up copy will be e-mailed to the corresponding author for review and to make any final adjustments.

REVISIONS

When submitting a revised version of a paper, the author must submit a detailed "Response to the reviewers" that states point by point how each issue raised by the reviewers has been covered and where it can be found (each reviewer's comment, followed by the author's reply and line numbers where the changes have been made) as well as an annotated copy of the main document. Revised manuscripts must be submitted within 30 days from the date of the decision letter. If the revised version of the manuscript is not submitted within the allocated time, the revision option may be canceled. If the submitting author(s) believe that additional time is required, they should request this extension before the initial 30-day period is over.

ENGLISH LANGUAGE EDITING

All manuscripts are professionally edited by an English language editor prior to publication.

AFTER ACCEPTANCE

All accepted articles are technically edited by one of the Editors. On completion of the technical editing, the article will be sent to the production department and published online as a fully citable Accepted Article within about one week.

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Authors will be asked to transfer copyright of the article to the Publisher (or grant the Publisher exclusive publication and dissemination rights). This will ensure the widest possible protection and dissemination of information under copyright laws.

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Publication of color illustrations is free of charge.

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The purpose of the proof is to check for typesetting or conversion errors and the completeness and accuracy of the text, tables and figures. Substantial changes in content, e.g., new results, corrected values, title and authorship, are not allowed without the approval of the Editor.

After online publication, further changes can only be made in the form of an Erratum, which will be hyperlinked to the article.

ONLINE EARLY

The Turkish Journal of Colorectal Disease publishes abstracts of accepted manuscripts online in advance of their publication in print. Once an accepted manuscript has been edited, the authors have submitted any final corrections, and all changes have been incorporated, the manuscript will be published online. At that time the manuscript will receive a Digital Object Identifier (DOI) number. Both forms can be found at www.journalagent.com/krhd. Authors of accepted manuscripts will receive electronic page proofs directly from the printer, and are responsible for proofreading and checking the entire manuscript, including tables, figures, and references. Page proofs must be returned within 48 hours to avoid delays in publication.

CORRESPONDENCE

All correspondences can be done to the following postal address or to the following e-mail address, where the journal editorial resides:

Address: Latilokum Sok. Alphan İşhanı No:3 Kat:2 Mecidiyeköy-Şişli-İstanbul- Turkey

Phone: +90 (212) 356 01 75-76-77

Gsm: +90 (532) 300 72 36

Fax: +90 (212) 356 01 78

Online Manuscript: www.journalagent.com/krhd

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Yazarlara Bilgi

GENEL BİLGİ

Türk Kolon ve Rektum Hastalıkları Dergisi, Türk Kolon ve Rektum Cerrahisi Derneği'nin dergisidir. Derginin misyonu; ince bağırsak, kolon, rektum, anüs ve pelvik taban bozuklukları hakkındaki bilgiye katkı sağlamaktır. Dergi daha önce başka bir yerde yayınlanmamış olması koşuluyla, derginin kapsamı ile ilgili ve talep üzerine yazılan derleme makaleleri, araştırma makaleleri, kısa raporlar ve editöre mektuplar ve olgu sunumlarını yayınlamaktadır. Randomize, kohort, kesitsel ve vaka kontrol çalışmaları gibi temel bilim yazılarına öncelik verilir. Alanında bilinen uzmanlarca talep üzerine yazılan derlemeler dikkate alınacaktır.

Yazılar ICMJE yönergelerine göre (http://www.icmje.org/) hazırlanmalıdır. Tüm yazılar dergi tarafından benimsenen stile uygunluk sağlamak için editöryal kontrol ve düzeltmelere tabi tutulmaktadır. Derginin çift kör bir değerlendirme sistemi vardır. Değerlendirilen ve kabul edilen yayınlar Türkçeden İngilizceye veya İngilizceden Türkçeye derginin profesyonel çeviri hizmeti aracılığıyla tercüme edilir. Yayınlanmadan önce, çeviriler onay veya düzeltme istekleri için yazarlara gönderilir ve 7 gün içinde geri dönüş talep edilir. Bu süre içinde yanıt alınamazsa, çeviri kontrol ve yayın kurulu tarafından onaylanır.

Kabul edilen yayınlar hem Türkçe hem de İngilizce olarak yayınlanır.

Türk Kolon ve Rektum Hastalıkları Dergisi'ne gönderilen tüm yayınlar 'iThenticate' yazılımı kullanılarak intihal açısından taranır. İntihal saptanan durumlarda yayın iade veya reddedilir.

Türk Kolon ve Rektum Hastalıkları Dergisi, makale gönderme veya işlem ücreti adı altında herhangi bir ücret talep etmemektedir.

Türk Kolon ve Rektum Hastalıkları Dergisi'nin kısaltması "TJCD"dir, ancak, refere edildiğinde "Turk J Colorectal Dis" olarak kullanılmalıdır.

YAYIN POLİTİKASI

Tüm makaleler bilimsel katkıları, özgünlük ve içerikleri açısından bilimsel komite tarafından değerlendirilecektir. Yazarlar verilerinin doğruluğundan sorumludurlar. Dergi gerekli gördüğü yerlerde dil ve uygun değişiklik yapma hakkını saklı tutar. Gereğinde makale revizyon için yazara gönderilir. Dergide basılan yayın derginin malı haline gelir ve telif hakkı "Türk Kolon ve Rektum Hastalıkları Dergisi" adına alınmış olur. Daha önce herhangi bir dilde yayınlanmış makaleler dergide yayınlanmak üzere kabul edilmeyecektir. Yazarlar bir başka dergide yayınlanmak üzere olan makaleyi teslim edemez. Tüm değişiklikler, yazar ve yayıncının yazılı izin alındıktan sonra yapılacaktır. Tüm makalelerin tam metinleri derginin www.journalagent.com/krhd web sitesinden indirilebilir.

YAZAR KILAVUZU

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Açıklama bildirimi

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Bilgilendirilmiş Onam

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Çıkar çatışmaları: Yazarlar, finansal, kurumsal, danışmanlık şeklinde ya da herhangi bir çıkar çatışmasına yol açabilecek başka ilişkiler de dahil olmak üzere yayındaki ilgili tüm olası çıkar çatışmalarını belirtilmelidir. Herhangi bir çıkar çatışması yoksa da bu da açıkça belirtilmelidir. Tüm finansman kaynakları yazının içinde belirtilmelidir. Finansman kaynakları ve ilgili tüm çıkar çatışmaları yazının başlık sayfasında "Finansman ve Kaynak Çatışmaları:" başlığı ile yer almalıdır.

Üst Yazı

Yazarlar, yazının içinde malzemenin elektronik ortam da dahil olmak üzere herhangi bir başka bir yerde yayımlanmak üzere gönderilmediğini veya planlanmadığını üst yazıda belirtmelidir. Yine "Kurumsal Değerlendirme Kurulu" (KDK) onayı alınıp alınmadığı ve 2013 yılı Helsinki Bildirgesi'ne eşdeğer kılavuzların izlenip izlenmediği belirtilmelidir. Aksi takdirde, bir açıklama temin edilmelidir. Üst yazı; adres, telefon, faks ve ilgili yazarın e-posta adresini içermelidir.

Makale Yazım Kuralları

Tüm makaleler online başvuru sistemi üzerinden teslim edilmelidir. Yazarlar web sitesi www.journalagent.com/krhd adresinde oturum açtıktan sonra internet üzerinden yazılarını sunmalıdır.

Makale gönderimi yapılırken sorumlu yazarın ORCID (Open Researcher ve Contributor ID) numarası belirtilmelidir. http://orcid.org adresinden ücretsiz olarak kayıt oluşturabilir.

Online Başvuru

Gecikmeyi önlemek ve hızlı hakemlik için sadece çevrim içi gönderimler kabul edilir. Yazılar word belgesi (*.doc) veya zengin metin biçimi (*.rtf) olarak hazırlanmalıdır. www.journalagent.com/krhd adresinde web oturumu açtıktan sonra "Makale gönder" ikonuna tıklayın. Tüm yazarlar, gerekli bilgileri sisteme girdikten sonra bir şifre ve bir kullanıcı adı alır. Kendi şifre ve kullanıcı adınız ile makale gönderme sistemine kayıt olduktan sonra yazının işleme alınmasında bir gecikme olmaması için gerekli tüm bilgileri sağlamak için sistemin yönergelerini dikkatlice okuyunuz. Makaleyi ve tüm şekil, tablo ve ek dökümanları ekleyiniz. Ayrıca üst yazı ve "Telif Hakkı ve Finansal Durum" formunu ve yazının tipine göre aşağıda belirtilen kılavuzların kontrol listesini ekleyiniz.

Makale Hazırlama Kuralları

Türk Kolon ve Rektum Hastalıkları Dergisi "Biyomedikal Dergilere Gönderilen Makaleler için Gerekli Standartları" izler. (International Committee of Medical Journal Editors: Br Med J 1988; 296: 401-5).

Yazarlar yayınlarını gönderirken, çalışmalarının türünü ve uygulanan istatistik yöntemlerini "Tıbbi Dergilere Gönderilen Makaleler için İstatistiksel Raporlama Rehberi"ne uygun olarak belirtmelidir (Bailar JC III, Mosteller F. Ann Intern Med 1988;108:266-73).

Araştırma makalesi, sistematik değerlendirme ve meta-analizin hazırlanması aşağıdaki çalışma tasarımı kurallarına uymak zorundadır; (CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group.

The CONSORT statement revised recommendations for improving the quality of reports of parallel group randomized trials. JAMA 2001; 285:1987-91) (http://www.consort-statement.org/);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009; 6(7): e1000097.) (http://www.prisma-statement.org/);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al., for the STARD Group. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. Ann Intern Med 2003;138:40-4) (http://www.stard-statement.org/);

STROBE statement, a checklist of items that should be included in reports of observational studies (http://www.strobe-statement.org/);

MOOSE guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting Meta-analysis of observational Studies in Epidemiology (MOOSE) group. JAMA 2000; 283: 2008-12).

Metin Biçimlendirme

Yazılar Word programı ile hazırlanarak teslim edilmelidir.

- Metin için normal, düz yazı tipi kullanın (örneğin, 10 punto Times Roman).

- Sayfa numarası için otomatik sayfa numaralandırma işlevini kullanın.

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- Alan fonksiyonları kullanmayın.

- Girintiler için sekme durakları (Tab) kullanın, ara çubuğu ve diğer komutlar kullanmayın.

- Tablo yapmak için diğer işlevleri değil, elektronik tablo fonksiyonunu kullanın.

- Dosyanızı .docx formatında (Word 2007 veya üstü) ya da .doc formatında (eski Word sürüm) kaydedin.

Giriş sayfası

Tüm yazılar, makale türü ne olursa olsun, aşağıdakileri içeren bir başlık sayfası ile başlamalıdır:

- Makalenin başlığı;

- Makalenin kısa başlığı;

- Yazarların isimleri, isimlerinin baş harfleri ve her yazarın akademik ünvanı;

- Her yazarın görevi;

- Her yazarın kurumu;

- Yazarın adı ve e-posta adresi;

- Herhangi bir yazarın olası bir çıkar çatışması olduğunu teyit eden bir ifade, aksi takdirde çatışma olmadığını belirtir bir açıklama;

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- Varsa yayının yayınlanmış olduğu bilimsel toplantının tarihi, yeri ve varsa kongre özet kitabındaki özeti.

Makale Tipleri

Orijinal Makaleler

Bu kategori, klinik ve temel bilimde orijinal araştırmaları içerir. Yayın orijinal olmalı ve başka bir dergide yayınlanmış/gönderilmiş ya da kabul edilmiş olmamalıdır. Yazarlar, herhangi biri tarafından bir dergiye gönderilmiş, baskıda veya basılmış ilgili herhangi bir çalışmaya atıfta bulunmak istiyorlarsa açıkça atıfta bulunulmalı ve kaynak gösterilmelidir.

Tüm klinik çalışmalar, Uluslararası Tıp Dergisi Editörler Komitesince (ICMJE) kabul gören bir kayıt sistemine kayıtlı olmalıdır. Bunun için http://www.icmje.org/faq.html adresine müracaat edin. Randomize kontrollü çalışmaların yazarları da, www.consort-statement.org adresinden başvurulabilen CONSORT kılavuzuna uymalıdır ve yayınlarıyla birlikte CONSORT kontrol listesi ve akış diyagramı tebliğ edilmelidir. Akış şeması olarak www.consort-statement.org adresinde bulunan MS Word şablonunun kullanılması ve bunun yayının içinde bir alıntı veya bir figür olarak yerleştirilmesi gereklidir. Buna ek olarak, sunulan yayınlar her yayına spesifik verilen özel kayıt numarasını içermelidir.

Tüm yazarların, insan üzerindeki çalışmalar ve hayvan deneylerinde etik standartlara uymaları beklenmektedir. İnsan üzerindeki veya laboratuvar hayvanları içeren çalışmalarda, yazarların yayının Gereç ve Yöntem kısmında deney protokolünün ilgili kurumsal inceleme komitesi tarafından onaylandığını ve sorumlu devlet kurumu kurallarına uyduğunu açık bir dille açıklamaları gereklidir. İnsan üzerindeki çalışmalarda kurumsal inceleme kurulu onayına ek olarak, aydınlatılmış onam da bulunmalıdır.

Orijinal Makaleler (özet, kaynaklar, tablolar, rakamlar hariç) 3000 kelime ve dört figürü aşmamalıdır.

Orijinal Makaleler aşağıdaki gibi organize edilmelidir:

Özet: Özet 250 kelimeyi geçmemeli ve şunları içermelidir;

Amaç: Çalışmanın amacı nedir?

Yöntem: Kullanılan yöntem ve materyaller (örneğin hayvanlar) veya hastalar ya da konu (sağlıklı gönüllüler gibi) hakkında kısa bir açıklama içermelidir.

Bulgular: Ana bulgular nelerdir?

Sonuç: Çalışmanın ana sonuçları ve etkileri nelerdir?

Anahtar kelimeler: Özetin altında en az 3 anahtar kelime veriniz. Kısaltmaları anahtar kelime olarak kullanmayınız.

Giriş: Açık bir dille çalışmanın amaç ve gerekçesini belirtin ve çalışmanın arka planını açıklarken sadece en önemli kaynaklardan alıntı yapın.

Gereç ve Yöntem: Gözlemsel veya deneysel deneklerin (hastalar, deney hayvanları veya kontrol grupları dahil) seçim şeklini açıklayın. Deney protokolünün ilgili kurumsal inceleme komitesi tarafından onaylandığını ve ilgili devlet kurumu kurallarına uyduğunu açık bir dille açıklayın. İnsan çalışması durumunda, tüm şahısların aydınlatılmış onamlarının alındığını açık bir dille belirtin. Yöntem, cihaz ve ürünleri tanımlayın (Parantez içinde üretici firma adı ve adresi)** Uygulanmış olan tüm prosedürler, diğer çalışmacıların aynı deneyi tekrar edebilecekleri detay ve netlikte anlatılmalıdır. İstatistiksel yöntemler de dahil olmak üzere yerleşik ve yaygın olarak bilinen çalışma yöntemleri için kaynaklar belirtilmelidir. Yayınlanmış ancak yaygın olarak bilinmeyen yöntemler için ise kaynaklar ve kısa tanımlamalar verilmelidir. Kullanma sebepleri ve limitasyonları belirtilmelidir.

Bulgular: İstatistiksel yöntemlerle desteklenmiş bulgularınızı ayrıntılı olarak sunun. Şekil ve tablolar metni tekrar değil, takviye etmelidir. Verilerin hem metinde hem figür olarak verilmemesi gerekir. Metin veya figürden birisi olarak verilmesi yeterlidir. Sadece kendi önemli izlenimlerinizi belirtin. Kendi izlenimlerinizi diğerlerininkiyle karşılaştırmayın. Bu tür karşılaştırma ve yorumlar tartışma bölümünde yapılmalıdır.

Tartışma: Bulgularınızın önem ve anlamını vurgulayın ancak bulgular kısmında verilenleri tekrarlamayın. Fikirlerinizi yalnızca bulgularınızla kanıtlayabildiklerinizle sınırlı tutun. Bulgularınızı diğerlerininkiyle karşılaştırın. Bu bölümde yeni veriler bulunmamalıdır.

Teşekkür: Sadece çalışmaya ciddi katkılarda bulunmuş kişilere teşekkür edin. Yazarlar ismen teşekkür ettikleri herkesten yazılı izin almak zorundadır. Teşekkür kısmına "Yazarlar ….teşekkür eder" şeklinde başlayın.

Yazarlık ve Katkı Sağlayanlar: Dergi, biyomedikal dergilere gönderilen yayınlara yönelik ICMJE tavsiyelerini izler. Buna göre "yazarlık" aşağıdaki dört kritere dayalı olmalıdır:

Yazar;

- Yayının konsept veya dizaynına, çalışmanın verilerinin elde edilmesine, analizine ve yorumlanmasına önemli katkılar veren; ve

- İşi hazırlayan veya entellektüel içerik açısından eleştirel biçimde gözden geçiren; ve

- Yayınlanacak son şekli onaylayan; ve

- Çalışmanın her bir bölümünün doğruluğu ve bütünlüğü ile ilgili sorunları uygun bir şekilde inceleyen ve çözüm sağlayan sorumlu kişidir.

Bu şartların hepsini sağlamayan diğer tüm katılımcılar yazar değil, "Teşekkür" bölümünde anılması gereken katkı sağlamış kişilerdir.

Kaynaklar: Kaynakları 1'den başlayarak Arap rakamları ve alfabetik sıra ile verin. Kaynak numaraları cümle sonunda noktadan sonra üstte küçük rakamlar şeklinde (superscript) yazılmalıdır. Kısaltmalar için gerekli standartları http:/www.bilimterimleri.com adresinde bulunan Türk Bilim Terimleri Kılavuzu'ndan edinin.

Dergi başlıkları "Cumulated Index Medicus" kısaltmalarına uygun olmalıdır.

Dergiden: Yazar/yazarların soyadı ve adının ilk harfi, makale başlığı, dergi başlığı ve derginin özgün kısaltması, yayın tarihi, baskı, kapsayıcı sayfa numaralarını içermelidir.

Örneğin: 1. Dilaveris P, Batchvarov V, Gialafos J, Malik M. Comparison of different methods for manual P wave duration measurement in 12-lead electrocardiograms. Pacing Clin Electrophysiol 1999;22:1532-1538.

Kitap Bölümü: Yazar/yazarların soyadı ve adının ilk harfi, bölüm başlığı, kitap editörleri, kitap başlığı, basım, yayın yeri, yayın tarihi, kapsadığı sayfa numaralarını içermelidir

Örneğin: 1. Schwartz PJ, Priori SG, Napolitano C. The Long QT Syndrome. In: Zipes DP, Jalife J, eds. Cardiac Electrophysiology. From Cell to Bedside. Philadelphia; WB Saunders Co. 2000:597-615.

Tablolar: Tüm tablolar Arapça sayılarla numaralandırılmalıdır. Tüm tablolardan metin içerisinde numara sırası ile bahsedilmelidir. Her tablo için tablonun içeriği hakkında bilgi veren bir başlık verin. Başka yayından alıntı olan tüm tabloları tablonun alt kısmında kaynak olarak belirtin. Tabloda dipnotlar tablonun altında, üst karakter olarak küçük harflerle verilmelidir. İstatistiksel anlamlı değerler ve diğer önemli istatistiksel değerler yıldız ile işaretlenmelidir.

Şekiller: Şekillerin "Windows" ile açılması gerekir. Renkli şekiller veya gri tonlu görüntüler en az 300 dpi olmalıdır. Şekiller ana metinden ayrı olarak "*.tiff", "*.jpg" veya "*.pdf" formatında kaydedilmelidir. Tüm şekil ayrı bir sayfada hazırlanmalı ve Arap rakamları ile numaralandırılmalıdır. Her şekilde kendisindeki işaret ve sembolleri açıklayan bir alt yazı olmalıdır. Şekil gönderme için yazardan hiçbir ek ücret alınmaz.

Ölçü Birimleri ve Kısaltmalar: Ölçü birimleri System International (SI) birimleri cinsinden olmalıdır. Kısaltmalardan başlıkta kaçınılmalıdır. Sadece standart kısaltmalar kullanın. Metinde kısaltma kullanılırsa ilk kullanıldığı yerde tanımlanmalıdır.

İzinler: Yazarlar yayınlarına önceden başka bir yerde yayınlanmış şekil, tablo, ya da metin bölümleri dahil etmek isterlerse telif hakkı sahiplerinden izin alınması ve bu izin belgelerinin yayınla beraber değerlendirmeye gönderilmesi gerekmektedir. Böyle bir belgenin eşlik etmediği her materyalin yazara ait olduğu kabul edilecektir.

Davetli (Talep üzerine yazılan) Derlemeler

Özet uzunluğu: 250 kelimeyi aşmamalıdır.

Makale uzunluğu: 4000 kelimeyi aşmamalıdır.

Kaynak sayısı: 100 kaynağı aşmamalıdır.

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Derlemeler, üzerine konuyla ilgili yeni bir hipotez ya da çalışma oturtulabilecek bir sonuç içermelidir. Literatür taraması metodlarını veya kanıt düzeyi yöntemlerini yayınlamayın. Derleme makaleleri hazırlayacak yazarların ilgili konuda önceden araştırma makaleleri yayımlamış olması gerekir. Çalışmanın yeni ve önemli bulguları sonuç bölümünde vurgulanır ve yorumlanmalıdır. Derlemelerde maksimum iki yazar olmalıdır.

Olgu Sunumları

Özet uzunluğu: 100 kelimeyi aşmamalıdır.

Makale uzunluğu: 1000 kelimeyi aşmamalıdır.

Kaynak sayısı: 15 kaynağı aşmamalıdır.

Olgu Sunumları aşağıdaki gibi yapılandırılmalıdır:

Özet: Olguyu özetleyen bir yapılandırılmamış özet (gereç ve yöntem, bulgular, tartışma gibi bölümlerin olmadığı).

Giriş: Kısa bir giriş (tavsiye edilen uzunluk: 1-2 paragraf).

Olgu Sunumu: Bu bölümde ilk tanı ve sonuç da dahil olmak üzere olgu ayrıntılı olarak anlatılır.

Tartışma: Bu bölümde ilgili literatür kısaca gözden geçirilir ve sunulan olgunun, hastalığa bakışımızı ve yaklaşımımızı nasıl değiştirebileceği vurgulanır.

Kaynaklar: Vancouver tarzı, (yukarıda 'Kaynaklar' bölümüne bakınız).

Teşekkür

Tablolar ve şekiller

Teknik Notlar

Özet uzunluğu: 250 kelimeyi aşmamalıdır.

Makale uzunluğu: 1200 kelimeyi aşmamalıdır.

Kaynak Sayısı: 15 kaynağı aşmamalıdır.

Teknik Notlar, yeni bir cerrahi tekniğin açıklanmasını ve az sayıda olguda uygulanmasını içermektedir. Büyük bir atılım/değişikliği temsil eden bir tekniğin sunulması durumunda tek bir olgu yeterli olacaktır. Hastanın takip ve sonucu açıkça belirtilmelidir.

Teknik Notlar aşağıdaki gibi organize edilmelidir:

Özet: Aşağıdaki gibi yapılandırılmalıdır:

Amaç: Bu çalışmanın amacı nedir?

Yöntem: Kullanılan yöntemlerin, hastalar ya da sağlıklı gönüllülerin veya hayvanların tanımı, malzemeler hakkında kısa bir açıklama.

Bulgular: Ana bulgular nelerdir?

Sonuç: Bu çalışmanın ana sonuçları ve etkileri nelerdir?

Endikasyonları

Yöntem

Diğer yöntemlerle karşılaştırılması: Avantaj ve dezavantajları, zorluklar ve komplikasyonlar.

Kaynaklar: Vancouver tarzı (yukarıda 'Kaynaklar' bölümüne bakınız)

Teşekkür

Tablolar ve şekiller; alt yazıları dahil

Video Makale

Makale Uzunluğu: 500 kelimeyi aşmamalıdır.

Kaynak Sayısı: 5 kaynağı aşmamalıdır.

Tanıyı, uygulanan cerrahi tekniği ve sonucu açıklayarak olguyu kısaca özetleyiniz. Uygun şekilde adlandırılmış ve referans edilmiş video materyalleri ile tüm önemli noktaları, örn; yeni cerrahi tekniği, belirtiniz. Materyaller, yazarların cerrahi tekniğini anlattıkları veya karşılaştıkları ilginç vakalardan oluşmalıdır.

Teknik Gereklilikler: Veriler, makale yükleme sırasında diğer dosyalarla birlikte eklenmelidir. Video süresinin 10 dakikayı geçmemesi kaydıyla dosya boyutu maksimum 350 MB olmalı ve 'MOV, MPEG4, AVI, WMV, MPEGPS, FLV, 3GPP, WebM' formatlarından biri kullanılmalıdır. 100 MB'yi aşmayan video dokümanları sisteme yüklenebilir. Daha büyük video dokümanları için lütfen iletisim@galenos.com.tr adresinden bizimle iletişime geçiniz. Tüm video seslendirmeleri İngilizce olmalıdır. Video atıfları, Şekil veya Tablo atıfları ile aynı biçimde kullanılmalıdır. Örneğin; "….Bunu gerçekleştirmek için, yeni bir cerrahi teknik geliştirdik (Video 1)." Video materyallerinde isim ve kurumlar yer almamalıdır. Kabul edilen makalelerin video materyalleri online yayınlanacaktır.

Editöre Mektuplar

Makale uzunluğu: 500 kelimeyi aşmamalıdır.

Kaynak Sayısı: 10 kaynağı aşmamalıdır.

Türk Kolon ve Rektum Hastalıkları Dergisi'nde yayınlanan makaleler hakkında yorumlar memnuniyetle kabul edilir. Özet gerekli değildir, ancak lütfen kısa bir başlık ekleyiniz. Mektuplar bir şekil veya tablo içerebilir.

Editöryal Yorumlar

Makale uzunluğu: 1000 kelimeyi aşmamalıdır.

Kaynak Sayısı: 10 kaynağı aşmamalıdır.

Editöryal yorumlar sadece editör tarafından kaleme alınır. Editöryal yorumlarda aynı konu hakkında başka yerlerde yayınlanmış yazılar hakkında fikir veya yorumlar belirtilir. Tek bir yazar tercih edilir. Özet gerekli değildir, ancak lütfen kısa bir başlık ekleyiniz. Editöryal gönderimler revizyon/gözden geçirme talebine tabi tutulabilir. Editörler, metin stilini değiştirme hakkını saklı tutar.

Etik

Bu dergi, bilimsel kayıtların bütünlüğünü korumayı tahhüt etmektedir. Yayın Etik Komitesi (COPE) üyesi olarak, dergi olası olumsuz davranışlarla nasıl başa çıkılacağı konusunda Yayın Etik Komitesi (COPE) kılavuzlarını takip edecektir.

Yazarlar araştırma sonuçlarını yanlış sunmaktan; derginin güvenilirliğine, bilimsel yazarlık profesyonelliğine ve en sonunda tüm bilimsel çabalara zarar verebileceğinden dolayı, sakınmalıdır. Araştırma bütünlüğünün sürdürülmesi ve bunun sunumu, iyi bilimsel uygulama kurallarını takip ederek başarılır. Bu da şunları içerir:

- Yazılı eser değerlendirilmek üzere eş zamanlı birden fazla dergiye gönderilmemelidir.

- Yazılı eser daha önceki bir eserin geliştirilmesi olmadıkça, daha önce (kısmen ya da tamamen) yayınlanmamış olmalıdır. [Metnin yeniden kullanıldığı imasından kaçınmak için tekrar kullanılabilir materyallerde şeffaflık sağlayın ("self-plagiarism""kişinin kendinden intihali")].

- Tek bir çalışma; sunum miktarını arttırmak için birçok parçaya bölünmemeli ve zaman içinde aynı ya da çeşitli dergilere gönderilmemelidir. (örneğin "salam-yayıncılık" "salamizasyon").

- Veriler, sonuçlarınızı desteklemek için fabrikasyon (uydurma) ya da manüple edilmiş olmamalıdır.

- Yazarın kendine ait olmayan hiçbir veri, metin veya teori kendininmiş gibi sunulmamalıdır (intihal). Diğer eserlerin kullanımı, (eserin birebir kopyalanması, özetlenmesi ve/veya başka kelimeler kullanarak açıklanmasını da içeren) ya telif hakkı korunacak şekilde izin alınarak ya da tırnak işareti içinde birebir kopyalanarak uygun onay ile kullanılmalıdır.

Önemli not; Türk Kolon ve Rektum Hastalıkları Dergisi intihal taramak için bir program (iThenticate) kullanmaktadır.

- Eser sunulmadan önce sorumlu makamlardan ve çalışmanın yapıldığı enstitü/kuruluşlardan-zımnen veya açıkça-onay alınmasının yanı sıra tüm yazarlardan açıkça onay alınmış olmalıdır.

- Sunulan eserde yazar olarak ismi olanların, bilimsel çalışmaya yeterince katkısı olmuş olmalıdır ve ortak mesuliyet ve sorumluluğu olmalıdır.

Bununla beraber:

- Yazarlık veya yazarların sıra değişiklikleri eserin kabulünden sonra yapılamaz

- Yazının revizyon aşamasında, yayın öncesi veya yayınlandıktan sonra yazar isim eklenmesi veya çıkarılması istemi; ciddi bir konudur ve geçerli sebepler olduğunda değerlendirilebilir. Yazar değişikliği gerekçesi; haklı gerekçeli, inandırıcı ve sadece tüm yazarların yazılı onayı alındıktan sonra; ve yeni/silinmiş yazarın rolü silme hakkında ikna edici ayrıntılı bir açıklama ile kabul edilebilir. Revizyon aşamasında değişiklik olması halinde, bir mektup revise edilmiş yayına eşlik etmelidir. Yayına kabul edildikten veya yayınlandıktan sonra değişiklik olması halinde, bu istek ve gerekli dökümantasyonun yayıncı yoluyla editöre gönderilmesi gerekmektedir. Gerek görüldüğünde bu isteğin gerçekleşmesi için daha fazla doküman talep edilebilir. Değişikliğin kabul veya red kararı dergi editörü insiyatifindedir. Bu nedenle, yayının gönderilmesi aşamasında yazar/yazarlar; gönderecekleri ilgili yazar grubunun isim doğruluğundan sorumludur.

- Yazarlardan sonuçların geçerliliğini doğrulamak amacıyla verilerin ilgili belgelerinin istenmesi halinde bu verileri göndermek için hazır bulundurulmalıdır. Bunlar, ham veri, örnekler, kayıt vb. şeklinde olabilir.

Görevi kötüye kullanma ya da suistimal şüphesi halinde dergi COPE yönergeleri izleyerek bir soruşturma yürütecektir. Soruşturmanın ardından, iddia geçerli görünüyorsa, yazara sorunu gidermek için bir fırsat verilecektir.

Usulsüzlük, şüphe seviyesinde kaldığında; dergi editörü aşağıdaki yollardan birine başvurabilir;

- Makale halen şüpheli ise, reddedilip yazara iade edilebilir.

- Makele online yayınlanmış ise; hatanın mahiyetine bağlı olarak ya yazım hatası olarak kabul edilecek ya da daha ciddi durumlarda makale geri çekilecektir.

- Hatalı yayın ve geri çekme durumlarında açıklayıcı not yayınlanır ve yazarın kurumu bilgilendirilir.

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İnsan ve Hayvan Araştırmaları

İnsan Hakları Beyannamesi

İnsan katılımlı araştırmalar; 1964 Helsinki Deklarasyonu'na ve sonrasında yayımlanan iyileştirici ilkelere uygun olmalıdır ve yazarlar tarafından kurumsal ve/veya ulusal etik kurul komitelerine başvurulup onay alınmış olduğu beyan edilmelidir.

Araştırmanın 1964 Helsinki Deklarasyonu veya kıyaslanabilir standartlara göre yürütülmesi ile ilgili şüphe durumunda, yazarlar bu durumun nedenlerini açıklamak zorundadır ve bağımsız etik kurulları veya diğer değerlendirme kurulları aracılığıyla şüphelerin giderilmesi gerekmektedir.

Aşağıda belirtilen durumlar yazı içerisinde "Kaynaklar" bölümünden önce yer almalıdır:

Etik Kurul Onayı: "Çalışmada insanlara uygulanan tüm prosedürler kurumsal ve ulusal araştırma kurullarının etik standartlarına, 1964 Helsinki Deklarasyonu'na ve sonrasında yayımlanan iyileştirici ilkelere uygun olmalıdır."

Retrospektif çalışmalarda, aşağıda belirtilen cümle yer almalıdır.

"Bu tür çalışmalarda yazılı onam gerekmemektedir."

Hayvan Hakları Beyannamesi

Araştırmalarda kullanılan hayvanların refahına saygı gösterilmelidir. Hayvan deneylerinde, yazarlar hayvanların bakımında ve kullanımında uluslararası, ulusal ve/veya kurumsal olarak oluşturulmuş kılavuzlara uymalıdır ve çalışmalar için kurumdaki veya çalışmanın yapıldığı veya yürütüldüğü merkezdeki (eğer böyle bir merkez varsa) Klinik Araştırmalar Etik Kurulundan onay alınmalıdır.

Hayvanlar ile yürütülen çalışmalarda, aşağıda belirtilen durumlar yazı içerisinde 'Kaynaklar' bölümünden önce yer almalıdır:

Etik Kurul Onayı: "Hayvanların bakımı ve kullanımı ile ilgili olarak uluslararası, ulusal ve/veya kurumsal olarak oluşturulmuş tüm kılavuzlara uyulmuştur."

Eğer uygun bulunduysa (komitenin bulunduğu merkezde): "Hayvan çalışmalarında yapılan tüm uygulamalar kurumsal veya çalışmanın yürütüldüğü merkez tarafından belirlenmiş etik kurallara uyumludur."

Eğer makale insan ya da hayvan katılımlı bir çalışma değilse, lütfen aşağıda yer alan uygun durumlardan birini seçiniz:

"Bu makalenin yazarları insan katılımlı bir çalışma olmadığını bildirmektedir."

"Bu makalenin yazarları çalışmada hayvan kullanılmadığını bildirmektedir."

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Bilgilendirilmiş Onam

Bütün bireyler ihlal edilemeyecek kişisel haklara sahiptir. Çalışmada yer alan bireyler, elde edilen kişisel bilgilere, çalışmada geçen görüşmelere ve elde edilen fotoğraflara ne olacağı konusunda karar verebilme hakkına sahiptir. Bundan dolayı, çalışmaya dahil etmeden önce yazılı bilgilendirilmiş onam alınması önemlidir. Bilimsel olarak gerekli değilse ve katılımcılardan (veya katılımcı yetkin değilse ebeveynlerinden veya velilerinden) basılması için yazılı onam alınmadıysa, katılımcılara ait detaylar (isimleri, doğum günleri, kimlik numaraları ve diğer bilgileri) tanımlayıcı bilgilerini, fotoğraflarını ve genetik profillerini içerecek şekilde yazılı formda basılmamalıdır. Tam gizlilik sağlanmasının zor olduğu durumlarda, bilgilendirilmiş onam formu şüpheyi içerecek şekilde düzenlenmelidir. Örneğin fotoğrafta katılımcıların göz kısmının maskelenmesi gizlilik açısından yeterli olmayabilir. Eğer karakteristik özellikler gizlilik açısından değiştirilirse, örneğin genetik profilde, yazar yapılan değişikliğin bilimsel olarak sorun oluşturmadığından emin olmalıdır.

Aşağıdaki ifade belirtilmelidir:

Bilgilendirilmiş Onam: "Çalışmadaki tüm katılımcılardan bilgilendirilmiş onam alınmıştır."

Eğer makalede katılımcıların tanımlayıcı bilgileri yer alacaksa, aşağıdaki ifade belirtilmelidir:

"Makalede kişisel bilgileri kullanılan tüm katılımcılardan ayrıca bilgilendirilmiş onam alınmıştır."

DEĞERLENDİRME SÜRECİ

Türk Kolon ve Rektum Hastalıkları Dergisi'ne gönderilen tüm yazılar, sisteme yüklendikten sonra ilk önce editöryal kurul tarafından derginin amaç ve hedeflerine uygunluk ve temel şartları sağlama yönünden değerlendirilecektir. Yazılar, konusunda uzman dergi hakemlerine değerlendirilmek üzere gönderilecektir. Tüm kabul edilen yazılar yayımlanmadan önce, istatistik ve İngiliz dili konusunda uzman editörler tarafından değerlendirilecektir. Sayfaların ilk gözden geçirilmesinden sonra, hakem yorumları ön karar vermek için Editör'e gönderilecektir. Bu aşamada, ilk değerlendirmede bulunanların düşüncesi doğrultusunda, yazı kabul edilebilir, reddedilebilir veya yazıda düzeltme yapılması istenebilir. İlk değerlendirme sonrasında değerli bulunan makaleler için genellikle düzeltme istenir. Düzeltilen makaleler ilk karardan sonraki 2 ay içerisinde tekrar dergiye gönderilmelidir. Süre uzatmaları yardımcı editörden 2 aylık süre bitmeden en az 2 hafta önce talep edilmelidir. Türk Kolon ve Rektum Hastalıkları Dergisi tarafından, 2 aylık düzeltme süresi sona erdikten sonra, yazı kabul edilmeyecektir. Düzeltme yapılan yazılar sisteme tekrar yüklendikten sonra değerlendirilmek üzere (genellikle ilk değerlendirmeyi yapan hakeme) gönderilecektir. Sonuç olarak yayımlanma kararı verildikten sonra, baskı öncesi Teknik Editör tarafından son kez değerlendirilecektir ve iletişim kurulacak olan yazara gözden geçirme ve son düzenlemeleri yapmak üzere işaretlenmiş bir nüshası elektronik ortamda gönderilecektir.

DÜZELTME SONRASI GÖNDERİLMESİ

Revize edilmiş bir versiyonu gönderirken yazar, yorumcular tarafından ele alınan her konuyu ayrıntılı olarak açıklamalı ve nokta nokta ayrıntılı olarak "yorumlara yanıt" sunmalıdır ve ardından belgenin açıklamalı kopyası bulunmalıdır (her yorumcunun yorumu nerede bulunabilir, yazarın cevap ve satır numaraları gibi yapılan değişiklikler).

Bunun yanı sıra ana revize yazı, kabul mektubu tarihinden itibaren 30 gün içinde teslim edilmelidir. Yazının revize edilmiş versiyonunun tanınan süre içinde verilmemesi durumunda, revizyon seçeneği iptal edilebilir. Yazar(lar) ek sürenin gerekli olduğunu düşünüyorsa, ilk 30 günlük süre bitmeden, uzatmayı talep etmelidir.

İNGİLİZCE YAZIM

Tüm yazılar yayımlanmadan önce profesyonel olarak "English Language Editor" tarafından değerlendirilmektedir.

KABUL SONRASI

Tüm kabul edilen makaleler editörlerden biri tarafından teknik açıdan değerlendirilecektir. Teknik inceleme tamamlandıktan sonra, makale ilgili birime gönderilerek yaklaşık bir hafta içerisinde tamamen atıf yapılabilir "Kabul Edilmiş Makale" şeklinde online olarak yayınlanacaktır.

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Renkli çizimlerin yayımlanması ücretsizdir.

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Amaç; dizgi kontrolünü sağlamak veya dönüştürme hatalarını fark etmek, bütünlük ve netlik açısından yazıyı, tabloları ve şekilleri kontrol etmektir. Yeni bulgu ekleme, değerlerde düzeltme, başlıkta ve yazarlarda önemli değişikliklere editör izni olmadan müsade edilmemektedir.

Online olarak yayımlandıktan sonra yapılacak değişikliklerde, Erratum üzerinden form oluşturulup makaleye erişim sağlayacak bağlantı oluşturulması gerekmektedir.

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Kabul edilmiş yazının baskı için tümü hazırlanırken online olarak özet hali yayımlanır. Kabul edilen yazı kontrolden geçtikten sonra, yazarlar son düzeltmeleri yaptıktan sonra ve tüm değişiklikler yapıldıktan sonra yazı online olarak yayımlanacaktır. Bu aşamada yazıya DOI (Digital Object Identifier) numarası verilecektir. Her iki forma da www.journalagent.com/krhd adresinden ulaşılabilecektir. Kabul edilen yazının yazarları elektronik ortamdaki sayfaları çıktı olarak aldıktan sonra proofreading yapmak, tüm yazıyı, tabloları, şekilleri ve kaynakları kontrol etmekle sorumludur. Baskıda gecikme olmaması için 48 saat içinde sayfa kontrolleri yapılmış olmalıdır.

YAZIŞMA

Tüm yazışmalar dergi editöryal kuruluna ait aşağıdaki posta adresi veya e-mail adresi ile yapılacaktır.

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Telefon: +90 212 356 01 75-76-77

GSM: +90 (532) 300 72 36

Faks: +90 212 356 01 78

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Turkish Journal of
COLORECTAL DISEASE

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Turkish Journal of
COLORECTAL DISEASE

Editorial/Editöryal

Esteemed colleagues,

We are pleased to greet the new year with a new issue of our journal. In this issue we present a review, six original articles, and five case reports.

The review explores all aspects of the increasingly popular ventral rectopexy procedure and presents them together. I believe you will read it with interest. This issue focuses heavily on stomas and the problems faced by individuals with stoma.

After stoma closure, surgical site infection, natural cosmetic outcomes, and patient satisfaction are important issues for us all. In this issue we feature a research article examining the effect of different stoma closure methods on cosmetic outcomes. There is also a study investigating preoperative anxiety levels in patients scheduled for stoma surgery and another analyzing modifiable risk factors for parastomal hernia. Besides these, we also present a study on the effectiveness of various agents in mechanical intestinal cleansing, another concerning pilonidal sinus, and a report summarizing the authors' experiences with rectal neoplastic polyps. In addition, this issue includes five fascinating case reports.

This year we will be striving to expand the readership of our journal and will also continue our efforts to be included in more indexes. I can now say with pleasure that our national readership is nearly matched by our international readers across the globe. However, we are still trying to reach a broader audience.

In addition, the Turkish Society of Colon and Rectal Surgery will soon host our biggest event of the year, the ***16th Turkish Colon and Rectal Surgery Congress****. The congress will be held* ***April 9-13, 2019*** *at the Regnum Carya, one of the distinctive resorts of Turkey. The* ***ESCP joint perianal fistula workshop*** *on the last day of the congress will surely be a point of attraction.*

We wish you all a happy new year and look forward to seeing you in the next issue.

Tahsin Çolak, MD
Editor-in-Chief

Değerli meslektaşlarım,

Yeni yılda yeni bir sayı ile karşınızda olmaktan memnunuz. Bu sayıda çok değerli bir derleme, altı araştırma makalesi ve beş olgu sunumu ile çıkıyoruz.

Derleme gittikçe popülerlik kazanan Ventral Rektopeksinin tüm yönleriyle irdelenmesi ve birlikte sunulması şeklinde oldu. Keyifle okuyacağınızı düşünüyorum. Bununla birlikte, bu sayıda stoma ve stomalı bireylerin problemlerini irdeleyen sorunlara ağırlıklı olarak yer verildi.

Kapanan stoma yerinde enfeksiyon oluşumu ve doğal olarak kozmetik sonuçlara ve hasta memnuniyetine etkisi hepimizi etkileyen önemli bir sorundur. Bu sayıda stoma kapatmada değişik yöntem kullanımının kozmetik sonuçlara etkisini inceleyen bir araştırma yazısına yer verildi. Stoma planlanan bireylerde operasyon öncesi gelişen anksiyete düzeylerini inceleyen bir çalışma ve parastomal herni gelişiminde kontrol edilebilen risk faktörlerini değerlendiren iki çalışmaya daha yer verildi. Bununla birlikte mekanik bağırsak temizliğinde değişik ajanların etkisi, pilonidal sinüs ile ilgili bir diğer çalışma ve rektal neoplastik poliplerle ilgili deneyimlerini özetleyen çalışmaları da sunuyoruz. Bununla birlikte, oldukça çok okunan beş olgu sunumuna yer verildi. Bu yıl derginin daha çok insana ulaşması için yoğun çaba harcıyoruz. Bu yılda da daha çok indexe girmek için çabalarımız devam edecek. Artık memnuniyetle söyleyebilirim ki ulusal okurlarımız kadar dünyanın hemen her yerinden okurumuz mevcut. Ancak daha çok kişiye ulaşmak için çaba içindeyiz.

Bununla birlikte Türk Kolon ve Rektum Cerrahisi Derneğinin en büyük etkinliği ***XVII. Türk Kolon ve Rektum Cerrahisi Kongresi yaklaşıyor. 9-13 Nisan 2019 tarihleri arasında*** *ülkemizin nadide otellerinden biri olan Regnum Karya'da düzenlenecektir. Kongrenin son günü* ***ESCP ile ortak perianal fistül kursunun*** *da ilginizi çekeceğini düşünüyorum.*

Hepinizin yeni yılını kutlarken yeni bir sayıda buluşmayı dilerim.

Prof Dr Tahsin Çolak
Baş-Editör

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RESEARCH ARTICLE

Comparing Cosmetic Results of Purse-String Closure vs Conventional Linear Sutured Closure of the Stoma Wound Following Loop Ileostomy Reversal

Loop Ileostomi Sonrası Stoma Yerinin Kapatılmasında Kese Ağzı Yöntemi ile Konvansiyonel Yöntemlerin Kozmetik Sonuçlarının Karşılaştırılması

Wafi Attaallah, Şakir Karpuz, Abdulla Taghiyev, Mumin Coşkun
Marmara University Faculty of Medicine, Department of General Surgery, İstanbul, Turkey

ABSTRACT

Aim: Currently, conventional linear sutured closure of the skin following loop ileostomy reversal is widely used. The purse-string closure technique has recently been described as an approach associated with less wound infection and scar formation. The primary aim of this study was to compare the cosmetic results of purse-string closure vs conventional linear sutured closure of the stoma wound following loop ileostomy reversal.
Method: The medical records of patients who underwent loop ileostomy closure at a single center were reviewed retrospectively. The appearance of dog-ear deformity (redundant skin) in the stoma site skin was the primary outcome used to evaluate cosmetic results.
Results: Twenty-five patients were included in this study. Purse-string technique was used in 10 patients and linear closure technique was performed in 15 patients. After a median follow up of 34 (12-64) months the dog-ear deformity was seen in 13 (87%) patients who underwent linear closure technique, whereas none was seen in patients who underwent purse-string closure ($p<0.0001$).
Conclusion: Purse-string closure of the stoma wound was associated with significantly better cosmetic results compared to conventional linear sutured closure following loop ileostomy reversal.
Keywords: Ileostomy reversal, purse-string skin closure, linear closure, cosmetic results

ÖZ

Amaç: Günümüzde loop ileostomi sonrası deri kapatılmasında konvansiyonel olarak lineer sütürler kullanılmaktadır. Son zamanlarda ise daha az yara yeri enfeksiyonu ve skar oluşumu ile ilişkili olduğu belirtilen kese ağzı şeklinde kapatma tekniği tanımlanmıştır. Bu çalışmanın amacı loop ileostomi sonrası stoma yerinin kapatılmasında kese ağzı yöntemi ile konvansiyonel yöntemlerin kozmetik sonuçlarının karşılaştırılmasıdır.
Yöntem: Tek merkezli olarak yapılan bu çalışmada loop ileostomileri kapatılan hastaların tıbbi kayıtları retrospektif olarak incelendi. Kozmetik sonuçların değerlendirilmesinde stoma bölgesinde dog-ear deformitesinin görülmesi primer çıkarım olmuştur.
Bulgular: Çalışmaya toplamda 25 hasta dahil edildi. 15 hastada kese ağzı tekniği, 10 hastada ise konvansiyonel lineer kapatma tekniği kullanıldı. Ortanca 34 (12-64) aylık takip süresi sonunda dog-ear deformitesi lineer olarak kapatılan hastaların 13'ünde (%87) izlenirken, kese ağzı yöntemi ile kapatılan hastalardan hiçbirinde izlenmemiştir ($p<0.0001$).
Sonuç: Stoma yerinin kapatılmasında konvansiyonel lineer sütür ile kapatma yöntemine kıyasla kese ağzı yöntemi ile kapatmanın belirgin olarak daha iyi kozmetik sonuçları olduğu tespit edildi.
Anahtar Kelimeler: İleostomi kapatılması, kese ağzı, lineer kapatma, kozmetik sonuç

Introduction

A temporary stoma is frequently used in the treatment of colorectal cancer, inflammatory bowel disease and diverticulitis. It is used to reduce the anastomotic leakage and the reoperation rate particularly in very low anterior resection of rectal cancer. Many complications such as obstruction, infection, leakage, and incisional hernia can occur after stoma closure.[1,2]

Address for Correspondence/Yazışma Adresi: Wafi Attaallah MD,
Marmara University Faculty of Medicine, Department of General Surgery, İstanbul, Turkey
Phone: +90 536 818 24 55 **E-mail:** drwafi2003@yahoo.com **ORCID ID:** orcid.org/0000-0002-3179-4144
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After stoma closure, surgical site infection is also a frequent complication, with a reported incidence rates up to 40% in patient with conventional linear sutured closure of the stoma wound.[3,4]

The treatment of surgical site infection (SSI) requires wound drainage, cleaning, and, in some cases, antibiotics. However, the cosmetic results are not satisfactory and the healing time is extended.[5,6] The optimal stoma site skin-closure technique has not yet been established. Currently, conventional linear sutured closure of the skin following stoma reversal is widely used.

The circumferential purse-string approximation technique, introduced by Banerjee, after an ileostomy closure has been associated with less wound infection and scar formation, as well as with better cosmetic results.[7]

The primary aim of this retrospective study is to compare the cosmetic outcomes of the circumferential purse-string approximation technique and conventional linear sutured closure of the skin following loop ileostomy closure.

Materials and Methods

Patients

We retrospectively reviewed the medical records of patients who underwent loop ileostomy closure at Marmara University Hospital in Turkey between February, 2012 and May, 2016. Medical charts were reviewed for patient demographics, including age, gender, past medical history, such as the presence of diabetes, chronic obstructive pulmonary disease, cardiovascular disease, liver dysfunction, alcohol consumption and smoking status.

Patients were included if they had reversal of a loop ileostomy. The exclusion criteria were death, loss to follow up or presence of another stoma at the time of the study.

Operative Techniques

In patients who underwent the linear technique, the incision was made in a spindle-shape fashion, with a cylindrical stoma takedown. The anastomosis was accomplished by a hand-sewn or stapled anastomosis after resection of a segment of the small bowel or with the fold over technique. The fascia was closed with figure-of-8 stitches using 1-0 polyglactin. The skin was closed with 3 or 4 interrupted stitches using 3-0 polypropylene.

In patients who underwent the purse-string technique, a circular incision was made 1 to 2 mm lateral to the mucocutaneous junction. The stoma takedown and anastomosis were performed in the same manner as in the former group. The skin was closed using a purse-string subcuticular continuous suture with 3/0 monocryl, leaving an open orifice of about 5 mm (Figures 1a, b, c). The cosmetic appearance of the scar was evaluated after inviting the patients for follow up visits. Photos of the stoma site were taken during the visit for evaluation the appearance of the scar. The appearance of dog-ear deformity (redundant skin) (Figure 2) in the stoma site skin was the objective criteria we used in this study to evaluate the cosmetic results. Surgical site infection was considered as any superficial or deep infection in the wound that occurred up to 1 month of the postoperative period.[8] The clinical findings used to diagnose surgical site infection were purulent secretion, pain, erythema, and warmth.[9,10]

This study was approved by the Institutional Review Board of Marmara University (approval number: 09.2018.001) and written informed consent was obtained from all the patients.

Statistical Analysis

All data were analyzed using SPSS 23.0 statistical software package (SPSS, Inc., Chicago, IL, USA). Nominal variables

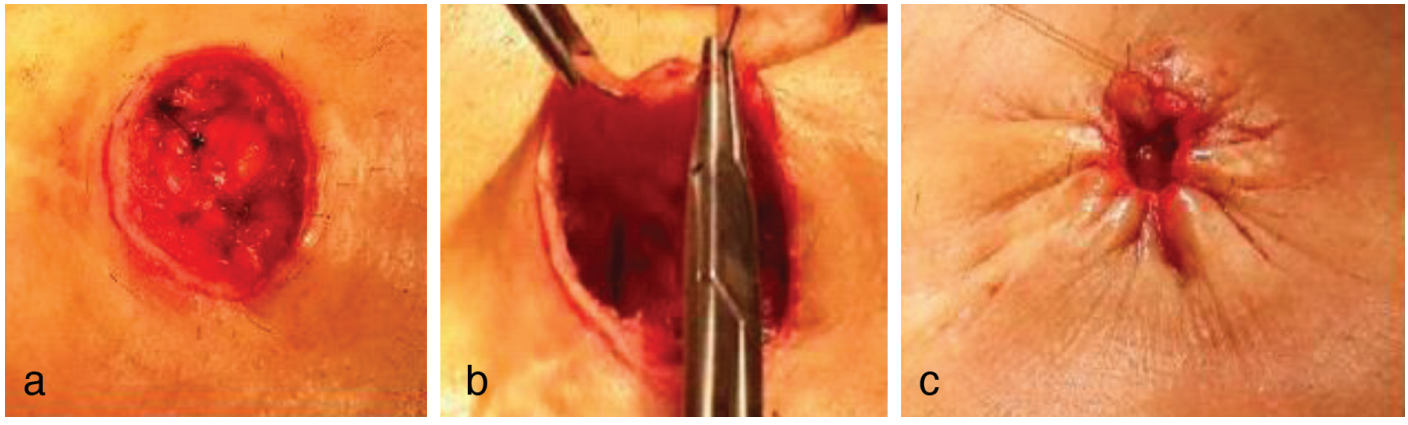

Figure 1. a-c) Surgical procedure of the purse-string skin closure. Following ileostomy reversal. (a) A circular incision was made around the mucocutaneous junction, (b) A circumferential subcuticlar stitch using 3-0 absorbable material was placed around the circumstomal incision, (c) Purse-string final wound

were analyzed using the χ^2 test or Fisher exact test. Ordinal variables were analyzed using Student's t-test or Mann-Whitney U test. A p value of less than 0.05 was considered to indicate statistical significance.

Results

Between February 2012 and May 2016, all patients who underwent loop ileostomy closure in the Clinic of General Surgery Marmara University Hospital were contacted by phone. Among a total of 43 patients, 4 were deceased, 2 had stoma reopened and twelve were lost to follow up. Twenty five patients were included in this study. The median age of the 25 patients was 58 (24-77) years, and 21 (84%) were male. The primary operation of eleven (44%) patients were colorectal cancer surgery. The remaining fourteen patients were operated for benign diseases. Laparoscopic surgery was performed in 4 (16%) patients during the primary operation. The median follow up time for the patients was 34 (12-64) months. Purse-string technique was used in 10 patients and linear closure technique was performed in 15 patients. The two groups were comparable regarding patients' characteristics (Table 1). Fifteen consecutive patients who were underwent loop ileostomy closure between February 2012 and March 2014, underwent conventional linear sutured closure of the skin following stoma reversal. However after March 2014 purse-string technique was used in 10 (71%) out of 14 consecutive patients.

After a median follow up of 34 months the dog-ear deformity was seen in 13 (87%) patients who underwent linear closure technique (Figure 3), whereas none was seen in patients who underwent purse-string closure (p<0.0001) (Figure 4). One patient (7%) in the linear closure group was diagnosed with surgical site infection based on retrospectively collected data. None of the patients in the purse-string closure group was diagnosed with surgical site infection (p=1.0) (Table 1).

Figure 2. The appearance of dog-ear deformity (redundant skin)

Discussion

This study showed that significantly higher rates of dog-ear deformity (87%) occurred in patients who underwent linear sutured closure of the stoma wound following loop ileostomy reversal (p<0.0001). No dog-ear deformity occurred after purse-string closure of the stoma wound.

Conventionally, outcome assessments in colorectal cancer include mortality, morbidity, disease recurrence, and long-term survival. However, patient-reported outcomes (e.g., cosmetic results) are now also regarded as key measurements in assessing outcomes of interventions.[11]

Cosmetic results are considered to be important aspects for patients. However, the optimal skin-closure technique following loop ileostomy reversal has not yet been established.[6] Currently, conventional linear sutured closure of the skin following loop ileostomy reversal is widely used.[5]

Table 1. Patients characteristics and outcomes

	Linear technique n=15	Purse-string technique n=10	p value
Age (median) years	58 (24-75)	55 (30-75)	0.70
Gender			
Male	13 (87%)	8 (80%)	1.0
Female	2 (13%)	2 (20%)	
Cancer diagnosis	7 (47%)	4 (40%)	1.0
Adjuvant chmeotherapy	1 (7%)	4 (40%)	0.12
Adjuvant radiotherapy	1 (7%)	2 (20%)	0.54
Ileostomy duration (months)			
Median time from stoma creation to closure (months)	7 (2-36)	5 (2-15)	1.0
Index operation laparoscopic surgery	4 (27%)	0 (0%)	0.13
Comorbid disease			
Diabetes mellitus	2 (13%)	3 (30%)	0.36
Hypertension	3 (20%)	1 (10%)	0.63
Coronary artery disease	1 (7%)	1 (10%)	1.0
Renal failure	0 (0%)	1 (10%)	0.40
Smoking	6 (40%)	5 (50%)	0.70
Alcohol consumption	1 (7%)	0 (0%)	1.0
Duration of follow-up (mo), median (range)	40 (17-64)	25 (12-37)	<0.0001
Dog-ear deformity	13 (87%)	0 (0%)	<0.0001
Wound infection	1 (7%)	0 (0%)	1.0

Figure 3. The appearance of dog-ear deformity in patients with linear closure technique

Figure 4. The appearance of the wound in the patients with purse-string closure technique

This study fills this gap of the less discussed issue of skin closure technique and highlights the better cosmetic results of purse-string skin closure technique.

Major limitations of this study were the small sample size and the retrospective design of the study.

Surgical site infection is one of the most common complications that can occur after stoma closure. Reports have described differences in the incidence of wound infection depending on the skin closure technique.

Different types of closure techniques were attempted to try to reduce the high rates of wound infection related to stoma closure.

Although associated with a lower risk of infection, secondary closure has higher costs, long healing time and its cosmetic results are not pleasant.

Two prospective randomized studies compared the incidence of infections after primary and secondary closure. Surgical site infections occurred in 20% and 36% of cases that underwent primary closure, in comparison with 10% and 5% in the secondary closure group.[12,13]

Depending on the closure technique, the surgical site infection rate ranges between 0% and 41%. Primary linear closure, secondary closure, and purse-string closure have been introduced as stoma closure techniques, but there is no consensus on the ideal closure technique for a stoma wound. In one prospective non-randomized trial, the surgical site infection rate was 21.4% after primary linear closure, whereas no SSIs occurred in the circumferential purse-string group.[14]

A randomized clinical trial of short-term outcomes following purse-string versus conventional closure of ileostomy wounds performed by Reid et al.[15] randomly assigned 61 patients, 31 and 30 in each group. The only statistically significant difference found was a decrease in surgical site infection in the purse-string closure group (12% vs 2%, p=0.005).

The advantage of the circumferential purse-string is that, until granulation tissues grow and the skin is epithelialized, small skin defect areas act as natural drainage pathways that prevent wound infection.[16]

Camacho-Mauries et al.[5] randomized 2 groups, comparing purse-string closure vs conventional linear closure. The SSI rate for the conventional linear closure group was 36.6% (n=11) vs 0% in the purse-string closure group (p<0.0001).

In this study, the infection rate in the conventional linear closure group was 7% vs 0% in the purse-string closure group (p=1.0). The difference between the two groups was not significant which may be due to the small sample size and the retrospective design of the study.

The cosmetic outcomes are very important for patients.

Camacho-Mauries et al.[5] reported that the results achieved with the purse-string technique were highly appreciated. They used a visual analog scale with a score from 0 to 10 (0 being the lowest and 10 the highest grade in cosmetic scar perception of the patient) to evaluate the post-operative cosmetic appearance of the scar. In the purse-string closure group, 93% of the scores ranged from 8 to 10, whereas, in the linear closure group, 57% had scores of 4, 5, and 7. In the same study patient satisfaction levels were graded by using a scale from 1 to 4,1 being very unsatisfied and 4 very satisfied. Seventy percent of the patients with purse-string closures were very satisfied in comparison with 20% in the other group (p=0.0001). The visual analog scale and patient satisfaction levels are considered as subjective tools to evaluate the cosmetic results. However, in this study we used the dog-ear deformity as an objective criteria to evaluate the cosmetic results.

Camacho-Mauries et al.[5] reported the cosmetic results using scales at 6 months after surgery. Whereas in this study cosmetic results were evaluated after a longer [34 (12-64) months] follow up period.

Another study reported a trend towards better cosmetic results for circumferential subcuticular wound approximation compared to primary closure[17] and significantly higher mean patient satisfaction score was reported in the circumferential subcuticular wound approximation group compared to the primary closure group.

Klink et al.[18] reported that patients who underwent a circumferential subcuticular wound approximation found that while the initial circular scar might be unappealing, final scar formation occurred along natural skin tension lines, producing a cosmetically pleasant scar.

This study showed that after March 2014, purse-string technique was used in 10 (71%) out of 14 consecutive patients in our hospital. This means that purse string closure technique has recently become more preferred by surgeons in our hospital due to its lower rates of SSIs as well as its better long-term cosmetic results.

Purse-string closure of the stoma wound was associated with a significantly better cosmetic results compared to conventional linear sutured closure following loop ileostomy reversal.

Ethics

Ethics Committee Approval: This study was approved by the Institutional Review Board of Marmara University (approval number: 09.2018.001).

Informed Consent: Informed consent was obtained from all the patients.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: W.A., Ş.K., A.T., M.C., Concept: W.A., Ş.K., A.T., M.C., Design: W.A., Ş.K., A.T., M.C., Data Collection or Processing: W.A., Ş.K., A.T., M.C., Analysis or Interpretation: W.A, Ş.K., A.T., M.C., Literature Search: W.A., Ş.K., A.T., M.C., Writing: W.A., Ş.K., A.T., M.C.

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References

1. Alvandipour M, Gharedaghi B, Khodabakhsh H, Karami MY. Purse-String Versus Linear Conventional Skin Wound Closure of an Ileostomy: A Randomized Clinical Trial. Ann Coloproctol 2016;32:144-149.
2. Tan WS, Tang CL, Shi L, Eu KW. Meta-analysis of defunctioning stomas in low anterior resection for rectal cancer. Br J Surg 2009;96:462-472.
3. Sutton CD, Williams N, Marshall LJ, Lloyd G, Thomas WM. A technique for wound closure that minimizes sepsis after stoma closure. ANZ J Surg 2002;72:766-767.
4. Llaguna OH, Avgerinos DV, Lugo JZ, Matatov T, Abbadessa B, Martz JE, Leitman IM. Incidence and risk factors for the development of incisional hernia following elective laparoscopic versus open colon resections. Am J Surg 2010;200:265-269.
5. Camacho-Mauries D, Rodriguez-Díaz JL, Salgado-Nesme N, González QH, Vergara-Fernández O. Randomized Clinical Trial of Intestinal Ostomy Takedown Comparing Pursestring Wound Closure vs Conventional Closure to Eliminate the Risk of Wound Infection. Dis Colon Rectum 2013;56:205-211.
6. Dusch N, Goranova D, Herrle F, Niedergethmann M, Kienle PN. Randomized controlled trial: comparison of two surgical techniques for closing the wound following ileostomy closure: purse string vs direct suture. Colorectal Dis 2013;15:1033-1040.
7. Banerjee A. Pursestring skin closure after stoma reversal. Dis Colon Rectum 1979;40:993-994.
8. Matthaiou DK, Peppas G, Falagas ME. Meta-analysis on surgical infections. Infect Dis Clin North Am 2009;23:405-430.
9. Gardner SE, Frantz RA, Doebbeling BN. The validity of the clinical signs and symptoms used to identify localized chronic wound infection. Wound Repair Regen 2001;9:178-186.
10. Cutting Kf, White RJ. Criteria for identifying wound infection- revisited. Ostomy Wound Manage 2005;51:28-34.
11. Sprangers MA. Quality-of-life assessment in oncology: achievements and challenges. Acta Oncol 2002;41:229-237.
12. Lahat G, Tulchinsky H, Goldman G, Klauzner JM, Rabau M. Wound infection after ileostomy closure: a prospective randomized study comparing primary vs. delayed primary closure tech-niques. Tech Coloproctol 2005;9:206-208.
13. Vermulst N, Vermeulen J, Hazebroek EJ, Coene PP, van der Harst E. Primary closure of the skin after stoma closure. Management of wound infections is easy without (long-term) complications. Dig Surg 2006;23:255-258.
14. Sang Il Yoon, Sun Mi Bae, Hwan Namgung, Dong Guk Park. Clinical Trial on the Incidence of Wound Infection and Patient Satisfaction After Stoma Closure: Comparison of Two Skin Closure Techniques Ann Coloproctol 2015;31:29-33.
15. Reid K, Pockney P, Pollitt T, Draganic B, Smith SR. Randomized clinical trial of short-term outcomes following pursestring versus conventional closure of ileostomy wounds. Br J Surg 2010;97:1511-1517.
16. Lee JR, Kim YW, Sung JJ, Song OP, Kim HC, Lim CW, Cho GS, Jung JC, Shin EJ. Con-ventional linear versus purse-string skin closure after loop ileostomy reversal: comparison of wound infection rates and operative outcomes. J Korean Soc Coloproctol 2011;27:58-63.
17. Milanchi S, Nasseri Y, Kidner T, Fleshner P. Wound infection after ileostomy closure can be eliminated by circumferential subcuticular wound approximation. Dis Colon Rectum 2009;52:469-474.
18. Klink CD, Wünschmann M, Binnebösel M, Alizai HP, Lambertz A, Boehm G, Neumann UP, Krones CJ. Influence of skin closure technique on surgical site infection after loop ileostomy reversal: retrospective cohort study. Int J Surg 2013;11:1123-1125.

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RESEARCH ARTICLE

Assessment of Patient Anxiety Levels Before and After Stoma Surgery

Stoma Cerrahisi Öncesi ve Sonrası Hastaların Anksiyete Düzeylerinin Değerlendirilmesi

Selda Karaveli Çakır[1], Türkan Özbayır[2]

[1]Kastamonu University, Fazıl Boyner Faculty of Health Sciences, Department of Nursing, Kastamonu, Turkey
[2]Ege University Faculty of Nursing, Department of Surgical Nursing, İzmir, Turkey

ABSTRACT

Aim: Preoperative education is one of the methods used to reduce anxiety levels. This study was planned to investigate the effect of preoperative education on the anxiety levels of patients undergoing planned colorectal surgery with creation of an intestinal stoma.

Method: The study population consisted of patients admitted to the general surgery department of a university hospital between 9 June 2013 and 15 August 2014 for planned colorectal surgery with stoma creation. The study sample consisted of 30 patients in the experimental group (received preoperative education) and 30 patients in the control group who met the inclusion criteria. Scheduled trainings were given to the experimental group during the preoperative period using a training booklet on stoma care. The Spielberger State-Trait Anxiety Inventory (STAI form TX-1/2) was administered to all patients preoperatively and six months after surgery.

Results: Mean age of the patients was 53.5±12.83 years in the experimental group, and 58.00±14.22 years in the control group. Mean preoperative STAI form TX-1 scores of the experimental and control groups were 37.10±3.57 and 42.70±2.02, respectively. Mean preoperative STAI form TX-2 scores in the experimental and control groups were 37.00±2.00 and 47.83±3.37, respectively. Six months after surgery, the experimental and control groups had mean STAI form TX-1 scores of 37.17±5.38 and 41.93±3.02 and mean STAI form TX-2 scores of 39.73±5.02 and 48.00±2.33, respectively. Preoperative STAI form TX-1 and 6-month postoperative STAI form TX-1/2 scores were significantly higher in the control group than in the experimental group ($p<0.05$).

Conclusion: Based on the results obtained, patients who underwent stoma surgery experienced anxiety, and preoperative education decreased patients' anxiety levels in the postoperative period.

Keywords: Stoma, anxiety, State-Trait Anxiety Inventory

ÖZ

Amaç: Ameliyat öncesi dönemde verilen eğitim anksiyete seviyesini düşürmek için uygulanan yöntemlerden biridir. Bu araştırma planlı kolorektal cerrahi sonrası stoma açılacak olan hastalara ameliyat öncesi verilen eğitimin hastaların anksiyete düzeyine etkisini incelemek amacıyla planlanmıştır.

Yöntem: Araştırmanın evrenini 9 Haziran 2013-15 Ağustos 2014 tarihleri arasında bir üniversite hastanesinin genel cerrahi anabilim dalında planlı kolorektal cerrahi ameliyatı için yatışı yapılan stoma açılacak olan hastalar, örneklemi araştırmanın sınırlılıklarına uyan 30'u deney (ameliyat öncesi eğitim alan), 30'u kontrol grubunda yer alan hastalar oluşturdu. Deney grubundaki hastalara ameliyat öncesi dönemde stoma bakımına yönelik eğitim kitapçığı kullanılarak planlı eğitim verildi. Tüm hastalara ameliyat öncesi ve ameliyattan 6 ay sonra Spielberger Durumluk-Sürekli Kaygı Ölçeği (STAI form TX-1/2) uygulandı.

Bulgular: Deney grubundaki hastaların yaş ortalaması 53,5±12,83; kontrol grubundaki hastaların yaş ortalaması 58,00±14,22 yıldır. Deney grubundaki hastaların ameliyat öncesi STAI form TX-1 puan ortalaması 37,10±3,57, kontrol grubunun 42,70±2,02, deney grubunda STAI form TX-2 puan ortalaması 37,00±2,00, kontrol grubunun 47,83±3,37 olduğu saptandı. Ameliyattan 6 ay sonra deney grubundaki hastaların STAI form TX-1 puan ortalaması 37,17±5,38, kontrol grubunun 41,93±3,02, deney grubunda STAI form TX-2 puan ortalaması 39,73±5,02, kontrol grubunun 48,00±2,33 olduğu saptandı. Ameliyat öncesi STAI form TX-1 ve ameliyattan 6 ay sonraki STAI form TX-1/2 puanları kontrol grubundaki hastalarda deney grubundaki hastalara göre anlamlı derecede yüksek olduğu saptandı ($p<0,05$).

Sonuç: Elde edilen sonuçlara göre stoma cerrahisi geçiren hastaların anksiyete yaşadığı, ameliyat öncesi verilen eğitimin ameliyat sonrası dönemde hastaların anksiyetesini azalttığı saptanmıştır.

Anahtar Kelimeler: Stoma, anksiyete, Durumluk-Sürekli Kaygı Ölçeği

Address for Correspondence/Yazışma Adresi: Selda Karaveli Çakır MD,
Kastamonu University, Fazıl Boyner Faculty of Health Sciences, Department of Nursing, Kastamonu, Turkey
Phone: +90 366 280 41 03 **E-mail:** seldakaraveli@gmail.com **ORCID ID:** orcid.org/0000-0003-2432-546x
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Introduction

Defecation is one of our physiological needs and has an important place in living a healthy life.[1,2] In healthy individuals, bowel movements and bowel continence are under their control.[3] Any problems that may develop in bodily functions may hinder an individual's ability to meet their needs, forcing them to change their lifestyle. One of the surgeries aimed at correcting dysfunction of the human body is the creation of an intestinal stoma.[1,3] An individual, whether male or female, scheduled for stoma surgery may experience many psychological problems including anxiety, fear, loss of body image, and depression.[4]

Preoperative anxiety has been reported in 60-80% of patients.[5,6] Most patients exhibit varying degrees of anxiety before surgery. This anxiety and fear may be related to anesthesia, or to various other factors such as the patient's previous experiences, personality traits, and type of surgery planned.[7] The situation may be different when the patient is going to have a stoma. Someone who will have a stoma is anxious about changes in their physical appearance and about losing control over their bowel functions, which they have had since childhood.[8,9] Preoperative education may be beneficial in reducing this anxiety, facilitating patients' recovery, and increasing their quality of life.[4,10] This study is a semi-experimental study aimed at analyzing the impact of preoperative education on the anxiety levels of patients scheduled for colorectal surgery involving stoma formation.

Materials and Methods

The study was conducted after obtaining approval from the Clinical Research Ethics Committee of the Ege University Faculty of Medicine Hospital (ethics committee approval number: 13-2/8). The universe of the study included patients admitted to the general surgery ward of a university hospital between 9 June 2013 and 15 August 2014 for scheduled colorectal surgery with stoma formation. The study sample included 60 patients, 30 in the experimental group (who had preoperative education) and 30 in the control group, who met the inclusion criteria and were selected by randomized controlled sampling. Patients were assigned to the experimental and control groups using sealed envelopes containing group designations. The envelopes were selected by the ward nurse in a lottery system. The patients in the study did not know which group they were in.

Inclusion criteria were;

- Scheduled for colorectal surgery including stoma formation,
- Able to understand and communicate in Turkish,
- Volunteered to participate in the study and completed an informed written consent form,
- Over 18 years of age,
- Had no diagnosed psychiatric disorder,
- Had no vision or hearing problems,
- Were literate,
- Agreed to 6 months of follow-up.

In meetings held the day before surgery, patients in both groups signed the informed consent form and filled out a patient information form including their age, gender, education level, chronic diseases, marital status, employment status, number of children, and previous surgical history. Patients in the control group were assessed using the Spielberger State-Trait Anxiety Inventory (STAI) form TX-1/2. Patients in the experimental group first received preoperative education regarding stoma care based on a training manual, after which the STAI TX-1/2 was used. The STAI form has two sections, the state anxiety scale (STAI form TX-1) and trait anxiety scale (STAI form TX-2), each containing 20 questions. The STAI form TX-1 measures how the individual feels at a certain moment and under certain circumstances, while the STAI form TX-2 measures how the individual feels independent of their current situation and circumstances. Validity and reliability studies for the Turkish version of the STAI were performed by Öner and LeCompte.[11] According to STAI score thresholds, scores of 0-19 are considered no anxiety, 20-39 points represents mild anxiety, 40-59 points is interpreted as moderate anxiety, 60-79 points is considered severe anxiety, scores of 80 or higher indicate panic and crisis.

After completing the forms, the patients in the experimental group underwent anatomic evaluation and stoma site marking based on each patient's individual characteristics, performed by the researcher. In addition to the routine education given in the clinic, the patients also received preoperative education based on a training manual about stoma care prepared according to the literature. Three days after surgery, the patients watched an educational DVD created by the Wound, Ostomy and Incontinence Nurses Society. Patients with ileostomy watched a 15-minute educational DVD about how to change a two-piece ileostomy bag system[12] and patients with colostomy watched a 12-minute educational DVD about how to change a single-piece colostomy bag system[13]. Before being discharged from the hospital, the patients were allowed to perform stoma care themselves under the researcher's supervision. Patients in the control group not have stoma site marking, received only the routine patient care provided in the clinic. Patients in both the experimental and control groups were reassessed with the STAI 6 months after stoma surgery to determine whether there were any changes.

The data obtained during the study were analyzed using the SPSS 20.0 software package. Comparisons of demographic variables and other qualitative and quantitative data between the experimental and control groups were done using descriptive statistical methods (number, percent, mean, standard deviation, median, minimum, maximum) and the results of normality tests were compared using Mann-Whitney U and chi-squared tests. Level of significance was accepted as 0.05, with $p<0.05$ considered a significant difference between the groups.

Results

The research was conducted with 60 patients. Mean age of the patients in the experimental group (n=30) was 53.5±12.83 years and that of the patients in the control group (n=30) was 58.00±14.22 years. Cancer was the reason for creating a stoma in 76.6% (n=23) of the patients in the experimental group and in 86.6% (n=26) of those in the control group. The patients' demographic data are summarized in Table 1. Analysis of group homogeneity showed that there were no statistically significant differences between patients in the experimental and control groups in terms of descriptive characteristics such as age, gender, marital status, or employment status ($p>0.05$).

Sixty percent of the patients in the experimental group had colostomy and 40% had ileostomy, whereas 63.33% of the patients in the control group had colostomy and 36.67% had ileostomy (Table 2). There was no statistically significant difference in stoma types between patients in the experimental and control groups ($\chi^2=0.000$, $p>0.05$).

In the experimental group, mean preoperative scores on the STAI TX-1 and -2 were 37.10±3.57 (min: 34.00, max: 53.00) and 37.00±2.00 (min: 34.00, max: 43.00), respectively; at 6 months postoperatively, mean STAI TX-1 and -2 scores were 37.17±5.38 (min: 31.00, max: 48) and 39.73±5.02 (min: 34.00, max: 50.00), respectively. In the control group, mean preoperative scores on the STAI TX-1 and -2 were 42.70±2.02 (min: 39.00. max: 46.00) and 47.83±3.37 (min: 40.00, max: 51.00) respectively; at postoperative 6 months, mean scores on the STAI TX-1 and -2 were 41.93±3.02 (min: 37.00, max: 46.00) and 48.00±2.33 (min: 48.00, max: 52.00), respectively.

There were statistically significant differences between the experimental and control groups in terms of both preoperative and 6-months postoperative mean STAI form TX-1/2 scores ($p<0.05$). Preoperative state anxiety and 6-month postoperative state/trait anxiety scores were significantly higher in the control group than in the experimental group ($p<0.05$) (Table 3).

Neither group showed significant differences in STAI form TX-1 or -2 scores based on gender, marital status, chronic diseases, or history of prior surgery ($p>0.05$).

Discussion

Stoma surgery is performed for palliative or treatment purposes in many diseases. Stomas are most commonly created due to colorectal cancer.[14] Individuals scheduled for stoma surgery experience various emotions such as anxiety, fear, negative body image, and depression, independent of their gender.[8] Preoperative education may can help reduce these feelings, encourage more rapid recovery, and increase patients' quality of life.[16] Nurses can improve patients' quality of life by easing the pre- and postoperative anxiety of patients and their relatives, providing emotional support, recognizing potential problems early, and implementing appropriate nursing initiatives.[7,10]

Studies have demonstrated that patients who receive detailed information in the preoperative period have lower levels of postoperative anxiety and recover faster.[7,17] Our findings also show that anxiety levels are reduced when patients are provided information preoperatively.

In a study performed by Cheung et al.[18] with stoma patients, the state anxiety score in the intervention group was 54.65±2.57 after surgery before practicing progressive relaxation exercises, and 31.27±3.11 at postoperative 10 weeks, while that of the control group was 51.03±10.96 after surgery and 42.83±4.24 at postoperative 10 weeks. The anxiety scores of the patients in our study were found to be lower than the group of patients studied by Cheung et al.[18]

Beaver et al.[19] found that stoma patients followed in the hospital had state and trait anxiety scores of 29±8.9 and 35.9±13.2, whereas patients followed by telephone had state and trait anxiety scores of 28.5±8.1 and 31.3±10.8, respectively. The anxiety levels of the stoma patients in our study were higher than those reported by Beaver et al.[19]

In study by Dayılar et al.,[20] the state anxiety score of patients scheduled for colon surgery was 53.30±18.60 and their trait anxiety score was 50.24±7.83. In their study, the number of patients who had a stoma was not specified, and only the anxiety scores of patients undergoing colon surgery were analyzed preoperatively. One of the main sources of anxiety for the patients in that study was that the intestine would be connected to the abdomen with a stoma after the operation. The patients included in our study were aware that they would have a stoma. Fear of the unknown among patients in the study by Dayılar et al.[20] resulted in higher STAI form TX-1/2 scores compared to our study.

Table 1. Distribution of descriptive characteristics of patients in the experimental and control groups

		Group					
		Experimental		Control		Total	
		n	%	n	%	n	%
Age	20-40 years	6	20.00	4	13.33	10	16.67
	40-60 years	16	53.33	14	46.67	30	50.00
	60 and over	8	26.67	12	40.00	20	33.33
Gender	Female	13	43.33	13	43.33	26	43.33
	Male	17	56.67	17	56.67	34	56.67
Marital status	Married	23	76.67	24	80.00	47	78.33
	Single	7	23.33	6	20.00	13	21.67
Employment status	Employed	5	16.67	5	16.67	10	16.67
	Not employed	25	83.33	25	83.33	50	83.33
	Sibling	2	6.67	0	0.00	2	3.33
Parental status	Yes	25	83.33	27	90.00	52	86.67
	No	5	16.67	3	10.00	8	13.33
Prior surgery	Yes	19	63.33	15	50.00	34	56.67
	No	11	36.67	15	50.00	26	43.33
Chronic disease	Yes	28	93.33	24	80.00	52	86.67
	No	2	6.67	6	20.00	8	13.33
Surgery type	APR	12	40.00	8	26.67	20	33.33
	LAR + protective ileostomy	7	23.33	2	6.67	9	15.00
	Hartman	5	16.67	4	13.33	9	15.00
	Total colectomy	4	13.33	3	10.00	7	11.67
	Mikulicz	2	6.67	13	43.33	15	25.00
Stoma indication	Rectal cancer	11	36.67	21	76.66	32	53.33
	Colon cancer	9	30.00	3	10.00	12	20.00
	Ulcerative colitis	3	10.00	2	6.66	5	8.33
	Sigmoid cancer	4	13.33	3	10.00	7	11.66
	Anastomotic leakage	2	6.66	0	0.00	2	3.33
	Anal canal cancer	1	3.33	1	3.33	2	3.33

LAR: Low anterior resection, APR: Abdominoperineal resection

Table 2. Comparison of stoma types in patients in the experimental and control groups

		Group					
		Experimental		Control		Total	
		n	%	n	%	n	%
Stoma type	Colostomy	18	60.00	19	63.33	37	61.67
	Ileostomy	12	40.00	11	36.67	23	38.33

Table 3. Comparison of state and trait anxiety levels of patients in experiment and control groups by time

		Group			
		n	Mean	SD	p
Preoperative state anxiety level	Experimental	30	37.10	3.57	0.000*
	Control	30	42.70	2.02	
Preoperative trait anxiety level	Experimental	30	37.00	2.00	0.000*
	Control	30	47.83	3.37	
State anxiety level at postoperative 6 months	Experimental	30	37.17	5.38	0.000*
	Control	30	41.93	3.02	
Trait anxiety level at postoperative 6 months	Experimental	30	39.73	5.02	0.000*
	Control	30	48.00	2.33	

*p<0.05, SD: Standard deviation

In conclusion, the findings of this study show that patients undergoing stoma surgery feel anxiety and that preoperative education reduces their anxiety in the postoperative period. Based on these results, we recommend regularly assessing stoma patients' anxiety levels, providing support for those with high levels of anxiety, and investigating the relationship between anxiety and the individuals' adaptation to life with a stoma.

Ethics

Ethics Committee Approval: Ege University Faculty of Medicine Hospital Clinical Research Ethics Committee approval (approval number: 13-2/8).

Informed Consent: Informed consent form was obtained from the patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: S.K.Ç., T.Ö., Concept: S.K.Ç, T.Ö., Design: S.K.Ç, T.Ö., Data Collection or Processing: S.K.Ç., Analysis or Interpretation: S.K.Ç., T.Ö., Literature Search: S.K.Ç., Writing: S.K.Ç., T.Ö.

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References

1. Karadağ A. Barsak Stoması Açılan Hastalarda Hemşirelik Bakımı, Kolon Rektum Hastalıkları Dergisi 2004;14:26-31.
2. Hanson KA, Quallich S. Assessment of Elimination. Ed: Black JM, Hawks JH in: Medical Surgical Nursing Eighth Saunders Elsevier 2009;653-660.
3. Kapan M, Girgin S, Keleş C, Önder A, Gümüş M. Kolorektal Cerrahide Ostomi Uygulamaları, Türkiye Klinikleri J Gastroenterohepatol 2010;17:94-106.
4. Mahjoubi B, Goodarzi KK, Mohammad-Sadeghi H. Quality of Life in Stoma Patients: Appropriate and Inappropriate Stoma Sites. World J Surg 2010;34:147-152.
5. Cimilli C. Cerrahide anksiyete. Klinik Psikiyatri 2001;4:182-186.
6. Jlala HA, French JL, Foxall GL, Hardman JG, Bedforth NM. Effect of Preoperative Multimedia Information on Perioperative Anxiety in Patients Undergoing Procedures under Regional Anaesthesiology. Br J Anaesth 2010;104:369-374.
7. Taşdemir A, Erakgün A, Deniz MN, Ertuğ A. Preoperatif Bilgilendirme Yapılan Hastalarda Ameliyat Öncesi ve Sonrası Anksiyete Düzeylerinin State-Trait Anxiety Inventory Test ile Karşılaştırılması. Turk J Anaesth Reanim 2013;41:44-49.
8. Yaşan A, Ünal S, Gedik E, Girgin S. Kalıcı ve Geçici Ostomi Yapılmış Kişilerde Yaşam Kalitesinde Değişim Depresyon ve Anksiyete, Anatolian Journal of Psychiatry 2008;9:162-168.
9. Sideris L, Zenasni F, Vernerey D, Dauchy S, Lasser P, Pignon JP et al. Quality of Life of Patients Operated on for Low Rectal Cancer: Impact of the Type of Surgery and Patients' Characteristics. Dis Colon Rectum 2005;48:2180-2191.
10. Oshea H. Teaching the Adult Ostomy Patient, J Wound Ostomy and Continence Nursing 2001;28:47-54.
11. Öner N, LeCompte WA. Durumluk-Sürekli kaygı envanteri el kitabı, Boğaziçi Üniversitesi Yayınları, İstanbul 1983.
12. Şenol Çelik S, Karadağ A, Göçmen Baykara Z, Karabulut H, Öztürk D, Ören Hin A. Çift Parçalı Sistem İleostomi Torbasının Değiştirilmesi. Yara Ostomi İnkontinans Derneği, 2013, Ankara.
13. Karadağ A, Harputlu D, Göçmen Baykara Z, Karabulut H, Öztürk D, Ören Hin A. Tek Parçalı Sistem Kolostomi Torbasının Değiştirilmesi. Yara Ostomi İnkontinans Derneği, 2013, Ankara.
14. Skeps R, McMullen CK, Wendel CS, Bulkley J, Grant M, Mohler J, Hornbrook MC, Krouse RS, Herrinton LJ. Changes in Body Mass Index and Stoma Related Problems in the Elderly. J Geriatr Oncol 2013;4:84-89.
15. Jawaid M, Mushtaq A, Mukhtar S, Khan Z. Preoperative anxiety before elective surgery. Neurosciences (Riyadh) 2007;12:145-148.
16. Boker A, Brownell L, Donen N. The Amsterdam preoperative anxiety and information scale provides a simple and reliable measure of preoperative anxiety. Can J Anaesth 2002;49:792-798.
17. Demir A, Akyurt D, Ergün B, Haytural C, Yiğit T, Taşoğlu İ, Elhan AH, Erdemli Ö. Kalp Cerrahisi Geçirecek Olgularda Anksiyete Sağaltımı Türk Göğüs Kalp Damar Cer Derg 2010;18:177-182.
18. Cheung YL, Molassiotis A, Chang AM. The Effect of Progressive Muscle Relaxation Training on Anxiety and Quality of Life After Stoma Surgery in Colorectal Cancer Patients. Psychooncology 2003;12:254-266.
19. Beaver K, Campbell M, Williamson S, Procter D, Sheridan J, Heath J, Susnerwala S. An Exploratory Randomized Controlled Trial Comparing Telephone and Hospital Folow-up after Treatment for Colorectal Cancer. Colorectal Dis 2012;14:1201-1209.
20. Dayılar H, Oyur G, Kamer E, Sarıçiçek A, Cengiz F, Hacıyanlı M. Kolon Ameliyatı Öncesi Hastaların Anksiyete Düzeylerinin Değerlendirilmesi Turk J Colorectal Dis 2017;27:6-10.

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RESEARCH ARTICLE

Assessment of the Caregiver Burden of Caregivers of Colorectal Cancer Patients

Kolorektal Kanserli Hastalara Bakım Verenlerin Bakım Yükünün İncelenmesi

Gülcan Öztürk Kaynar[1], Fatma Vural[2]

[1]Dokuz Eylül University, Research and Practise Hospital, Operation Unit, İzmir, Turkey
[2]Dokuz Eylül University Faculty of Nursing, Department of Surgical Nursing, İzmir, Turkey

ABSTRACT

Aim: To examine caregiver burden of caregivers of patients with colorectal cancer.

Method: This is a prospective, cross-sectional, descriptive study. The sample consisted of 162 patients who underwent colorectal cancer surgery between January 1 and June 30, 2015 in the General Surgery ward of Dokuz Eylül University Hospital. Data were collected using the Caregiver Strain Index (CSI) and the Your Reactions to Helping Your Family Member scale (RHFM), which is a component of the Family Care Inventory. Descriptive statistics, Mann-Whitney U, Kruskal-Wallis test, and Pearson correlation analysis were used in data analysis.

Results: The mean age of the patients was 58.5±12.7 years and the mean age of the caregivers was 51.8±10.8 years. Of the patients, 51.2% were male, 38.9% (n=63) underwent low anterior resection, and 66.7% had a stoma. Fifty-eight percent of the caregivers were female. The caregivers' mean CSI score was 3.61±3.52 and mean RHFM score was 50.50±9.78. There were statistically significant correlations between caregiving burden and patients' age and stoma status ($p<0.05$). Patient gender and surgery type did not affect caregiver burden ($p>0.05$). Caregiver age, duration of care (days), and receiving caregiving assistance were associated with caregiver burden ($p<0.05$). However, the caregivers' gender, marital status, and education level did not affect caregiver burden ($p>0.05$). Presence of stoma, caregiver gender, duration of care, and caregiver relationship to patient were found to affect RHFM score ($p<0.05$).

Conclusion: Caregivers of colorectal cancer patients seem to have greater caregiving burden in the postoperative period. For this reason, it is important to provide patients self-care training and encouragement to facilitate their self-care. It will also be beneficial to support caregivers with scheduled education in topics such as stoma care and through support group initiatives.

Keywords: Colorectal cancer, care burden, caregiver, stoma, nursing

ÖZ

Amaç: Kolorektal kanserli hastalara bakım verenlerin bakım yükünün incelenmesidir.

Yöntem: Prospektif, kesitsel ve tanımlayıcı araştırmadır. Örneklemi 1 Ocak-30 Haziran 2015 tarihleri arasında kolorektal kanser nedeniyle ameliyat olan ve Dokuz Eylül Üniversitesi Hastanesi Genel Cerrahi polikliniğine kontrole gelen 162 hasta ve bakım vereni oluşturmuştur. Veriler Hasta ve Bakım Verenler Tanıtıcı Özellikler Formu, Bakım Verenin Stres Ölçeği (BVSÖ) ve Aile Bireyinize Yardımcı Olmaya Gösterdiğiniz Tepkiler Ölçeği (ABYOGT) ile toplanmıştır. Verilerin analizinde sayı, yüzde, ortalama, Mann-Whitney U, Kruskall-Wallis testi, Pearson korelasyon analizi kullanılmıştır.

Bulgular: Hastaların yaş ortalaması 58,5±12,7 ve bakım verenlerin yaş ortalaması 51,8±10,8'dir. Hastaların %51,2'si erkek; %38,9'una (n=63) aşağı anterior rezeksiyon uygulanmış, %66,7'sinin stoması vardır. Bakım verenlerin %58'ini kadınlar oluşturmuştur. BVSÖ puan ortalaması 3,61±3,52 bulunmuştur. Bakım verenlerin ABYOGT puan ortalaması ise 50,50±9,78 saptanmıştır. Hastaların yaş ve stoma durumuna göre bakım yükünün arttığı ($p<0,05$); hastanın cinsiyeti ve ameliyat durumunun bakım yükünü etkilemediği belirlenmiştir ($p>0,05$). Bakım verenlerin yaşı, bakım verdiği gün sayısı ve yardım alma durumu bakım yükünü etkilemektedir ($p<0,05$). Ancak bakım verenin cinsiyeti, medeni durumu ve eğitim durumu bakım yükünü etkilememektedir ($p>0,05$). Hastanın stoma durumu ve bakım verenin cinsiyeti, bakım verdiği süre ve yakınlık durumu ABYOGT düzeyini etkilediği bulunmuştur ($p<0,05$).

Sonuç: Kolorektal kanserli hastaların bakım vericilerinin ameliyat sonrasında bakım yükünün fazla olduğu görülmektedir. Bu nedenle hastaların öz bakımlarını yapabilmeleri için teşvik edilmesi ve öz bakım eğitimi önemlidir. Ayrıca bakım verenlerin de özellikle stoma bakımı gibi konularda planlı eğitimlerle ve destek grup girişimleri gibi yöntemlerle desteklenmesi yararlı olacaktır.

Anahtar Kelimeler: Kolorektal kanser, bakım yükü, bakım veren, stoma, hemşirelik

Address for Correspondence/Yazışma Adresi: Gülcan Öztürk Kaynar MD,
Dokuz Eylül University, Research and Practise Hospital, Operation Unit, İzmir, Turkey
Phone: +90 536 723 68 20 **E-mail:** gulcan.ozturk.kaynarr@gmail.com **ORCID ID:** orcid.org/0000-0001-9962-2480
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Introduction

Colorectal cancer is the fourth most common type of cancer diagnosed worldwide and the second greatest cause of cancer-related deaths. According to 2018 data from the GLOBOCAN database (Estimated global cancer incidence, mortality, and prevalence), a project of the International Agency for Research on Cancer, colorectal cancer ranks third worldwide among the most common cancers overall, third among males and second among females (http://globocan.iarc.fr).[1] According to Turkish cancer statistics from the Republic of Turkey Ministry of Health published in 2017, colorectal cancer is the third most common cancer for both males and females (www.kanser.gov.tr).[2]

With decreases in colorectal cancer incidence and mortality, hospital stays have become shorter and home care has gained importance. A cancer diagnosis affects not only the patient, but also their caregivers and family members.[3,4] The patient being diagnosed with cancer and their family members assuming a caregiving role is a simultaneous process. The primary caregiver is the key person who supports the patient and generally provides the most care. Having a family member with cancer impacts the daily tasks and routines of the household and puts people in new situations to which they must adapt. Cancer is an ongoing, life-threatening disease that prevents the patient from returning to their professional and social lives, and also affects the entire family. These factors increase the responsibilities of the caregiver and change their role in the family.[5]

The magnitude of the care burden perceived by the caregiver is dependent on traits of both the patient and the caregiver. Factors that influence caregiver burden include the severity of symptoms suffered by the patient, the caregiver's age, their relationship to the patient, and their own health.[6] Colorectal cancer operations are major, complex surgeries, and some patients require temporary or permanent stomas. Postoperatively, these patients may experience stomal and peristomal complications (peristomal irritation, parastomal herniation), negative body image, and sexual dysfunction. Patients without stomas may also face problems such as anastomotic leak, surgical site infection, changes in dietary and bowel habits, and sexual dysfunction.[7,8,9] All of these problems intensify the patient's need for physical and psychosocial care, placing an even larger burden on the caregiver. Caregivers fulfill various duties, including providing patients physical, social, and emotional support, arranging their outpatient visits, providing transportation to the hospital, helping perform daily activities in the home, managing their comorbidities and tracking medication, acquiring ostomy care products, and performing or assisting with stoma maintenance.[10] Family members who assume the role of primary caregiver struggle due to the negative impact on their daily activities and the various physical, emotional, psychological, social, economic, and professional problems they experience. As these problems increase, the caregivers' perceived care burden also increases and quality of life is reduced.[4,11,12]

Nurses have a vital role in preparing patients and caregivers for home care during pre-discharge education. The nurse educates the patients and their relatives about how life will be at home after hospital discharge and how they can cope with any problems they face. Determining the burden of care in caregivers of colorectal cancer patients who have undergone surgery should provide guidance in identifying caregivers' needs, meeting these needs early, and planning appropriate nursing initiatives to reduce this burden. Reducing the burden on caregivers is an important step in meeting the optimal care requirements of cancer patients and maintaining effective long-term care, thereby increasing quality of life for both the patient and caregiver. There have been no studies in Turkey related to the burden on caregivers of patients with colorectal cancer after surgery. The aim of this study was to investigate perceived caregiver burden among caregivers of patients operated for colorectal cancer.

Materials and Methods

Research Design

This study was conducted as a prospective, cross-sectional, and descriptive study.

Research Setting

Data were collected in the general surgery outpatient clinic of Dokuz Eylül University Hospital.

Study Universe/Sample

The universe of the study comprised all patients who underwent colorectal cancer surgery and visited the outpatient clinic between January 1 and June 30, 2015, and their caregivers. Criteria for inclusion in the study sample were that the patient was over 18 years old, had a primary diagnosis of colorectal cancer, and was undergoing their first surgery for colorectal cancer. Inclusion criteria pertaining to the caregiver were: being over 18 years of age, being able to speak and understand Turkish, having provided home care for at least 1 month after surgery, and being the spouse or a first-degree relative (child or parent) of the patient.

Data Collection Tools

Data collection tools included patient and caregiver information forms, the Your Reactions to Helping Your Family Member scale, and the Caregiver Strain Index (CSI).

Patient Information Form

The form includes socio-demographic and clinical characteristics such as the patient's age, gender, and marital status, type of surgery, and length of hospital stay (days).

Caregiver Information Form

This form includes socio-demographic characteristics such as the caregiver's age and gender, relationship to the patient, number of children, duration of caregiving, and any caregiving assistance received from others.

Caregiver Strain Index

This tool was developed by Robinson in 1983 to measure the care burden of caregivers, which is assessed using 13 items. There is at least one item in each of five domains: employment, financial, physical, social, and time. Each of the 13 items describes a stressor. The items are answered as yes (1) or no (0). Giving affirmative answers to 7 or more items in the index indicates high stress levels. The total score is calculated by summing the answers (0 or 1) for the 13 items. The Cronbach's alpha value of the scale was found to be 0.86.[13] Validity and reliability studies of the Turkish version of the CSI were conducted by Uğur[14] in 2006, and the Cronbach's alpha value was found to be 0.77. In our study, we determined a Cronbach's alpha of 0.87 for the CSI.

Your Reactions to Helping Your Family Member

This scale is included in the Family Care Inventory developed by Archbold and Stewart (1983). "RHFM" consists of 15 items with subdimensions. The scale was developed to identify caregivers' responses to caring for patients and was restructured in 1993 and 2000. The items in the scale are scored using a 5-point Likert scale as 0: not at all, 1: a little, 2: moderately, 3: a lot, and 4: a great deal. The total score of the RHFM ranges from a minimum of 0 to a maximum of 60. Higher total score corresponds to a larger reaction.[15] Uğur[14] conducted the validity and reliability study of the Turkish version of the scale in 2006 and determined a Cronbach's alpha of 0.88. In the present study, the scale's Cronbach's alpha value was 0.95.

Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 22.0 software. Socio-demographic characteristics were expressed in numbers and percentages. Pearson's correlation analysis was used to evaluate relationships between caregiver and patient age, length of hospital stay, number of children, number of people supporting the caregiver, and mean CSI and RHFM total scores. Differences between mean CSI and RHFM total scores based on caregivers' socio-demographic characteristics such as gender, marital status, social insurance, employment status, and cohabitation with the patient were analyzed using Kruskal-Wallis test and Mann-Whitney U test. $P<0.05$ was considered statistically significant.

Results

Socio-demographic data of the caregivers are presented in Table 1. The mean duration of caregiving was 36.9±16.39 (min-max: 30-120) days, 78.4% (n=127) of caregivers had no dependents other than the patient, and 80.2% (n=130) received no caregiving assistance.

Mean CSI score of the caregivers was 3.61±3.52 and mean RHFM score was 50.50±9.78. Caregivers reported low stress levels and large reactions to caregiving.

Comparison of caregiving burden according to patient characteristics (Table 2) showed a statistically significant differences in mean CSI score based on presence of stoma (U=1894.0) and in mean RHFM score based on presence of stoma (U=1946) ($p<0.001$).

Analysis of perceived care burden in relation to caregiver characteristics (Table 3) revealed statistically significant differences in mean CSI scores according to relationship to patient (U=11.83), education level (U=14.52), income level (KW=11.69), and caregiving assistance (U=1587.0). Other socio-demographic characteristics of the caregivers (gender, employment, etc.) were not associated with significant differences in their mean CSI scores. There was a statistically significant difference in mean RHFM scores based on gender (U=2518.5) and relationship to patient (KW=14.27).

Caregiving duration was moderately correlated with CSI score (r=0.392, p=0.000) and weakly correlated with RHFM score (r=0.242, p=0.002). There were very weak correlations between the other patient/caregiver characteristics and CSI and RHFM scores. A moderate positive correlation was observed between caregivers' CSI and RHFM scores (r=0.281, p=0.000) (Table 4).

Discussion

In this analysis of the caregiver burden in caregivers of patients who underwent surgery for colorectal cancer, the mean CSI score was 3.61±3.52. This finding indicates low caregiver burden. In a study by Karaaslan[16], caregivers (n=150) of inpatients in the hematology/oncology and gynecologic oncology wards reported a mean caregiver burden of 5.77±2.97, whereas caregivers (n=200) of cancer inpatients and outpatients had a mean caregiver burden of 7.2±3.3 in a study by Yıldız et al.[12] The lower care burden observed in our study may be related to the caregivers being the patients' spouses, being female, being unemployed, and having no other caregiving obligations. In Turkish culture, women are expected to take care of their spouses

as a requirement of the family structure and marriage. Lower caregiver strain may be due to the fact that women as spouses perceive caregiving as the responsibility of a wife rather than as a burden.

It has been reported in the literature that caregiver gender does not affect caregiver burden.[5,17,18,19] No differences in magnitude of caregiver burden were observed based on the gender, marital status, employment status, or income of the caregivers. In a study by Orak and Sezgin[18] analyzing care burden of caregivers (n=273) of inpatients in a radiation oncology ward, they determined that marital status of the caregiver was not associated with care burden. In contrast, Karaaslan[16] and Kabataş Yıldız and Ekinci[19] reported that married caregivers with children perceived greater caregiver burden. Being married with children might have increased their caregiver burden because these individuals have the additional responsibilities of housework and child care besides caring for the patient. In our study, low socio-

Table 1. Socio-demographic characteristics of patients and caregivers (n=162)

Patients			**Caregivers**		
Socio-demographic characteristics	**Mean ± SD**	**min-max**		**Mean ± SD**	**min-max**
Age (years)	**58.5±12.7**	**18.0-93.0**	**Age (years)**	**51.8±10.8**	**25.0-75.0**
	n	**%**		**n**	**%**
Gender			**Gender**		
Female	79	48.8	Female	94	58.0
Male	83	51.2	Male	68	42.0
Marital status			**Marital status**		
Single	19	11.7	Single	10	6.2
Married	143	88.3	Married	152	93.8
Chronic disease			**Chronic disease**		
(-)	90	55.6	(-)	136	84.0
(+)*	72	44.4	(+)*	26	16.0
Medication			**Medication**		
(-)	94	58.0	(-)	136	84.0
(+)**	68	42.0	(+)**	26	26.0
Stoma			**Employment status**		
(+)	108	66.7	Employed	30	18.5
(-)	54	33.3	Not employed	132	81.5
Surgery			**Occupation**		
Right/left hemicolectomy	48	29.7	Homemaker	77	47.5
Low anterior resection	63	38.9	Retired	50	30.9
Abdominoperineal resection	42	25.9	Independent/self-employed	26	13.0
Other***	9	5.6	Other****	9	9.5
			Relationship		
			Parent	9	5.5
			Child	40	24.7
			Spouse	113	69.8
			Number of children		
			1-2	114	70.4
			3-4	35	23.4
			0	10	6.2
Total	162	100.0		162	100.0

*Diabetes mellitus, hypertension, hyperthyroidism, asthma, dementia, chronic obstructive lung disease, etc.

**Antihypertensive, antidiabetic, antipsychotic, antidementia drugs, anticoagulants, etc.

***Total colectomy, colostomy, ileostomy ****Civil servant, Laborer, Unemployed

Min: Minimum, Max: Maximum, SD: Standard deviation

economic and educational levels were associated with heavier caregiver burden. There are similar data in the literature indicating that caregivers with low education have greater care burden.[18,19,20] It may be that low-educated caregivers have limited abilities to cope effectively with problems (limited access to information, low financial status) or plan care more efficiently. Papastavrou et al.[20] also reported that caregivers with low socio-economic level bear heavier caregiver burden and are in poorer health. Creating an intestinal stoma may be necessary in some patients with

Table 2. Comparison of patients' characteristics with mean Caregiver Strain Index and Your Reactions to Helping Your Family Member scale (n=162)

		CSI*			RHFM*		
Socio-demographic characteristics	**n**	**Mean ± SD**	**Test**	**p**	**Mean ± SD**	**Test**	**p**
Gender							
Female	79	1.64±1.81	U=2963.0	0.269	40.12±12.77	U=2764.0	0.125
Male	83	1.92±2.08			36.25±9.80		
Surgery							
Hemicolectomy	48	1.57±1.34			38.78±12.42		
Low anterior resection	63	2.22±2.48	KW=6.41	0.170	40.06±11.49	KW=4.13	0.388
Abdominoperineal Resection	42	1.57±1.71			38.47±11.15		
Other***	9	0.66±0.50			33.22±2.72		
Stoma							
(+)	108	16.9±2.8	U=1894.0	**0.000****	42.37±10.01	U=1946.5	**0.000****
(-)	54	1.38±1.66			35.06±9.01		

*CSI: Caregiver Strain Index, RHFM: Your Reactions to Helping Your Family Member scale, SD: Standard deviation, **Kruskal-Wallis test, Mann-Whitney U test, p<0.05 ***Total colectomy, colostomy, ileostomy

Table 3. Comparison of caregiver characteristics with Mean Caregiver Strain Index and Your Reactions to Helping Your Family Member scale

		CSI*			RHFM*		
Sociodemographic characteristics (n)	**n**	**Mean ± SD**	**Test**	**p**	**Mean ± SD**	**Test**	**p**
Gender							
Female	94	2.04±2.25	U=2764.0	0.125	40.01±11.17	U=2518.5	**0.011****
Male	68	1.44±1.38			37.20±11.09		
Education level	4	4.00±0.81			41.75±8.65		
Literate/Primary school	38	2.26±2.23			39.36±11.36		
High school	88	1.73±2.00	KW=14.52	**0.002****	38.65±11.35	KW=2.51	0.472
University	32	1.09±1.05			38.31±11.19		
Relationship							
Parent	9	1.71±1.97			42.57±13.86		
Child	40	2.42±2.04	KW=11.83	**0.008****	39.00±11.31	KW=14.27	**0.003****
Spouse	113	4.03±1.41			58.62±12.64		
Income level							
Income less than expenses	11	3.18±1.25			41.45±10.51		
Income equal to expenses	141	1.70±1.99	KW=11.69	**0.003****	38.41±10.98	KW=3.759	0.153
Income greater than expenses	10	1.40±1.50			41.90±14.75		
Caregiving assistance							
(+)	32	2.21±1.66	U=1587.0	**0.030****	40.68±12.10	U=1812.5	0.213
(-)	130	1.68±2.01			38.37±10.95		

*CSI: Caregiver Strain Index (CSI), RHFM: Your Reactions to Helping Your Family Member scale, SD: Standard deviation, **Kruskal-Wallis test, Mann-Whitney U test, p<0.05

Table 4. Correlations between patient/caregiver characteristics and Caregiver Strain Index and Your Reactions to Helping Your Family Member scale

Characteristic		CSI* total score	RHFM* total score
Patient age	r	0.146	0.205
	p	0.063	**0.009****
Caregiver age	r	0.163	0.195
	p	**0.034****	**0.013****
Caregiving duration	r	0.392	0.242
	p	**0.000****	**0.002****
Number of caregiver's children	r	0.144	-0.064
	p	0.069	0.418
RHFM	r	0.281	
	p	**0.000****	

*CSI: Caregiver Strain Index, RHFM: Your Reactions to Helping Your Family Member scale

**Pearson correlation analysis, $p<0.05$ or $p<0.01$

colorectal cancer. Caregivers may have to purchase most of the materials used for colostomy/ileostomy maintenance. This can negatively impact them financially. Consequently, caregivers with low socio-economic status may have faced such problems, which may have resulted in their perception of a larger caregiver burden.

In our study, the mean RHFM score of the caregivers was 50.50±9.7. In a study by Yıldız et al.[12], the average RHFM score of caregivers of cancer patients under inpatient or outpatient care in a hematology/oncology ward was 47.8±11.6. The RHFM scores of caregivers of colorectal cancer patients in our study seem to be higher than those reported in other studies. This strong caregiver reaction may be attributed to the presence of stoma, management of comorbidities, and greater care needs after surgery. In our study, the caregivers of stoma patients had higher caregiver burden and reactions to caregiving. Maguire et al. [4] observed that presence of stoma and general health status affected caregiver burden with colorectal patients. Having a stoma requires caregivers to possess additional knowledge and skills. Therefore, stoma patients have greater care needs. A stoma requires the caregiver to procure supplies and allot extra time in addition to their other daily activities for stoma care, which may increase the perceived care burden and reaction level.

There is evidence in the literature that the burden of caregiving increases with caregiver age[21, 22, 23] Garlo[24] reported that caregivers over the age of 60 who care for cancer patients perceived a caregiving burden and needed assistance from others to meet the patients' daily care needs. In our study, caregiver burden and reaction level increased as caregiver age increased. With older caregivers, the burden of caregiving is thought to increase as a result of their own comorbidities, declining physical health and reduced physical power, and greater difficulty in meeting patient needs (activities of daily living, stoma care, etc).

A positive correlation between caregiving duration and caregiver burden has been reported in the literature.[18,23,25] Hsu et al.[26] found that 61% of caregivers of cancer patients had been in their caregiving role for at least one year and spent about 10 hours a week caregiving. Maguire et al.[4] reported that one-third (n=153) of caregivers of colorectal cancer patients spent more than 25 hours a week providing care. In another study, Eşer and Bedük[27] found that 45.3% of caregivers of cancer patients did not receive assistance while caregiving. In the present study, caregiver burden and reaction level increased with the caregiving duration. Caregivers face many difficulties, including concerns about the cancer relapsing, emotional problems such as hopelessness about the future, difficulties with daily chores, stoma care, and symptom management (diarrhea, pain, fatigue, weight loss, and sexual dysfunction), scheduling appointments, keeping other relatives informed about the patient, reduced or complete lack of income, and disrupted social life. Burdened by these difficulties, caregivers might become sensitive, irritable, or physically and emotionally exhausted.[28,29] It is believed that with prolonged caregiving, the caregivers are exposed to these stressors for longer periods of time, and more pronounced physical (fatigue, cardiovascular diseases, sleeping disorders), emotional, social, and financial problems emerge in the long run, leading to an increased caregiving burden and stronger reaction.

A weak but statistically significant positive correlation was observed between the caregivers' perceived burden and their reaction level. As caregiver burden increases, caregivers show greater reactions to helping their family members. Caregivers' reactions to the patient and to caregiving itself intensify in parallel to the increase in caregiver burden. These stronger reactions might lead to conflict between the caregiver and the patient and negatively affect their quality of life. Therefore, it is important to provide care-related and psychological support to caregivers in order to reduce their reactions to caregiving.

Conclusion

This study investigated caregiver burden and reactions to helping family members among caregivers of colorectal cancer patients. We found that caregiver burden was

low, while reactions to caring for a family member were strong. Based on these results, we believe nurses should educate both patients and caregivers, provide motivation and encouragement, and provide stoma care training and support so that patients undergoing colorectal cancer surgery can care for themselves more effectively and the caregiving burden can be further reduced. In order to reduce caregivers' reactions to caregiving, areas of difficulty should be identified, information should be given as needed, and psychological support should be provided during postoperative patient follow-up. The effectiveness of initiatives (e.g., support groups) aimed at reducing the care burden of caregivers of colorectal cancer patients should be evaluated in randomized controlled studies. Caregivers should receive education/training about caregiving preoperatively, and mean scores for pre-training and post-training care burden should be compared.

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Ethics

Ethic Committee Approval: The study was approved by the Dokuz Eylül University non-Interventional Research (approval number: 2015/02-30), and Dokuz Eylül University Hospital Local Ethics Committee (approval number: 99577373-821).

Informed Consent: Informed consent was taken from the patients and caregivers.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Consept: G.Ö.K., F.V., Design: G.Ö.K., Data Collection or Processing: G.Ö.K., F.V., Analysis or Interpretation: G.Ö.K., F.V., Literiture Search: G.Ö.K., F.V., Writing: G.Ö.K., F.V.

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References

1. GLOBOCAN 2012 Erişim: 5.4.2018 http://globocan.iarc.fr/Pages/fact_sheets_population.aspx
2. Sağlık Bakanlığı Halk Sağlığı Kanser Daire Başkanlığı 2014 yılı kanser istatistikleri Erişim: 5.4.2018 http://www.kanser.saglik.gov.tr
3. Kayser K, Acquati C, Reese JB, Mark K, Wittmann D, Karam E. A systematic review of dyadic studies examining relationship quality in couples facing colorectal cancer together. Psychooncology 2018;27:13-21.
4. Maguire R, Hanly P, Hyland P, Sharp L. Understanding burden in caregivers of colorectal cancer survivors: What role do patient and caregiver factors play? Eur J Cancer Care (Engl) 2018;27.
5. Şahin ZA, Polat H, Ergüney S. Kemoterapi Alan Hastlara Bakım Verenlerin Bakım Verme Yüklerinin Belirlenmesi. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi 2009;12:2.
6. Adelman RD, Tmanova LL, Delgado D, Dion S, Lachs MS. Caregiver burden: A clinical review. JAMA 2014;311:1052-1060.
7. Adegboyega TO, Borgert AJ, Lambert PJ, Jarman BT. Applying the National Surgical Quality Improvement Program risk calculator to patients undergoing colorectal surgery: theory vs reality. Am J Surg 2017;213:30-33.
8. Fish DR, Mancuso CA, Garcia-Aguilar JE, Lee SW, Nash GM, Sonoda T, Charlson ME, Temple LK.Readmission After Ileostomy Creation Retrospective Review of a Common and Significant Event. Ann Surg 2017;265:379-387.
9. Vural F, Sütsünbüloğlu E, Şelimen D. Literature Review: Profile of Publications for the Patients with Stoma in Turkey. Turk J Colorectal Dis 2016;26:59-70.
10. McMullen CK, Schneider J, Altschuler A, Grant M, Hornbrook MC, Liljestrand P, Krouse RS. Caregivers as healthcare managers: health management activities, needs, and caregiving relationships for colorectal cancer survivors with ostomies. Support Care Cancer 2014;22:2401-2408.
11. Turkoglu N, Kılıc D. Effects of Care Burdens of Caregivers of Cancer Patients on Their Quality of Life. Asian Pac J Cancer Prev 2012;13:4141-4145.
12. Yıldız E, Dedeli Ö, Çınar Pakyüz S. Evaluation of Care Burden and Quality of Life among Family Caregivers of Patıents with Cancer. HEAD 2017;13:216-225.
13. Robinson BC. Validation of a caregiver strain index. J Gerontol 1983;38:344-348.
14. Uğur Ö. 2006 Onkoloji Hastalarına Evde Bakım Verenlerin Bakım Yükünün İncelenmesi. Doktora Tezi, İzmir
15. Archbold PG, Stewart BJ, Greenlick MR, Harvath T. Mutualtiy and Preparedness as Predictors of Caregiver Role Strain. Res Nurs Health 1990;13:375-384.
16. Karaaslan A. Kanserli Hastalara Bakım Veren Aile Üyelerinin Bakım Yükü Ve Algıladıkları Sosyal Destek Düzeyi. Yüksek Lisans Tezi. Ankara.2013.
17. Öksüz E, Barış N, Arslan F, Ateş MA. Kemoterapi Alan Hastalara Bakım Verenlerin Psikiyatrik Semptom Düzeyleri Ve Bakım Verme Yükleri, Psychıatrıc Symptom Levels And Burden Care Of Caregıvers Of Patıents Receıvıng Chemotherapy. Anatol J Clin Investig 2013;7:24-30.
18. Orak OS, Sezgin S. Kanser Hastasına Bakım Veren Aile Bireylerinin Bakım Verme Yüklerinin Belirlenmesi. J Psy Nurs 2015;6.
19. Kabataş Yıldız M, Ekinci M. Kanserli Hastaya Bakım Veren Aile Üyelerinin Bakım Yükleri ve Öfke İfade Tarzları Arasındaki İlişki ve Etkileyen Faktörler. Koç Üniversitesi Hemşirelik Fakültesi Hemşirelikte Eğitim ve Araştırma Dergisi (HEAD) 2017;14:176-184.
20. Papastavrou E, Charalambous A, Tsangarı H. Exploring The Other Side of Cancer Care: The İnformal Caregiver. Eur J Oncol Nurs 2009;13:128-136.
21. Papastavrou E, Charalambous A, Tsangarı H, Karayıannıs G. The Burdensome and Depressive Experience of Caring: What Cancer, Schizophrenia, and Alzheimer's Disease Caregivers Have in Common. Cancer Nurs 2012;35:187-194.
22. Babayiğit DM. Diyaliz Hastalarının Yakınlarında Bakım Verme Yükü İle Bunun Hastalardaki Anksiyete Depresyon Ve Yaşam Kalitesi Düzeyleri İle İlişkisi. Uzmanlık Tezi, İstanbul,2009.
23. Bayram H. Majör Ortopedik Cerrahi Uygulanan Hastalara Klinikte Bakım Verenlerin Bakım Yükünün Ve Etkileyen Faktörlerin Belirlenmesi, Yüksek Lisans Tezi, 2014.
24. Garlo K. Burden in Caregivers of Older Adults with Advanced Illnes. J Am Geriatr Soc 2010;58:2315-2322.

25. Chiou CJ, Chang HY, Chen IP, Wang HH. Social Support and Caregiving Circumstances as Predictors of Caregiver Burden in Taiwan. Arch Gerontol Geriatr 2009;48:419-424.
26. Hsu T, Loscalzo M, Ramani R, Forman S, Popplewell L, Clark K, Katheria V, Strowbridge R, Rinehart R, Smith D, Matthews K, Dillehunt J, Feng T, Smith D, Sun C, Hurria A. Are Disagreements in Caregiver and Patient Assessment of Patient Health Associated with Increased Caregiver Burden in Caregivers of Older Adults with Cancer? Oncologist 2017;22:1383-1391.
27. Eşer AK, Bedük T. Kanserli Hastalara Bakım Veren Aile üyelerinin Bakım Yükü Ve Algıladıkları Sosyal Destek Düzeyi, 5. Türk Tıbbi Onkoloji Kongresi Kitabı. 2014:582.
28. Mosher CE, Adams RN, Helft PR, O'Neil BH, Shahda S, Rattray NA, Champion VL. Family caregiving challenges in advanced colorectal cancer: patient and caregiver perspectives. Support Care Cancer 2016;24:2017-2024.
29. Çetinkaya F, Karadakovan A. Demanslı Hastaya Bakım Verenlerin Bakım Yükünün İncelenmesi. Turk J Geriatr 2012;15:171-178.

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RESEARCH ARTICLE

Controllable Risk Factor in the Development of Parastomal Hernia; Preoperative Marking

Parastomal Herni Gelişiminde Kontrol Edilebilir Risk Faktörü; Preoperatif İşaretleme

Ramazan Kozan, Fatma Ayça Gültekin

Zonguldak Bülent Ecevit University Faculty of Medicine, Department of General Surgery, Zonguldak, Turkey

ABSTRACT

Aim: Parastomal hernia is one of the most common ostomy-related late complications. Understanding the factors that play a role in development is very important in terms of preventing this complication. In this study, we aimed to determine the factors associated with the development of parastomal hernia and to reveal the relationship between herniation and preoperative stoma site marking.

Method: The data of 168 patients who underwent colostomy in our clinic were evaluated retrospectively. Demographic data, body mass index (BMI), malignant or benign disease status, emergency or elective operation, colostomy type, and preoperative stoma site marking were examined. Predictive factors in hernia development were determined by comparing patients with and without parastomal hernia.

Results: When the data of 168 patients were examined, the mean age was 59±26.2 years, the female/male ratio was 81/87, and the mean BMI was 29.8±16.2 kg/m^2. One hundred eighteen patients (70.2%) had colostomy due to malignancy, and 50 (29.8%) had colostomy due to benign causes. Sixty-three patients (37.5%) were operated under urgent conditions while 105 (62.5%) had elective surgery. Loop colostomy was performed in 40 patients (23.8%) and end colostomy was performed in 128 patients (76.2%). One hundred six patients (63.1%) had preoperative stoma site marking, but 62 (36.9%) were not marked. The incidence of parastomal hernia in the study was 5.95%. Median follow-up was 18 months (11-29 months).

Conclusion: High BMI, emergency surgery, end colostomy, and not having preoperative stoma site marking were independent predictive risk factors for parastomal hernia development. Of these, the only controllable factor is preoperative marking. Performing preoperative stoma site marking in all possible cases will contribute to reducing the risk of parastomal hernia.

Keywords: Parastomal hernia, stoma site marking, stoma complications

ÖZ

Amaç: Parastomal herni en sık görülen stoma ilişkili geç dönem komplikasyonlardan biridir. Gelişiminde rol oynayan faktörlerinin anlaşılması bu komplikasyonun önlenmesi açısından oldukça önemlidir. Bu çalışmada parastomal herni gelişiminde etkili faktörlerin saptanması ve özellikle preoperatif stoma yeri işaretlemesi ile herni gelişimi arasındaki ilişkinin ortaya konulması hedeflenmiştir.

Yöntem: Kliniğimizde kolostomi açılan 168 hastanın verileri retrospektif olarak değerlendirildi. Demografik veriler, vücut kitle indeksi (VKİ), malign veya benign hastalık durumu, ameliyatın acil veya elektif yapılması, kolostomi tipi ve preoperatif stoma yeri işaretlemesi yapılıp yapılmadığı incelendi. Parastomal herni gelişen ve gelişmeyen hastalar karşılaştırılarak herni gelişiminde etkili prediktif faktörler tespit edildi.

Bulgular: Yüz altmış sekiz hastanın verileri incelendiğinde yaş ortalaması 59±26,2 yıl, kadın/erkek oranı 81/87, VKİ ortalaması ise 29,8±16,2 kg/m^2 olarak hesaplandı. Yüz on sekiz (%70,2) hastada malignite nedeniyle, 50 hastada (%29,8) benign nedenlerden dolayı kolostomi açıldığı görüldü. Yüz beş (%62,5) hasta elektif şartlarda ameliyat edilmişken 63 hasta (%37,5) acil şartlarda ameliyat edilmişti. Hastaların 40'ında (%23,8) loop kolostomi, 128'inde (%76,2) uç kolostomi mevcuttu. Yüz altı (%63,1) hastada preoperatif stoma yeri işaretlenmişken 62 (%36,9) hastada işaretleme yapılmadığı görüldü. Çalışmadaki parastomal herni insidansı %5,95 olarak saptandı. Medyan takip süresi 18 aydı (11-29 ay).

Sonuç: Artmış VKİ, acil ameliyat, uç kolostomi tipi ve stoma yerinin işaretlenmemesi parastomal herni gelişimi için bağımsız prediktif risk faktörleri olarak saptanmıştır. Bu değişkenler içerisinde kontrol altına alınabilir tek faktör preoperatif işaretlemedir. Mümkün olan tüm hastalarda preoperatif stoma yeri işaretlemesinin yapılması parastomal herni riskinin azaltılmasına katkı sağlayacaktır.

Anahtar Kelimeler: Parastomal herni, stoma yeri işaretlemesi, stoma komplikasyonları

Address for Correspondence/Yazışma Adresi: Ramazan Kozan MD,
Zonguldak Bülent Ecevit University Faculty of Medicine, Department of General Surgery, Zonguldak, Turkey
Phone: +90 532 763 16 97 **E-mail:** dr.kozan@hotmail.com **ORCID ID:** orcid.org/0000-0002-3835-8759
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Introduction

Parastomal hernia is defined as the protrusion of abdominal contents through a wall defect adjacent to a stoma.[1] It occurs at an incidence of 28.3% in permanent ileostomies and 48.1% in permanent colostomies.[2] This common complication adversely affects quality of life and often requires surgical treatment, which makes prevention even more important. Factors such as obesity, older age, wound infection, and steroid use are known to increase the risk of parastomal hernia.[2,3] Besides these patient-related factors, there are also risk factors related to surgical technique such as wide fascial opening, laparoscopic method, and transperitoneal route.[4,5] Preoperative stoma marking is shown to reduce the rate of complications, particularly skin problems, and to result in better quality of life.[6,7,8] Preoperative marking is easy to implement in both emergency and elective cases. In this study, we retrospectively analyzed patients who had colostomies in our center to identify the risk factors for parastomal hernia and especially to evaluate the relationship between preoperative stoma marking and hernia development.

Materials and Methods

Data from the hospital's medical database system and stoma therapy unit records pertaining to 168 patients who underwent colostomy for various reasons in Zonguldak Bülent Ecevit University Medical School Health Application and Research Center between January 2013 and December 2016 were analyzed retrospectively. Patients with and without parastomal hernia were compared to identify predictive factors for hernia development. Presence of parastomal hernia was the dependent variable, while patient age, gender, body mass index (BMI), presence of benign or malignant disease, emergency or elective surgery, type of colostomy, and preoperative stoma marking were evaluated as independent variables. Patients with stomas created using percutaneous methods were not included in the study. Informed consent was obtained from all patients in the study.

All of the patients diagnosed with parastomal hernia had presented to the hospital with symptoms such as swelling around the stoma, pain, and asymmetry near the stoma. All patients in this group were examined by a surgeon after removing their stoma bags and adaptors in both erect and supine positions while performing the Valsalva maneuver. Asymmetry adjacent to the stoma, fascial defects, and reducibility were evaluated in abdominal examination. In addition, digital examination through the stoma was done to assess the relationship between the stoma and fascial planes. All cases with suspected hernia were examined by means of contrast-enhanced abdominal computed tomography (CT). Findings of a hernial sac protruding into the abdominal wall were considered significant in radiological examination.

The group who had stoma site marking included patients whose preoperative marking was done by stomatherapy and wound care nurses certified by the Turkish Society of Wound, Ostomy and Incontinence Nurses. When marking, stoma site was determined such that it would anatomically pass through the rectus muscle, away from incision line, costal arch, bone spurs, skin folds and belt line, and be easily visible and accessible to the patient. The marking procedure is first done with the patient in supine position and the final site is determined with the patient in seated position. The unmarked patients had their stoma location determined by the surgeon intraoperatively.

Statistical Analysis

Patients with and without parastomal hernia were compared. Categorical data were analyzed using χ^2 test and continuous data using Mann-Whitney U test. Factors found to be significant in univariate logistic regression analyses were included in multivariate logistic regression analysis to identify predictive factors. All data were analyzed using SPSS 19.0 (SPSS Inc., Chicago, IL, USA). $P<0.05$ was considered statistically significant.

Results

According to the demographic data of the 168 patients included in the study, the mean age was 59±26.2 years, female/male ratio was 81/87, and mean BMI was 29.8±16.2 kg/m^2. Median follow-up period was 18 months (minimum 11 months, maximum 29 months). One hundred eighteen (70.2%) of the patients had colostomy due to malignancy and 50 (29.8%) for benign disease. Surgery was elective in 105 (62.5%) cases and emergent in 63 (37.5%) cases. Only 1 patient who had elective surgery did not have preoperative stoma marking, while only 2 of the patients who had emergency surgery could be marked because their procedures were done during the working hours of the stomatherapy nurse. Forty (23.8%) of the patients had loop colostomy and 128 (76.2%) had end colostomy. In total, 106 patients (63.1%) had preoperative stoma marking and 62 (36.9%) did not (Table 1).

Ten patients had radiologically confirmed parastomal hernia. The demographic characteristics of these patients are given in detail in Table 2. Of the patients with parastomal hernia, 8 had malignant disease, 2 had benign disease, and 6 underwent emergency surgery. All of the patients with parastomal hernia had end colostomies, and half had the preoperative stoma site marking. Median time from colostomy procedure to parastomal hernia development was 15 months (minimum 6 months, maximum 22 months).

The incidence of hernia in our study was 5.95%. In univariate analyses, factors associated with parastomal hernia development included female gender, higher BMI, malignancy, emergency surgery, end colostomy, and unmarked stoma site (Table 3). Multivariate analyses showed that increased BMI, emergency surgery, end colostomy, and unmarked stoma site were statistically significant predictive factors (Table 4).

Discussion

Parastomal hernia is a form of incisional hernia that develops at the site of an intestinal stoma. Many studies have shown it to be one of the most common late stoma-related complications.[9,10,11] In surgical practice, it is difficult to identify the actual rate of parastomal hernia, and the incidence is higher than expected when radiology is used to support physical examination.[12] Parastomal hernia occurs at rates of 1.8-28.3% in permanent ileostomy, 4-48.1% in permanent colostomy, and 13.9% in urostomy.[2,3] In a study using CT examination as a criterion, the incidence increased from 52% to 78% after imaging.[12] Our study included both loop and end colostomy patients and the general incidence of parastomal hernia was 5.95%. Although this rate is near the lower limits reported in the literature, the actual incidence may have been higher because only symptomatic patients were included. Besides the positive contribution of marking, it is irrefutable that our study did not include patients who did not present to the hospital because their parastomal hernia was asymptomatic or did not have a marked impact on their quality of life.

Numerous studies have shown that the incidence of parastomal hernia is higher in end colostomies than in loop colostomies. According to a meta-analysis encompassing a follow-up period of 10 years, parastomal hernia rates range between 0% and 30.8% after loop colostomy, compared to 4% to 48.1% after end colostomy.[2] All of the patients in our study who developed parastomal hernia had end colostomies. When analyzed separately according to colostomy type, the incidence of parastomal hernia was 0% for loop colostomy and 7.81% for end colostomy. Not only is this finding consistent with the literature, but end colostomy was also identified as a predictive factor in both univariate and multivariate analyses, which is important evidence of the relation between colostomy type and parastomal hernia development.

Table 1. Clinical and operative characteristics of the study group

Age (years) (mean ± SD)	59±26.2
Female/male (n)	81/87
*BMI (kg/m^2) (mean ± SD)	29.8±16.2
Disease (%)	
Malignant	70.2%
Benign	29.8%
Surgery (%)	
Emergency	37.5%
Elective	62.5%
Patients with stoma site marking (n)	106
Patients without stoma site marking (n)	62
Ostomy type (n)	
Loop colostomy	40
End colostomy	128

*BMI: Body mass index, SD: Standard deviation

Table 2. Characteristics of patients with parastomal hernia

Number of patients	Sex	Age (years)	BMI (kg/m^2)	Disease	Surgery	Stoma site marking	Colostomy type	Time from colostomy to hernia development (months)
1	Female	43	29.4	Benign	Emergency	+	End	18
2	Male	67	30.2	Malignant	Emergency	+	End	22
3	Female	54	26.8	Malignant	Elective	+	End	9
4	Female	52	25.4	Malignant	Elective	-	End	15
5	Female	50	23.7	Malignan	Emergency	-	End	13
6	Female	57	31.6	Malignant	Elective	+	End	6
7	Female	36	27.1	Benign	Emergency	-	End	8
8	Male	77	26.7	Malignant	Emergency	-	End	15
9	Female	42	32.8	Malignant	Elective	+	End	18
10	Male	70	29.3	Malignant	Emergency	-	End	12

BMI: Body mass index

Parastomal hernia may be asymptomatic or may cause life-threatening complications such as strangulation, incarceration, obstruction, or perforation.[1,10,11,13] Furthermore, quality of life is significantly reduced by common stoma-related problems such as pain, leakage from the adaptor, peristomal irritation, and cosmetic concerns.[4,7,8,9] Unsatisfactory results have also been observed in patients with severe morbidity or who require surgical repair due to poor adaptation to ostomy devices.[14] These factors increase the importance of preventing or minimizing the risk of parastomal hernia. Multifactorial mechanisms have been implicated in its development. Patient-related risk factors include older age[3,5,10,11,12,13,14,15,16], elevated intraabdominal pressure[2,15,17], higher BMI and obesity[2,3,4,11,15,16,17], malignancy[2,9,11,15], chronic obstructive lung disease[2,11,17], ascites[2,17], wound site infection, corticosteroid use[2,11,17], smoking, diabetes[11], malnutrition[2,17], female gender[5,16] and other accompanying abdominal wall defects[10]. Technical factors include emergency surgery[2,15], transperitoneal route[4], laparoscopic method[4], diameter of stoma window[5,15,17] and exposing the stoma through the resection site.[18] In our study, factors associated with parastomal hernia development in univariate analyses were female gender, increased BMI, malignancy, emergency surgery, end colostomy, and lack of stoma site marking. In multivariate analyses, high BMI, emergency surgery, and lack of stoma site marking were identified as predictive factors for parastomal hernia.

Table 3. Risk factors for parastomal hernia development (univariate analysis)

Variable	Patient number		Univariate
	Parastomal hernia (+)	Parastomal hernia (-)	p value
Gender			
Female	7	74	<0.001
Male	3	84	
Age (years) (mean ± SD)	54.8±13.1	58.2±26.1	0.897
BMI (kg/m²) (mean ± SD)	28.3±2.8	29.7±15.9	<0.001
Disease			
Malignant	8	110	<0.001
Benign	2	48	
Surgery			
Emergency	6	57	<0.001
Elective	4	101	
Stoma site marking			
(-)	5	57	<0.001
(+)	5	101	
Colostomy type			
End colostomy	10	118	<0.001
Loop colostomy	-	40	

BMI: Body mass index, SD: Standard deviation

Table 4. Independent predictive factors of parastomal hernia development in multivariate analysis

Variable	Odds ratio	95% Confidence interval	p value
BMI (kg/m²)	1.8	1.2-2.7	<0.001
Surgery (emergency/elective)	1.9	1.5-2.5	<0.001
Stoma site marking (yes/no)	1.4	1.1-1.8	<0.001
Colostomy type (Loop/end colostomy)	3.15	1.05-9.5	<0.001

BMI: Body mass index

Of these, preoperative stomal site marking stands out as the only modifiable risk factor. Evidence indicates that preoperative stoma site marking reduces the general complication rate and improves quality of life.[6,7,8,19] Parastomal hernia and other stoma-related complications occur at higher rates in patients who do not undergo stomal marking.[7,8,19,20] Accurate determination of the stoma site is important to enable the creation of a functional stoma even in the most challenging circumstances.[20] Prior to elective surgery, most patients have an opportunity to see a stomatherapist for preoperative stoma site marking and education. However, if a stomatherapy unit is not available or if surgery is emergent, the marking must be done by the surgeon. It should be kept in mind that in such cases, marking done in the operating room will not be sufficiently effective; therefore, care must be taken to have marking done preoperatively whenever possible.[21] In our study, it was determined that parastomal hernia risk was higher in patients who underwent colostomy opened without preoperative stoma site marking. The key feature that distinguishes this factor from the other significant predictive factors identified in multivariate analysis is that it is modifiable.

Limitations of this study are that it included only patients with symptomatic hernia, was retrospective in design, and involved a relatively short follow-up period.

In conclusion, our multivariate analysis results show that preoperative stoma site marking was the only modifiable risk factor associated with parastomal hernia. We believe that the routine implementation of this quick and easy procedure with as many patients as possible will help minimize the risk of stoma-related complications, especially parastomal hernia.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Consent form was filled out by all participants.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: F.A.G., Concept: R.K., F.A.G., Design: R.K., F.A.G., Data Collection or Processing: R.K., F.A.G., Analysis or Interpretation: F.A.G., Literature Search: R.K., Writing: R.K., F.A.G.

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References

1. Pearl RK. Parastomal hernias. World J Surg 1989;13:569-572.
2. Carne PW, Robertson GM, Frizelle FA. Parastomal hernia. Br J Surg 2003;90:784-793.
3. Kouba E, Sands M, Lentz A, Wallen E, Pruthi RS. Incidence and risk factors of stomal complications in patients undergoing cystectomy with ileal conduit urinary diversion for bladder cancer. J Urol 2007;178:950-954.
4. Funahashi K, Suzuki T, Nagashima Y, Matsuda S, Koike J, Shiokawa H, Ushigome M, Arai K, Kaneko T, Kurihara A, Kaneko H. Risk factors for parastomal hernia in Japanese patients with permanent colostomy. Surg Today 2014;44:1465-1469.
5. Hong SY, Oh SY, Lee JH, Kim DY, Suh KW. Risk factors for parastomal hernia: based on radiological definition. J Korean Surg Soc 2013;84:43-47.
6. Cakir SK, Ozbayir T. The effect of preoperative stoma site marking on quality of life. Pak J Med Sci 2018;34:149-153.
7. Karadağ A. Peristomal Cilt Komplikasyonları: Tanılama, Önleme, Tedavi. Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi 2016;1:72-83.
8. McGrath A, Porrett T, Heyman B. Parastomal hernia: an exploration of the risk factors and the implications. Br J Nurs 2006;15:317-321.
9. Aquina CT, Iannuzzi JC, Probst CP, Kelly KN, Noyes K, Fleming FJ, Monson JR. Parastomal hernia: a growing problem with new solutions. Dig Surg 2014;31:366-376.
10. Londono-Schimmer EE, Leong AP, Phillips RK. Life table analysis of stomal complications following colostomy. Dis Colon Rectum 1994;37:916-920.
11. Styliński R, Alzubedi A, Rudzki S. Parastomal hernia - current knowledge and treatment. Wideochir Inne Tech Maloinwazyjne 2018;13:1-8.
12. Cingi A, Cakir T, Sever A, Aktan AO. Enterostomy site hernias: a clinical and computerized tomographic evaluation. Dis Colon Rectum 2006;49:1559-1563.
13. Bakshi C, Ruff S, Caliendo F, Agnew J. Acute cholecystitis in a parastomal hernia causing a small bowel obstruction. J Surg Case Rep 2017;2017:rjx235.
14. Rubin MS, Schoetz DJ Jr, Matthews JB. Parastomal hernia. Is stoma relocation superior to fascial repair? Arch Surg 1994;129:413-418.
15. Pilgrim CH, McIntyre R, Bailey M. Prospective audit of parastomal hernia: prevalence and associated comorbidities. Dis Colon Rectum 2010;53:71-76.
16. Sohn YJ, Moon SM, Shin US, Jee SH. Incidence and Risk Factors of Parastomal Hernia. J Korean Soc Coloproctol 2012;28:241-246.
17. Martin L, Foster G. Parastomal hernia. Ann R Coll Surg Engl 1996;78:81-84.
18. Randall J, Lord B, Fulham J, Soin B: Parastomal hernias as the predominant stoma complication after laparoscopic colorectal surgery. Surg Laparosc Endosc Percutan Tech 2012;22:420-423.
19. Baykara ZG, Demir SG, Karadag A, Harputlu D, Kahraman A, Karadag S, Hin AO, Togluk E, Altinsoy M, Erdem S, Cihan R. A multicenter, retrospective study to evaluate the effect of preoperative stoma site marking on stomal and peristomal complications. Ostomy Wound Manage 2014;60:16-26.
20. Shabbir J, Britton DC. Stoma complications: a literature overview. Colorectal Dis 2010;12:958-964.
21. Cataldo PA. Technical Tips for Stoma Creation in the Challenging Patient. Clinics in Colon and Rectal Surgery 2008;21:17-22.

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RESEARCH ARTICLE

Comparison of the Efficacy of Polyethylene Glycol, Sennoside and Sodium Phosphate in Bowel Preparation Before Colonoscopy

Kolonoskopi Öncesi Barsak Hazırlığında Polietilen Glikol, Sennozid ve Sodyum Fosfatın Etkinliğinin Karşılaştırılması

Emre Günay, Hasan Abuoğlu

University of Health Sciences, Haydarpaşa Numune Training and Research Hospital, Clinic of General Surgery, İstanbul, Turkey

ABSTRACT

Aim: The great majority of colorectal cancers arise from pre-existing adenomatous polyps. High-quality bowel cleansing is essential to improve the quality of colonoscopy. The most important factors in choosing a bowel cleansing agent are efficacy, tolerance, and safety. We aimed to compare the efficacy of polyethylene glycol (PEG), sennoside, and sodium phosphate for bowel cleansing in equally sized groups of patients undergoing colonoscopy at our center.

Method: A total of 600 patients undergoing colonoscopy at the University of Health Sciences Haydarpaşa Numune Training and Research Hospital General Surgery Endoscopy Unit the were included in the study irrespective of age, gender, and other factors. The patients were divided into 3 equal groups and were given either 4 liters of PEG solution, 500 mL of sennoside, or 90 mL of sodium phosphate solution for bowel preparation. The adequacy of bowel preparation was assessed using the Boston Bowel Preparation Scale and the results were compared.

Results: The polyp detection rate was higher in the PEG group than in the sennoside group, and lower in the sodium phosphate group compared to both the PEG and sennoside groups. Bowel preparation scores were similar in the PEG and sennoside groups but lower in the sodium phosphate group compared to the other two groups.

Conclusion: There was no difference in the quality of bowel preparation in patients who used PEG solution and sennosides; however, we observed a difference in polyp detection rates between these groups. This difference may be attributable to other factors that affect polyp detection (cecal intubation status, withdrawal time, technical difficulties, endoscopist experience). The lower polyp detection rate among patients using sodium phosphate seems to be a result of these factors combined with inadequate bowel cleansing. Socio-demographic features of the study population also affect colonoscopy outcomes.

Keywords: Cathartics, colon, colonoscopy, colorectal, polyp

ÖZ

Amaç: Kolorektal kanserlerin büyük çoğunluğu önceden var olan adenomatöz poliplerden köken alır. Kolonoskopinin kalitesini arttırmak için yüksek kaliteli barsak temizliği şarttır. Barsak temizliği sırasında kullanılacak ajanın seçiminde en önemli faktörler etkinlik, tolerans ve güvenliktir. Biz bu çalışma ile, merkezimizde kolonoskopi yapılmış olan eşit sayıda 3 farklı gruba ayırdığımız hastada polietilen glikol (PEG), sennozid ve sodyum fosfatın barsak temizliğindeki etkinliğini karşılaştırmayı amaçladık.

Yöntem: Sağlık Bilimleri Üniversitesi Haydarpaşa Numune Eğitim ve Araştırma Hastanesi Genel Cerrahi Endoskopi Ünitesinde kolonoskopi yapılan 600 hasta, yaş, cinsiyet ve diğer faktörler dikkate alınmaksızın çalışmaya dahil edildi. Bu hastaların barsak hazırlığı, 3 eşit grup halinde 4 litre PEG solüsyonu ile, 2 adet 250 mL sennozid içeren solüsyonla ve 2 adet 45 mL sodyum fosfat içeren solüsyonla yapıldı. Barsak hazırlığının yeterli düzeyde olup olmadığı Boston Barsak Hazırlığı Ölçeği'ne göre değerlendirildi ve sonuçlar karşılaştırıldı.

Bulgular: PEG solüsyonu ile barsak hazırlığı yapılmış olan hasta grubunda polip saptanma oranı, sennozid içeren solüsyon ile barsak hazırlığı yapılan gruba göre daha yüksek bulundu. Sodyum fosfat içeren solüsyonla barsak temizliği yapılan hastalarda polip saptanma oranı, PEG ve sennozid içeren solüsyonla barsak temizliği yapılan hastalara göre daha düşük bulundu. PEG solüsyonu ile barsak hazırlığı yapılan hastalarda barsak temizliği skoru, sennozid içeren solüsyonla barsak hazırlığı yapılan hastalarla benzer özellik göstermekte iken, sodyum fosfat ile barsak hazırlığı yapılan hastalarda bu iki gruba göre daha düşük bulundu.

Address for Correspondence/Yazışma Adresi: Emre Günay MD,
University of Health Sciences, Haydarpaşa Numune Training and Research Hospital, Clinic of General Surgery, İstanbul, Turkey
Phone: +90 532 498 23 13 **E-mail:** emregunay2000@yahoo.com **ORCID ID:** orcid.org/0000-0003-3445-4935
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ÖZ

Sonuç: PEG solüsyonu ve sennozidlerle barsak hazırlığı yapılmış olan hastalarda barsak temizliğinin kalitesi açısından fark olmamasına karşın polip saptanma oranları arasındaki fark, polip saptanma oranları üzerinde etkili başka faktörlerin de (çekal entübasyon durumu, kolonoskopik çıkış süresinin 6 dakika veya daha uzun olması, teknik sınırlamalar, endoskopistin deneyimi) olmasına bağlıdır. Sodyum fosfat tuzları ile barsak hazırlığı yapılmış olan hastalarda bu diğer faktörlere ek olarak yetersiz barsak temizliği de eklenince polip saptanma oranlarının düştüğünü görüyoruz. Çalışılan popülasyonun sosyo-demografik durumu da kolonoskopinin sonuçlarına etki eder.
Anahtar Kelimeler: Katartikler, kolon, kolonoskopi, kolorektal, polip

Introduction

The majority of colorectal cancers originate from previously existing adenomatous polyps.[1] The adenoma-carcinoma sequence offers an opportunity to protect against colorectal cancers.[1,2] However, 3-6% of colorectal cancers are diagnosed between screening colonoscopy and follow-up colonoscopies.[3,4] These interval cancers are believed to originate from lesions that are overlooked during screening colonoscopy.[5,6] High-quality bowel cleansing is essential to improve colonoscopy quality, because even a small amount of fecal residue can obscure an important colorectal lesion.

The three main characteristics of a good colonoscopy are an experienced endoscopist, a cooperative patient, and a clean bowel.[7] The principle factors in selecting a bowel cleansing agent are effectiveness, tolerability, and safety.[8] Solutions containing polyethylene glycol (PEG) are high-volume and osmotically balanced, whereas solutions containing sodium phosphate are low-volume and hyperosmotic.[9,10] PEG is a nonabsorbable and non-metabolic laxative that acts by drawing water into the intestinal lumen.[11] It may not be well tolerated because of its unpleasant taste and odor and the need to drink a large quantity in a short time.[8,12] It is generally available in oral preparations containing sodium chloride and potassium chloride to avoid electrolyte imbalance. Sodium phosphate stimulates bowel motility, increases fluid secretion into the bowel lumen, and causes mucosal secretion of cholecystokinin. Due to its high salt content, it is contraindicated in congestive cardiac failure and hypertension.[11] Stimulating laxatives and purgatives affect epithelial transport of water and electrolytes and increase intestinal motility. They are cheaper, safer, and oral intake is better tolerated. Sennoside is in this group.[13] Ample water should be consumed after taking this medicine. Its use is limited in diabetic patients due to its high sugar content. Inadequate bowel cleansing has been reported in 20% of patients scheduled for colonoscopy.[14,15] In some publications, this figure is up to 33%.[16] Inadequate bowel cleansing also leads to a high rate of repeat colonoscopy, increased complication rates, and longer procedure times.[17,18] Inadequate colon preparation can result in prolonged cecal intubation and withdrawal times as well as reduced detection rates for both small and large polyps.[19] Although guidelines advise repeat colonoscopy in cases of suboptimal bowel preparation, in clinical practice it is often recommended to shorten the interval between control colonoscopies if there are no suspicious findings during the procedure.[5,20,21] The aim of this study was to compare the bowel cleansing effectiveness of PEG, sennoside, and sodium phosphate in patients who underwent colonoscopy in our center.

Materials and Methods

The study included 600 patients who underwent colonoscopy by 5 experienced general surgeon colonoscopists in the University of Health Sciences Haydarpaşa Numune Training and Research Hospital General Surgery Endoscopy Unit between January 1, 2017 and March 31, 2017. All patients were included regardless of age, gender, or comorbidities. Ethical approval was obtained from the Chief of Medicine of Sağlık Bilimleri University of Health Sciences Haydarpaşa Numune Training and Research Hospital (dated 05.03.2018, protocol no: 62977267-000-3936). Repeat colonoscopies of patients with inadequate colon cleansing were not included in the study.

Bowel preparation was done using 4 liters of PEG solution in 200 patients, 2 units of 250 mL sennoside solution in another 200 patients, and 2 units of 45 mL sodium phosphate solution in the other 200 patients. In addition to the oral solutions, patients in all groups also had 210 mL rectal enemas applied twice, once the night before and the other on the morning of the procedure. All patients were instructed to stop eating solid food and to follow a clear-liquid diet for the 24 hours before the procedure.

Adequacy of bowel preparation was assessed using the Boston Bowel Preparation Scale (BBPS)[22] and the results were compared between the groups (Figure 1).

In the BBPS, the three colon segments (left, transverse, right) are scored based on the level of cleanliness:

0 points: presence of solid stool prevents evaluation of colon mucosa

1 point: fecal liquid and semisolid feces are observed in the colon segment

2 points: small amount of fecal liquid but allows good evaluation of mucosa

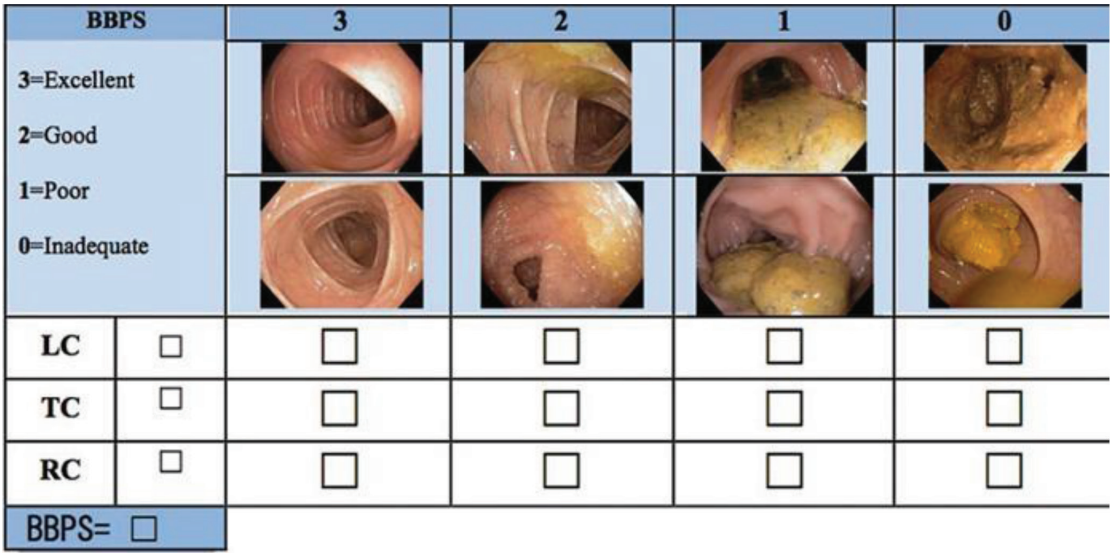

Figure 1. Boston Bowel Preparation Scale (Lorenzo-Zúñiga V, Moreno-de-Vega V, Boix J. Rev. Esp Enferm Dig. 2012; 104: 426-431.)
BBPS: Boston Bowel Preparation Scale, LC: Left colon, TC: Transverse colon, RC: Right colon

3 points: no residue, excellent evaluation of mucosa is possible

According to the BBPS, 0 points represents inadequate bowel cleansing and 9 points reflects excellent cleansing, with higher scores corresponding to better bowel cleanliness.

Statistical Analysis

Statistical assessment was done using one-way analysis of variance and Tukey's post-hoc test. A p value lower than 0.05 was considered statistically significant.

Results

Colon polyps were detected in 72 (36%) of the 200 patients in the PEG group. The mean bowel cleansing score in this group was 5.84 according to the BBPS. BBPS score was 5 or higher in 88% of this patient group. In the sennoside group, polyps were detected in 42 (21%) of the 200 patients. Their mean BBPS score was 5.88, with 94.75% of the patients having scores of 5 or higher. Finally, polyps were detected in 34 (17%) of the 200 patients in the sodium phosphate group. In this group, mean BBPS score was 4.8, with 71.4% of the patients having scores of 5 or higher.

The polyp detection rate among patients who used PEG solution for bowel preparation (36%) was significantly higher than that of the group who used sennoside solution (21%) ($p<0.05$). However, the mean bowel cleansing score was 5.84 for patients in the PEG group, compared to 5.88 in the sennoside group. Therefore, bowel cleansing score was not associated with polyp detection rate in these groups ($p>0.05$). Patients who used sodium phosphate solution for bowel cleansing had lower values for both polyp detection rate (17%) and mean bowel cleansing score (4.8) compared to the PEG and sennoside groups. This indicates a significant correlation between bowel cleansing score and polyp detection rate ($p<0.05$).

We observed no differences between the PEG and sennoside solutions with regard to patient compliance and tolerance, whereas there was severe intolerance (nausea and vomiting due to unpleasant taste and odor) among patients who used sodium phosphate solution.

Discussion

Previous studies on the relationship between bowel preparation and polyp detection rate have yielded variable results. In one study, polyp detection rate was found to be significantly higher in patients with good bowel preparation compared to patients with excellent bowel preparation.[23] Another study showed no significant difference between good and excellent bowel preparation with regard to polyp detection rate.[24] In some other studies, there were no significant differences in polyp detection rate between patients with inadequate bowel preparation and those with good and excellent bowel preparation.[25,26] In some studies, a significantly higher rate of overlooked polyps was reported in patients with inadequate bowel cleansing compared to those with good or excellent bowel cleansing.[27] However, yet another study demonstrated similar polyp detection rates in patients with excellent (24.2%), good (26.8%), and inadequate (22.1%) bowel cleansing.[28]

The literature includes some publications reporting the effectiveness and superiority of PEG solution compared to sennosides[29,30], while others have shown it to be equally[31,32] or less effective.[33,34] Radaelli et al.[33] compared the

effectiveness of sennosides and standard PEG solution and demonstrated that sennosides provide higher quality bowel cleansing (90.6% vs 79.7%) and that sennoside was more easily tolerated with greater patient compliance. A study by Shavakhi et al.[32] showed similarity between the effectiveness of sennosides and standard PEG solution with regard to the quality of bowel preparation, patient compliance, and tolerance. In their study, bowel cleansing quality was assessed using the Aronchick scoring scale. In the present study, the rate of polyp identification was higher among patients who used PEG solution for bowel preparation compared to those who used a sennoside solution. However, both groups had the same level of bowel cleansing quality. We used the BBPS to evaluate the quality of bowel cleansing in this study.

Quality assurance programs have been described worldwide to reduce the rate of overlooked colorectal polyps. Besides adequate colon cleansing, polyp detection rate is also affected by factors such as cecal intubation status, colonoscopic withdrawal time being 6 minutes or longer, technical limitations, and the endoscopist's experience.[35] In our study, patients for whom cecal intubation was impossible or posed technical difficulties were excluded from the study. All colonoscopists were careful to have a withdrawal time of 6 minutes or longer. All of the endoscopists had at least 3 years of experience.

Factors such as tendency for chronic constipation, opioid addiction, taking drugs such as tricyclic antidepressants, low socio-economic level, obesity (especially large abdominal girth), and male gender are indicators of ineffective colonscopy.[16,34]

Our study had several limitations. Although factors such as age, gender, and comorbidities are factors that may directly affect pre-colonoscopy bowel preparation, such effects were minimized by taking these factors into consideration when choosing the bowel preparation agents to be given. For example, diabetic patients were never given a sennoside-containing solution for bowel preparation, nor were sodium phosphate salts given to patients with cardiac failure or hypertension. Because commercially available PEG solutions contain balanced electrolytes, older patients and those with comorbidities were generally given PEG solution for bowel preparation. Furthermore, as bowel cleansing is known to have a direct and definite relation with polyp detection rate, we focused on this issue rather than colonoscopy indication. Patients for whom pancolonoscopy was possible in spite of poor bowel preparation were included in the study while the repeat colonoscopies of these patients were not, because the study was primarily aimed at evaluating the cleansing ability of the bowel cleansing agents. Patients for whom pancolonoscopy was impossible due to fecal residue were excluded from the study.

The most important indicators of adequate bowel preparation are the type of cleansing agent, adequate water consumption before the procedure, the cleansing protocol, and sufficient time between initiating bowel cleansing and the colonoscopy procedure.[16,36] The results of our study revealed no difference in the quality of bowel cleansing between PEG solution and sennosides, but generally poor-quality bowel cleansing in patients who used sodium phosphate. This may be explained by the patients' low tolerance for sodium phosphate.

Our findings of different polyp detection rates between the PEG and sennoside groups despite comparable bowel cleansing quality may be attributed to the fact that although we attempted to minimize the impact of other factors affecting polyp detection (cecal intubation, colonoscopic withdrawal time of 6 minutes or longer, technical limitations, endoscopist experience), we could not modify patient-related factors (e.g., constipation, low socio-economic level, obesity). When these factors were combined with inadequate bowel cleansing in patients who had bowel preparation using sodium phosphate, a reduction was observed in polyp detection rate.

The socio-demographic characteristics of the study population influence the results of even a well-designed colonoscopy. These demographic variables should be further investigated in future studies.

Ethics

Ethics Committee Approval: Ethical approval was obtained from the Chief of Medicine University of Health Sciences Haydarpaşa Numune Training and Research Hospital (dated 05.03.2018, protocol no: 62977267-000-3936).

Informed Consent: Informed consent was taken from the patient.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.G., H.A., Concept: E.G., Design: E.G., Data Collection or Processing: E.G., H.A., Analysis or Interpretation: E.G., H.A., Literature Search: E.G., H.A., Writing: E.G.

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References

1. Vogelstein B, Fearon ER, Hamilton SR, Kern SE, Preisinger AC, Leppert M, Nakamura Y, White R, Smits AM, Bos JL. Genetic alterations during colorectal-tumor development. N Engl J Med 1988;319:525-532.

2. Citarda F, Tomaselli G, Capocaccia R, Barcherini S, Crespi M; Italian Multicentre Study Group. Efficacy in Standard clinical practice of colonoscopic polypectomy in reducing colorectal cancer incidence. Gut 2001;48:812-815.
3. Farrar WD, Sawhney MS, Nelson DB, Lederle FA, Bond JH. Colorectal cancers found after a complete colonoscopy. Clin Gastroenterol Hepatol 2006;4:1259-1264.
4. Leaper M, Johnston MJ, Barclay M, Dobbs BR, Frizelle FA. Reasons for failure to diagnose colorectal carcinoma at colonoscopy. Endoscopy 2004;36:499-503.
5. Bond JH. Should the quality of preparation impact postcolonoscopy follow-up recommendations? Am J Gastroenterol 2007;102:2686-2687.
6. Pabby A, Schoen RE, Weissfeld JL, Burt R, Kikendall JW, Lance P, Shike M, Lanza E, Schatzkin A. Analysis of colorectal cancer occurrence during surveillance colonoscopy in the dietary polyp prevention trial. Gastrointest Endosc 2005;61:385-391.
7. Park JB, Lee YK, Yang CH. The evolution of bowel preparation and new developments. Korean J Gastroenterol 2014;63:268-275.
8. Parra-Blanco A, Ruiz A, Alvarez-Lobos M, Amorós A, Gana JC, Ibáñez P, Ono A, Fujii T. Achieving the best bowel preparation for colonoscopy. World J Gastroenterol 2014;20:17709-17726.
9. Barkun A, Chiba N, Enns R, Marcon M, Natsheh S, Pham C, Sadowski D, Vanner S. Commonly used preparations for colonoscopy: Efficacy, tolerability and safety-A Canadian Association of Gastroenterology position paper. Can J Gastroenterol 2006;20:699-710.
10. Hookey LC, Vanner S. A review of current issues underlying colon cleansing before colonoscopy. Can J Gastroenterol 2007;21:105-111.
11. Petticrew M, Watt I, Sheldon T. Systematic review of the effectiveness of laxatives in the elderly. Health Technol Assess 1997;1:1-52.
12. Lim YJ, Hong SJ. What is the best strategy for successful bowel preparation under special conditions? World J Gastroenterol 2014;20:2741-2745.
13. Kositchaiwat S, Suwanthanmma W, Suvikapakornkul R, et al. Comparative study of two bowel preparation regimens for colonoscopy: Senna tablets vs sodium phosphate solution. World J Gastroenterol 2006;12:5536-5539.
14. Lebwohl B, Wang TC, Neugut AI. Socioeconomic and other predictors of colonoscopy preparation quality. Dig Dis Sci 2010;55:2014-2020.
15. Harewood GC, Sharma VK, de Garmo P. Impact of colonoscopy preparation quality on detection of suspected colonic neoplasia. Gastrointest Endosc 2003;58:76-79.
16. Shieh TY, Chen MJ, Chang CW, Hung CY, Hu KC, Kuo YC, Shih SC, Wang HY. Effect of physician-delivered patient education on the quality of bowel preparation for screening colonoscopy. Gastroenterol Res Pract 2013;2013:570180.
17. Bechtold ML, Choudhary A. Bowel preparation prior to colonoscopy: a continual search for excellence. World J Gastroenterol 2013;19:155-157.
18. Park J, Kim TO, Lee NY, Kim H, Seo EH, Heo NY, Park SH, Moon YS. The Effectiveness of Short Message Service to Assure the Preparation-to-Colonoscopy Interval before Bowel Preparation for Colonoscopy. Gastroenterol Res Pract 2015;2015:628049.
19. Rex DK, Petrini JL, Baron TH, Chak A, Cohen J, Deal SE, Hoffman B, Jacobson BC, Mergener K, Petersen BT, Safdi MA, Faigel DO, Pike IM; ASGE/ACG Taskforce on Quality in Endoscopy. Quality indicators for colonoscopy. Am J Gastroenterol 2006;101:873-885.
20. Winawer SJ, Zauber AG, Fletcher RH, Stillman JS, O'Brien MJ, Levin B, Smith RA, Lieberman DA, Burt RW, Levin TR, Bond JH, Brooks D, Byers T, Hyman N, Kirk L, Thorson A, Simmang C, Johnson D, Rex DK; US Multi-Society Task Force on Colorectal Cancer; American Cancer Society. Guidelines for colonoscopy surveillance after polypectomy: a consensus update by the US Multi-Society Task Force on Colorectal Cancer and the American Cancer Society. Gastroenterology 2006;130:1872-1885.
21. Levin B, Lieberman DA, McFarland B, Andrews KS, Brooks D, Bond J, Dash C, Giardiello FM, Glick S, Johnson D, Johnson CD, Levin TR, Pickhardt PJ, Rex DK, Smith RA, Thorson A, Winawer SJ; American Cancer Society Colorectal Cancer Advisory Group; US Multi-Society Task Force; American College of Radiology Colon Cancer Committee. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. Gastroenterology 2008;134:1570-1595.
22. Lorenzo-Zúñiga V, Moreno-de-Vega V, Boix J. Preparation for colonoscopy: types of scales and cleaning products. Rev Esp Enferm Dig 2012;104:426-431.
23. Calderwood AH, Thompson KD, Schroy PC, Lieberman DA, Jacobson BC. Good is beter than excellent: bowel preparation quality and adenoma detection rates. Gastrointest Endosc. 2015;81:691-699.
24. Tholey DM, Shelton CE, Francis G, Anantharaman A, Frankel RA, Shah P, Coan A, Hegarty SE, Leiby BE, Kastenberg DM. Adenoma detection in excellent versus good bowel preparation for colonoscopy. J Clin Gastroenterol 2015;49:313-319.
25. Clark BT, Rustagi T, Laine L. What level of bowel prep quality requires early repeat colonoscopy: systematic review and meta-analysis of the impact of preparation quality on adenoma detection rate. Am J Gastroenterol 2014;109:1714-1723.
26. Sherer EA, Imler TD, Imperiale TF. The effect of colonoscopy preparation quality on adenoma detection rates. Gastrointest Endosc 2012;75:545-553.
27. Kim JS, Kang SH, Moon HS, Lee ES, Kim SH, Sung JK, Lee BS, Jeong HY, Chung WS. Impact of bowel preparation quality on adenoma identification during colonoscopy and optimal timing of surveillance. Dig Dis Sci 2015;60:3092-3099.
28. Rai T, Navaneethan U, Gohel T, Podugu A, Thota PN, Kiran RP, Lopez R, Sanaka MR. Effect of quality of bowel preparation on quality indicators of adenoma detection rates and colonoscopy completion rates. Gastroenterol Rep (Oxf) 2016;4:148-153.
29. Terry NA, Chen-LimML, Ely E, Jatla M, Ciavardone D, Esch S, Farace L, Jannelli F, Puma A, Carlow D, Mamula P. Polyethyleneglycol powder solution versus Senna for bowel preparation for colonoscopy in children. J Pediatr Gastroenterol Nutr 2013;56:215-219.
30. Amato A, Radaelli F, Paggi S, Terruzzi V. Half doses of PEG-ES and Senna vs. high-dose Senna for bowel cleansing before colonoscopy: a randomized, investigator-blinded trial. Am J Gastroenterol 2010;105:675-681.
31. Kierkus J, Horvath A, Szychta M, Woynarowski M, Wegner A, Wiernicka A, Dadalski M, Teisseyre M, Dziechciarz P. High- versus low-volume polyethyleneglycol plus laxative versus sennosides for colonoscopy preparation in children. J Pediatr Gastroenterol Nutr 2013;57:230-235.
32. Shavakhi A, Kianinia M, Torabi G, Nemati A, Saeidian B, Hoseinzadeh M, Madjlesi F, Navaei P, Rashidinejad F, Minakari M. High dose Senna or PolyEthyleneGlycol (PEG) for elective colonoscopy preparation: a prospective randomized investigator-blinded clinical trial. J Res Med Sci 2011;16:149-155.
33. Radaelli F, Meucci G, Imperiali G, Spinzi G, Strocchi E, Terruzzi V, Minoli G. High-dose Senna compared with conventional PEG-ES lavage as bowel preparation for elective colonoscopy: a prospective, randomized, investigator-blinded trial High-Dose Senna for Colonoscopy Preparation. Am J Gastroenterol 2005;100:2674-2680.
34. Prakash SR, Verma S, McGowan J, Smith BE, Shroff A, Gibson GH, Cheng M, Lowe Ii D, Gopal K, Mohanty SR. Improving the quality of colonoscopy bowel preparation using an educational video. Can J Gastroenterol Hepatol 2013;27:696-700.
35. Kim NH, Jung YS, Jeong WS, Yang HJ, Park SK, Choi K, Park DI. Miss rate of colorectal neoplastic polyps and risk factors for missed polyps in consecutive colonoscopies. Intest Res 2017;15:411-418.
36. Rosenfeld G, Krygier D, Enns RA, Singham J, Wiesinger H, Bressler B. The impact of patient education on the quality of inpatient bowel preparation for colonoscopy. Can J Gastroenterol 2010;24:543-546.

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RESEARCH ARTICLE

Role of Ultrasonography in Evaluation of Pilonidal Disease

Pilonidal Sinüsün Değerlendirilmesinde Ultrasonografinin Rolü

Dursun Özgür Karakaş

İstanbul Okmeydanı Training and Research Hospital, Clinic of General Surgery, İstanbul, Turkey

ABSTRACT

Aim: Pilonidal disease (PD) generally occurs in the sacrococcygeal region and physical examination (PE) is the main diagnostic method. However, imaging methods such as ultrasonography (USG) may be necessary to evaluate PD in some cases. The aim of this study was to evaluate the use of USG in PD.

Method: PD patients who underwent preoperative superficial USG between January 2012 and December 2013 were evaluated retrospectively. Age, sex, body mass index (BMI), duration of complaints, distance from anal verge, number of inactive or active sinus orifices, anesthesia type, and PD dimensions and distal and proximal borders in PE, USG, and postoperative exploration (EXP) were evaluated. T-test and Pearson's correlation were used for statistical analysis.

Results: Forty patients were included in the study. All patients were male (100%), mean age was 22.82±2.77 years, and mean BMI was 24.96±2.35 kg/cm^2. Surgery was conducted under local anesthesia for 72.5% of the patients. Mean PD dimensions on USG were significantly larger in patients operated under spinal anesthesia (p=0.01). The correlation of dimensions between PE and EXP was 0.72 (good) (p=0.0001) and correlation between USG and EXP was 0.51 (moderately good) (p=0.001). The correlation of distal and proximal borders between PE and EXP was 0.564 (good) and between USG and EXP was 0.368 (moderate) (p=0.0001, p=0.02 respectively).

Conclusion: Physical examination is a simple and highly accurate diagnostic modality for determining dimensions and borders of PD. USG dimensions are beneficial for determining suitable anesthesia type. Hydrogen peroxide-enhanced USG or magnetic resonance imaging can be used for advanced evaluation of PD.

Keywords: Pilonidal disease, physical examination, ultrasonography, anesthesia

ÖZ

Amaç: Pilonidal sinüs (PS), sıklıkla sakrokoksigeal bölgede görülen ve fizik muayenenin (FM) temel tanı yöntemi olduğu bir hastalıktır. Ultrasonografi (USG) gibi görüntüleme yöntemleri bazı PS değerlendirilmesinde gerekli olabilmektedir. Bu çalışmanın amacı PS için yapılan yüzeysel USG'yi değerlendirmektir.

Yöntem: Ocak 2012 ile Aralık 2013 tarihleri arasında PS nedeni ile başvuran ve preoperatif yüzeysel USG yapılan hastalar geriye dönük değerlendirildi. Yaş, cinsiyet, vücut kitle indeksi (VKİ), şikayetlerinin süresi, anal girimde uzaklığı, aktif ve inaktif sinüs orifis sayısı, anestezi şekli, PS'nin FM, USG ve patoloji piyesindeki (PP) boyutları, üst ve alt sınıra olan uzaklıkları değerlendirildi. İstatistiksel analiz için T-test and Pearson korelasyon testleri kullanıldı.

Bulgular: Çalışmaya kırk hasta dahil edildi. Tüm hastalar erkek (%100), ortalama yaş 22,82±2,77 yıl, ortalama VKİ 24,96±2,352 kg/cm^2 idi. Hastaların %72,5'i lokal anestezi altında opere edildi. Spinal anestezi ile opere edilen PS hastalarının USG'deki ortalama boyutları istatistiksel olarak anlamlı yüksek saptandı (p=0,01). Boyutların ölçümündeki korelasyon; FM ile PP arasında 0,72 (iyi) (p=0,0001), USG ile PP arasında 0,51 (ılımlı iyi) (p=0,001) saptandı. Üst ve alt sınıra olan uzaklıklarındaki korelasyon; FM ile PP arasında 0,564 (iyi), USG ile PP arasında 0,368 (ılımlı) (p=0,0001, p=0,02 sırasıyla) saptandı.

Sonuç: FM PS'nin boyut ve sınırlarının saptanmasında temel ve yüksek doğruluğa sahip tanı yöntemidir. USG ölçümleri uygun anestezi tipinin belirlenmesinde yardımcı olmaktadır. Hidrojen peroksit uygulaması ile birlikte yapılan USG veya manyetik rezonans görüntüleme ileri değerlendirmede daha etkili olarak kullanılabilecek yöntemlerdir.

Anahtar Kelimeler: Pilonidal sinüs, fizik muayene, ultrasonografi, anestezi

Address for Correspondence/Yazışma Adresi: Dursun Özgür Karakaş MD,
İstanbul Okmeydanı Training and Research Hospital, Clinic of General Surgery, İstanbul, Turkey
Phone: +90 505 656 25 63 **E-mail:** drdok1978@hotmail.com **ORCID ID:** orcid.org/0000-0002-2466-9855
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Introduction

Pilonidal disease (PD) is an acquired, chronical disease caused by penetration of hairs into the sacrococcygeal subcutaneous tissue and formation of foreign body reaction[1,2]. Incidence of PD is reported 26 per 100.000 population, affecting males twice as often as females and predominantly young adults of working age[3]. Prevelance of clinical PD is 4.6%, however the rate increases 8.3% with subclinic PD[4]. Gender, body mass index (BMI), family tendency, sitting habbits, depth of natal cleft, body hair density, type of hair, poor personal hygiene and excessive sweating are the most common risk factors for PD[5,6]. Treatment of PD is vary from conservative treatment such as phenol application to fasciocutaneous rotation flap according to size of sinus, extention of fistula tract and clinical experience of surgeons[7,8,9,10]. Physical examination is basic and the most important diagnostic modality for PD. Deep natal cleft or fistula tract which is abnormal located or adjacent to anus may require further imaging methods for deciding the surgical treatment of PD. Ultrasonography (USG) is an easy accessible and applicable, inexpensive and non-invasive imaging modality that can be used for further assesment of subcutaneous tissue so as PD. The aim of this study is to reveal the effect of preoperative superficial ultrasonography for evaluation the dimensions and borders of PD.

Materials and Methods

The ethical approval was obtained from Gülhane Military Medical Academy Ethics Committee with 15 December 2015 date and 490 page number. 40 operated PD patients who performed preoperative superficial ultrasonography from January 2012 to December 2013 were evaluated retrospectively. Age, sex, BMI, duration of compliant, distance from anal verge, number of inactive or active sinus orifice, type of anesthesia and dimensions (length x width) and borders (distance from proximal and distal borders from sinus orifices) of PD by physical examination (PE), preoperative superficial USG and postoperative exploration (EXP) of specimens were compared. The informed patient consent was not obtained because the study was retrospective.

Statistical Analysis

All statistical analysis were performed by a statistical software package (SPSS 16.0). Numerical data were expressed as mean and standard derivation unless otherwise stated. Statistical significance of age, BMI, duration of compliant, distance from anal verge, number of inactive or active sinus orifices and type of anesthesia was assessed by using t-test. Correlations between PE, superficial ultrasonogarphy and EXP were assessed by Pearson's correlation (PC). According to numerical values PC was classified as poor (0-0.25), fair-moderate (0.25-0.50), good (0.50-0.75) or very good (0.75-1.00). Results were expressed with a confidence interval of 95% and the p values below 0.05 were considered statistically significant.

Results

Forty patients were included to study who have operated for PD and performed preoperative superficial USG. Superficial USG image is shown at Figure 1. All patients were male (100%), mean age was 22.82±2.77, mean of BMI was 24.96±2.352 and mean of duration of compliant was 16.22±13.02 month. Mean of distance from anal verge was 8.90±1.692 cm (6-13 cm). 57.5% of patients had one, 20% had three and 17.5% had two inactive orifices (mean; 1.62±0.925) but only 20% of patients had active sinus orifice (mean; 0.2±0.405). 27.5% (n=11) of the patients operated under spinal anesthesia, 72.5% (n=29) operated under local anesteshia. Mean amount of local anesthesia was 6.76±2.047 (4-11). Mean dimensions of PD at local anesteshia group was 344.827±220.528, at spinal anesthesia group was 422.727±282.279 but not statistically

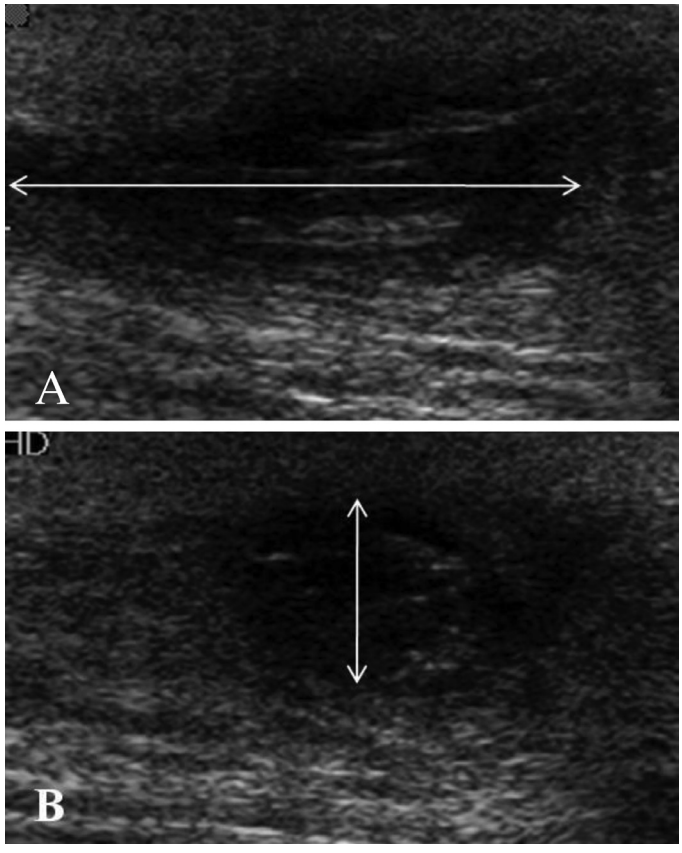

Figure 1. Superficial ultrasonography image of pilonidal disease. A) longitudinal ultrasonographic image of pilonidal cyst, B) vertical ultrasonographic image of pilonidal cyst

significant (p=0.507) in PE. Mean dimensions of PD at local anesteshia group was 218.572±131.331, at spinal anesthesia group was 304.580±265.720 and statistically significant (p=0.01) in USG (Table 1). Correlations between PE, USG and EXP are shown at Table 2. Mean of PD dimensions were measured as 366.25±237.88 mm^2 for PE, 242±178.88 mm^2 for USG and 500.87±339.68 mm^2 for EXP. Correlation of PE with EXP was found as 0.72 (good) and statistically significant (p=0.0001). Correlation of USG with EXP was found as 0.51 (moderate-good) and statistically significant (p=0.001). Mean of PD distal borders were measured as 10.00±6.097 mm for PE, 9.48±4.80 mm for USG and 10.12±6.15 mm for EXP. Correlation of PE with EXP was found as 0.564 (good) and statistically significant (p=0.0001). Correlation of USG with EXP was found as -0.019 (negative correlation) and statistically not significant (p=0.9). Mean of PD proximal borders were measured as 12.12±5.417 mm for PE, 9.69±6.78 mm for USG and 13.62±6.98 for EXP. Correlation of PE with EXP was found as 0.368 (good) and statistically significant (p=0.02). Correlation of USG with EXP was found as 0.186 (poor) and statistically not significant (p=0.25).

Discussion

PD is one of the major disease leading to loss of labor at young adults of working age. PD surgical treatments performed under local or spinal anesthesia generally. Local anesthesia has many advantages from spinal anesthesia such as short duration of hospital stay, early return to work, lack of spinal anesthesia complications. Dimensions, borders, previous operations and distance from anal region are the main determinants for desicion of anesthesia and surgery type. It is hard to measure the PD tissue dimensions and endpoints of PD exactly because of deep natal cleft or higher BMI or extention of PD to anal region without an external orifis. So that further imaging methods such as superficial USG is required to decide to surgery/anesthesia type.

Limited literatures were reported about imaging of PD such as endoanal USG or magnetic resonance imaging (MRI) were performed for fistula ano in PD. Superficial USG was performed for evaluation of dimensions, borders and branchs in sacrococcygeal or non-scarococcygeal PD.[11,12,13,14,15,16] Solivetti et al.[14] reported that high frequency probes used for diagnostic USG is useful for the anatomical definition of this PD, as well as to enable appropriate surgical treatment. Imanishi et al.[15] reported USG increases the diagnostic accuracy and determining the extent of surgery required for non-sacrococcygeal PD which occurs at low subcutaneous thickness area such as interdigittal region. Mentes et al.[16] were found the borders of PD tissue similar in 76.6% patients at PE and USG but USG detected branches or borders that distinctly exceeded the planned incision or surgery in 23.3% patients. In recent study; the correlation between PE and EXP was superior than preoperative USG and EXP or PE and preoperative USG [0.72 (good), 0.51 (moderate-good), 0.33 (moderate) respectively] for dimensions. Both correlations were statistically significant (p=0.0001, p=0.001, p=0.034 respectively). Dimensions can not be strictly detect in USG because of PD or neighbour tissue echogenity (inflammation or abcess) and anatomy of natal cleft, but application such as hydrogen peroxide can help to view the real dimensions and extention.

PE was correlated with EXP to detection distal and proximal borders [0.564 (good), 0.368 (moderate) respectively] and these were statistically significant (p=0.0001, p=0.02 respectively). USG was negative correlated with EXP to detection distal border (-0.019, p=0.9) and poor but not statistically significant correlated to detection proximal borders (0.186, p=0.25). Superior region of natal cleft has deep subcutaneous tissue underlying sacrum. Inferior region of natal cleft is adjecent with anal verge and perianal region with internal and external sphincteric muscle which have deep extention. Timely occured palpation sense

Table 1. Dimensions of pilonidal disease due to type of anesthesia (mean ± standard deviation)

	Local anesthesia (n=29)	Spinal anesthesia (n=11)	p
Physical examination	344.827±220.528	422.727±282.279	0.507
Superficial ultrasonography	218.572±131.331	304.580±265.720	0.01

Table 2. Correlation between postoperative exploration and physical examination/superficial ultrasonography

	Dimension		Distal border		Proximal border	
	PC	p	PC	p	PC	p
Physical examination	0.72	0.0001	0.564	0.0001	0.368	0.02
Superficial ultrasonography	0.51	0.001	-0.019	0.9	0.186	0.25

PC: Pearson's correlation

experience of surgeons and the experience of radiologist are the other factors for evaluation natal cleft and perianal region strictly.

Physcial examination was not affect the desicion of anesthesia type statistically (p=0.507) but USG was affect the desicion of anesthesia type statistically (p=0.01) which is clinically insignificant. Mentes et al.[16] reported that USG changes the planned surgery desicion in 23.3% patients.

In conclusion; PE is basic and a high accuracy diagnostic modality for detecting dimensions and borders of PD. Larger dimensions PDs which detected at USG can be operated with spinal anesthesia. Additional applications for USG which can increase the accuracy (make visible) such as hydrogen peroxide or MRI can be performed for detection dimensions and borders of PD.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

Peer-review: External and internal peer-reviewed.

Financial Disclosure: The author approved that there is no conflict of interest.

References

1. Harlak A, Mentes O, Kilic S, Coskun K, Duman K, Yilmaz F. Sacrococcygeal pilonidal disease: analysis of previously proposed risk factors. Clinics (Sao Paulo) 2010;65:125-131.
2. Hodge RM. Pilonidal sinus. Poston Med Surg J 1880;103:485-486.
3. McCallum IJ, King PM, Bruce J. Healing by primary closure versus open healing after surgery for pilonidal sinus: systematic review and meta-analysis. BMJ Apr 2008;19;336:868-871.
4. Aysan E, Ilhan M, Bektas H, Kaya EA, Sam B, Buyukpinarbasili N, Muslumanoglu M. Prevalence of sacrococcygeal pilonidal sinus as a silent disease. Surg Today 2013;43:1286-1289.
5. Onder A, Girgin S, Kapan M, Toker M, Arikanoglu Z, Palanci Y, Bac B. Pilonidal sinus disease: risk factors for postoperative complications and recurrence. Int Surg 2012;97:224-229.
6. Sekmen Ü, Kara ÜV, Altıntoprak F, Şenol Z. Pilonidal sinus in the army: Its incidence and risk factors. Ulus Cerrahi Derg 2010;26:95-98.
7. Isik A, Eryılmaz R, Okan I, Dasiran F, Firat D, Idiz O, Sahin M. The use of fibrin glue without surgery in the treatment of pilonidal sinus disease. Int J Clin Exp Med 2014;7:1047-1051. eCollection 2014.
8. Kaymakcioglu N, Yagci G, Simsek A, Unlu A, Tekin OF, Cetiner S, Tufan T. Treatment of pilonidal sinus by phenol application and factors affecting the recurrence. Tech Coloproctol 2005;9:21-24.
9. Bali İ, Aziret M, Sözen S, Emir S, Erdem H, Çetinkünar S, İrkörücü O. Effectiveness of Limberg and Karydakis flap in recurrent pilonidal sinus disease. Clinics (Sao Paulo) 2015;70:350-355.
10. Neşşar G, Kayaalp C, Seven C. Elliptical rotation flap for pilonidal sinus. Am J Surg 2004;187:300-303.
11. Youssef AT. The value of superficial parts and endoanal ultrasonography in evaluating pilonidal disease and exclusion of perianal sepsis. J Ultrasound 2015;18:237-243.
12. Taylor SA, Halligan S, Bartram CI. Pilonidal sinus disease: MR imaging distinction from fistula in ano. Radiology 2003;226:662-667.
13. Ak I. F-18 FDG imaging of an asymptomatic sacrococcygeal pilonidal sinus in a patient with malignant disease. Clin Nucl Med 2007;32:822-824.
14. Solivetti FM, Elia F, Panetta C, Teoli M, Bucher S, Di Carlo A. Preoperative advantages of HF sonography of pilonidal sinus. G Ital Dermatol Venereol 2012;147:407-411.
15. Imanishi H, Tsuruta D, Nomura N, Nakagawa K. Clinical usefulness of ultrasonography in interdigital pilonidal sinus. J Cutan Med Surg 2012;16:194-196.
16. Mentes O, Oysul A, Harlak A, Zeybek N, Kozak O, Tufan T. Ultrasonography accurately evaluates the dimension and shape of the pilonidal sinus. Clinics (Sao Paulo) 2009;64:189-192.

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CASE REPORT

Rectal Cancer with Synchronous External Iliac Lymph Node Metastasis Invading the External Iliac Artery and Its Surgical Management: A Case Report

External Iliak Arteri Infiltre Eden Senkron Rektum Kanseri Metastazı; Olgu Sunumu

Serdar Çulcu, Ömer Yalkın, Ferit Aydın, Ali Ekrem Ünal, Salim İlksen Başçeken, Salim Demirci
Ankara University Faculty of Medicine, Department of Surgical Oncology, Ankara, Turkey

ABSTRACT

Isolated external iliac lymph node recurrence is rare in rectal carcinoma. Herein we present a 78-year-old male with synchronous external iliac lymp node metastasis invading the external iliac artery and its successul surgical resection.
Keywords: Rectal cancer, recurrens, external iliac lymp node metastases

ÖZ

Rektum kanserinin izole eksternal iliak lenf nodunda rekürrensi nadirdir. Bu olgu sunumunda 78 yaşında erkek bir hastanın eksternal iliak arteri invaze eden tümörünün cerrahi olarak başarılı bir şekilde çıkarılması anlatılmıştır.
Anahtar Kelimeler: Rektum kanseri, rekürrens, external iliak lenf nodu metastazı

Introduction

In most carcinomas other than colorectal tumors, treatment is planned as systemic disease in the presence of recurrence following the resection of the primary lesion and salvage surgery is not often indicated for the recurrent lesion. Contrarily, in colorectal cancer, resection of the recurrent lesion may improve prognosis. Exclusively, liver metastasis, pulmonary metastasis, and local recurrence are known to be likely to result in improved prognosis with surgical resection.[1] After complete surgery locoregional recurrence rates are between 4-33%. Recurrences can involve the central soft tissues, invade the sacrum or invade the pelvic side-wall and associated vascular structures.[2]

In this report, we present a rare case of rectum cancer with synchronous isolated left external iliac lymph node metastases with invasion of external iliac artery and ureter, with neither regional lymph node metastasis nor distant hematogenous metastasis, for whom a potentially curative operation including distant metastatic lymph node dissection and arterial reconstruction was performed.

Case Report

A 78-year-old male had been referred to our department in 2006 for the treatment of rectal carcinoma. Low anterior resection with side to side colorectal anastomosis was performed. Stage of the tumor was found to be T2N0M0. After 8 years he had an acute mechanical intestinal obstruction showing recurrence at colorectal anastomosis site. Following resection and Hartmann colostomy, adjuvant chemotherapy was performed for T3N0M0 tumor.

The patient was followed by a periodic check-up of carcinoembryonic antigen (CEA) levels. His CEA level increased to 361.12 mg/dL in April 2017. The computed tomography (CT) scan showed a mass on the abdominal

Address for Correspondence/Yazışma Adresi: Serdar Çulcu MD,
Ankara University Faculty of Medicine, Department of Surgical Oncology, Ankara, Turkey
Phone: +90 505 463 47 23 **E-mail:** serdarculcu@gmail.com **ORCID ID:** orcid.org/0000-0002-1136-1771
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side of the left external iliac artery and positron emission tomography showed a hot spot in the same region (Figures 1, 2, 3, 4). There was no evidence of distant metastasis. At this point, we considered this mass as distant lymph node recurrence with invading external iliac artery.

In August we performed lymph node resection with external iliac artery reconstruction (Figures 5, 6). The mass was fixed to the abdominal side of the left external iliac artery and in order to ensure R0 resection, en bloc resection with external iliac artery was performed. The artery was reconstructed by end-to-end anastomosis (Figures 5, 6).

The patient had no complication after surgery and was discharged at postoperative day 8. In the resected specimen, pathological evaluation revealed metastasis of rectal carcinoma. The patient had no symptoms at the postoperative 4th month and the level of CEA was found to be 3.61.

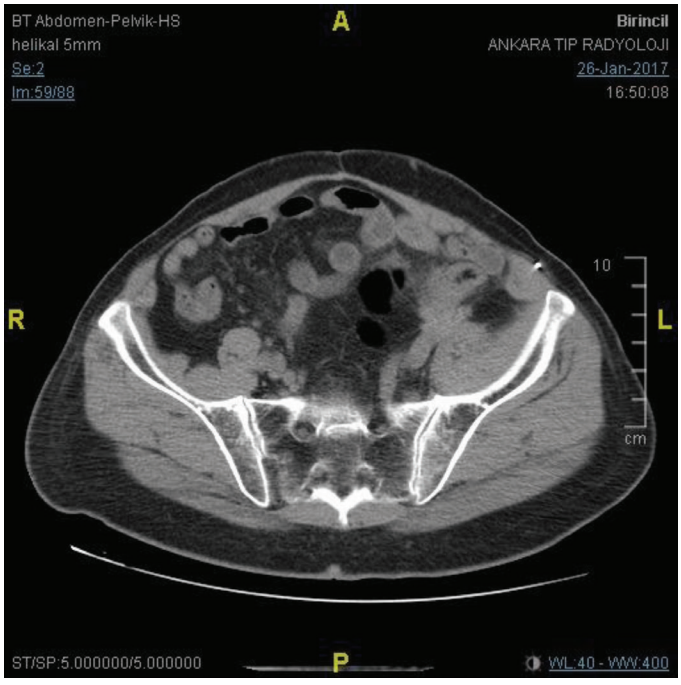

Figure 1. External lymp node metastasis

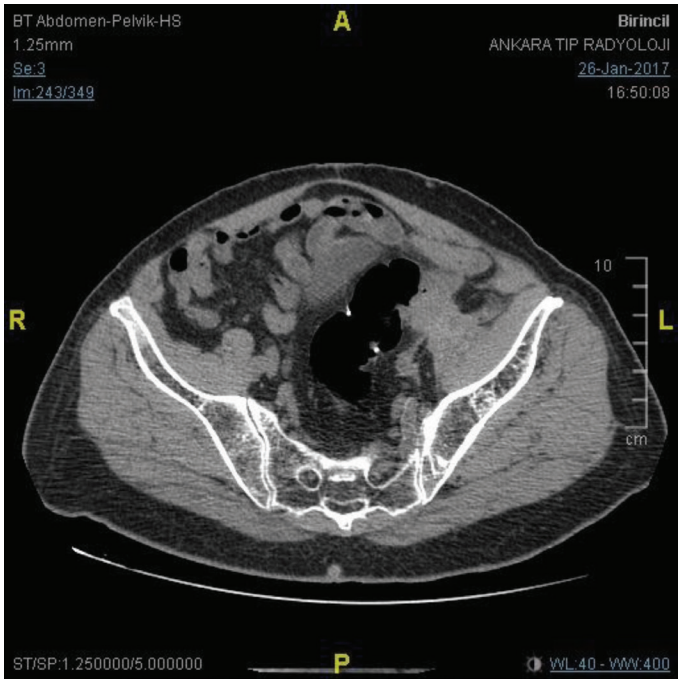

Figure 2. External lymp node metastasis

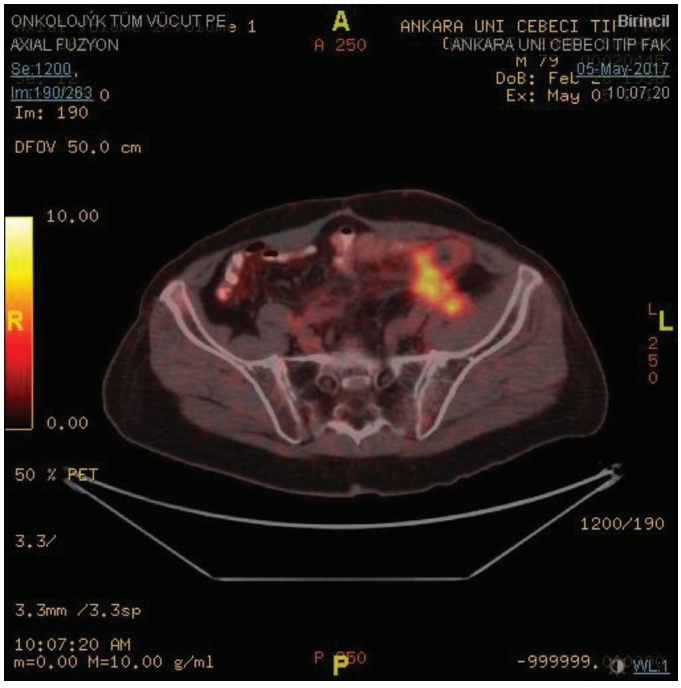

Figure 3. External lymp node metastasis

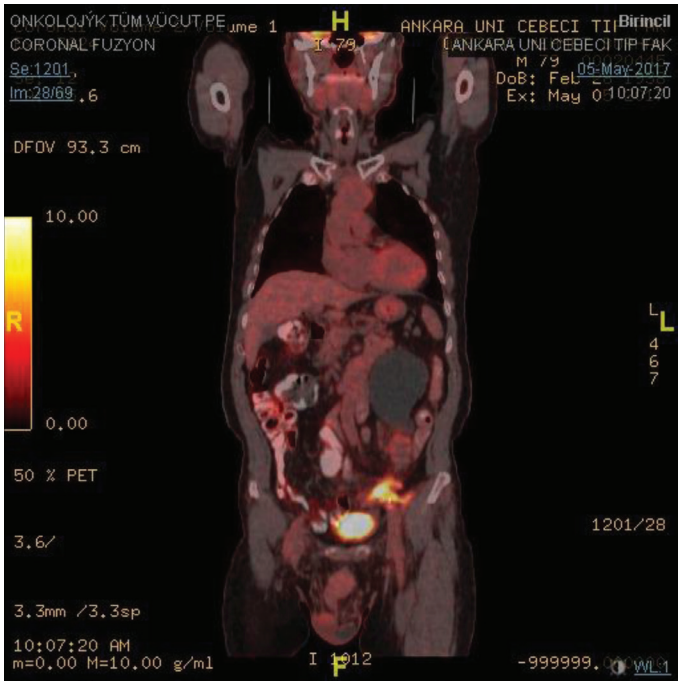

Figure 4. External lymp node metastasis

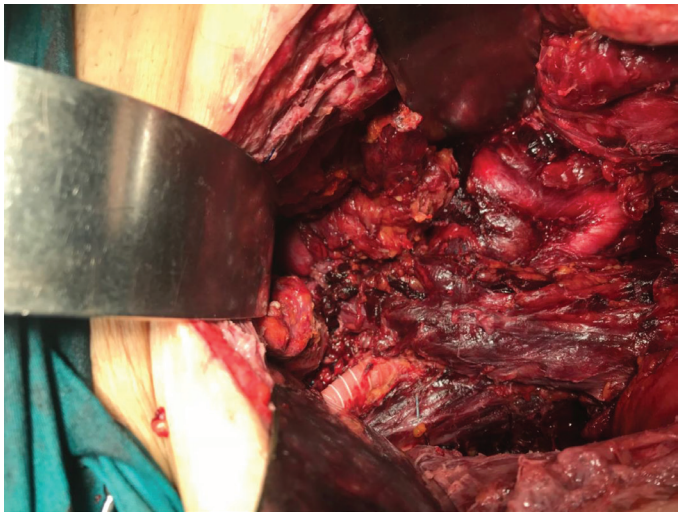

Figure 5. Figure excisision of metastasis and reconstructon of external iliac artery

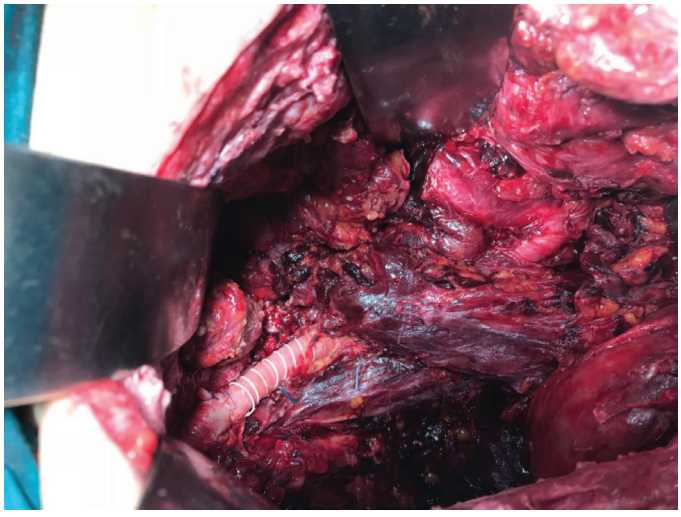

Figure 6. Figure excision of metastasis and reconstruction of external iliac artery

Discussion

Synchronous metastasis to the left external iliac or inguinal lymph nodes without local recurrence and hematogenous metastasis is very rare for rectal cancer. Our patient underwent after surgical resection he had taken chemotherapy and he was surviving recurrence free. In general, lymph node recurrence after colorectal cancer surgery is regarded as systemic disease, and in such cases, chemotherapy, radiotherapy or a combination of both rather than surgery, is preferred. With regard to isolated lymph node recurrence such as this case, there are some reports of resection, and in our clinic we prefer resection.[3,4,5]

Isolated lymph node recurrence rarely occurs in colorectal cancer and there is no agreement regarding surgical indication for this condition. However, in surgical treatment for liver and pulmonary metastases, the minimum requirement is local control.[1] In our case, favorable local control was achieved by initial surgery and, therefore, surgical resection was indicated for recurrent lesion, because of the possibility of achieving long-term prognosis. With regard to en bloc resection of blood vessels, it goes without saying that there is a fear of increased risk of complications. However, en bloc resection of the external iliac vessels requires revascularization and if the range of resection is wide, artificial vessels become necessary. For lymph node recurrence near blood vessels, en bloc resection of the vessels may be preferable from the viewpoint of local control and R0 resection, but should be considered only if it can be justified after considering the risks associated with surgery.

We presented a rare case of rectal cancer metastasis invading external iliac artery. For isolated lymph node recurrence of colorectal carcinoma, surgical resection should be considered, if favorable local control is thought to be achieved.

Ethics

Informed Consent: Informed consent was taken from the patient.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: S.D., A.E.Ü., S.Ç., Concept: S.Ç., Ö.Y., Design: F.A., S.İ.B., Data Collection or Processing: S.Ç., Ö.Y., Analysis or Interpretation: S.Ç., F.A., S.D., Literature Search: S.İ.B., A.E.Ü., Writing: S.Ç., Ö.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

1. Moriya Y. Treatment strategy for locally recurrent rectal carcinoma. Jpn J Clin Oncol 2006;36:127-131
2. Heriot AG, Byrne CM, Lee P, Dobbs B, Tilney H, Solomon MJ, Mackay J, Frizelle F. Extended radical resection: the choice for locally recurrent rectal cancer. Dis Colon Rectum 2008;51:284-291.
3. Nishimura G, Funaki H, Michiwa Y, Nishigima K, Kitagima H, Fushida S, Fujimura T, Kayahara M, Shimizu K, Ota T, Miwa K, Urayama H. A case of a combined aortectomy with dissection of recurrent paraaortic lymph nodes of sigmoid colon cancer (in Japanese with English abstract). Gan To Kagaku Ryoho 2000;27:2001-2004.
4. Hashimoto M, Komatsu H, Naruse Y, Sawada T, Watanabe G. Resection of paraaortic lymph node metastasis of colon cancer with graft replacement. Hepatogastroenterology 2003;50:709-710.
5. Hamano T, Homma Y, Otsuki Y, Shimizu S, Kobayashi H, Kobayashi Y. Inguinal lymph node metastases are recognized with high frequency in rectal adenocarcinoma invading the dentate line. The histological features at the invasive front may predict inguinal lymph node metastasis. Colorectal Dis 2010;12:e200-205.

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CASE REPORT

Prolapsed Ano-Rectal Neoplastic Polyps in Elderly Patients: Our Experience

Yaşlı Hastalarda Anüsten Prolabe Olan Anorektal Neoplastik Polipler: Deneyimlerimiz

Zeynep Özkan[1], Ahmet Bozdağ[1], Ahmet Kılıçaslan[2], Ayşe Nur Gönen[1], Barış Gültürk[1], Ulaş Aday[3], Abdullah Böyük[1]

[1]University of Health Sciences, Elazığ Training and Research Hospital, Clinic of General Surgery, Elazığ, Turkey
[2]University of Health Sciences, Elazığ Training and Research Hospital, Clinic of Pathology, Elazığ, Turkey
[3]University of Health Sciences, Elazığ Training and Research Hospital, Clinic of Gastroenterology Surgery, Elazığ, Turkey

ABSTRACT

Colorectal adenomas are polyps which originate from the mucosa and exhibit histopathologic neoplastic features. Although they are usually located in the rectosigmoid segment, they also occur commonly throughout the colon. Increasing dysplasia and malignant potential of adenomas are correlated with their size and villous component and with the patient's age. The prevalence of polyps is variable, and their incidence, size, and degree of dysplasia increase with age. Herein, we present four elderly patients with neoplastic polyps that were prolapsed from the anus, caused clinical symptoms and signs that were mistaken for hemorrhoids, and were treated by transanal excision.
Keywords: Anorectal neoplastic polyp, prolapsed, transanal excision

ÖZ

Kolorektal adenomlar, mukozadan kaynaklanan ve histolojik olarak neoplastik özellikler gösteren poliplerdir. Çoğunlukla rektosigmoid bölgede görülmelerine rağmen tüm kolonda sık olarak görülür. Artan displazi ve malignite potansiyeli adenomun boyutu, içerdiği villöz komponent ve hasta yaşı ile ilişkilidir. Adenomatöz poliplerin prevalansı değişkendir, yaş ilerledikçe poliplerin görülme sıklığı, büyüklüğü ve displazi gelişme oranı artar. Biz de bu yazımızda klinik semptom ve bulguları hemoroid ile karışan, transanal eksizyon yaptığımız anüsten prolabe neoplastik polipleri olan dört yaşlı olguyu sunmaya çalıştık.
Anahtar Kelimeler: Anorektal neoplastik polip, prolapsus, transanal eksizyon

Introduction

Colorectal neoplastic polyps and adenomas are structures that originate from the mucosa and exhibit histological neoplastic features. Adenomas are potentially malignant and are classified by the World Health Organization (WHO) as tubular, villous, and tubulovillous.[1] The incidence in the general population is about 5-10% and increases in older individuals, reaching 40-50% in those over 60 years of age.[2,3] They develop most commonly in the rectosigmoid region, are usually asymptomatic, and are detected incidentally during colonoscopy.[4] In one study, adenomas accounted for 70% of polyps removed by colonoscopy.[5] Most can be removed completely and safely by polypectomy during colonoscopy, and studies have demonstrated that the excision of adenomatous polyps prevents colorectal cancer.[6] Dysplasia is present to varying degrees in all adenomas. Degree of dysplasia and malignant potential are correlated with the patient's age and the adenoma's size and villous component. The prevalence of adenomatous polyps is variable, and the incidence, size, and rate of development of polyps increase with age.[7,8] Polyps protruding from the anus may mimic benign anorectal diseases and cause treatment delay in elderly patients, which in turn increases the malignant

Address for Correspondence/Yazışma Adresi: Ahmet Bozdağ MD,
University of Health Sciences, Elazığ Training and Research Hospital, Clinic of General Surgery, Elazığ, Turkey
Phone: +90 533 652 51 63 **E-mail:** abozdag80@hotmail.com **ORCID ID:** orcid.org/0000-0003-1973-2511
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potential. The aim of this study was to present four patients over 65 years of age with prolapsed anorectal polyps which we treated by transanal excision.

Patients who underwent transanal excision of polyps prolapsed from the anal canal between June 2015 and December 2017 in the general surgery unit of the Health Sciences University Elazığ Training and Research Hospital were retrospectively screened. The patients' demographic data, comorbid conditions, physical examination findings, and surgical notes were obtained from their medical records. Pathology reports were reviewed and data were recorded. Patients who could be reached by phone for follow-up were included in the study. Duration of postoperative follow-up was expressed in months. Six patients underwent transanal excision during the study period, but 2 patients who were lost to follow-up were excluded from the study. The clinical and pathological features of the patients are summarized in Table 1. Patients were informed about the study and written informed consent forms were obtained.

Case Reports

Case 1

A 65-year-old male patient was evaluated for a sporadically hemorrhagic mass protruding from the anal canal for approximately two years. On physical examination with the patient in prone position, a prolapsed, 2 cm mobile mass that looked like a hemorrhoid was detected at 3 o'clock. Laboratory test results were within normal range. A diminutive polyp was detected at the splenic flexure on pancolonoscopy, and polypectomy was performed. The hemorrhagic polyp protruding from the anal canal was removed by transanal excision under spinal anesthesia. The splenic flexure polyp was identified in histopathological examination as a hyperplastic polyp, while the polyp excised from the anal canal was identified as a serrated adenoma (Figure 1A).

Case 2

A 90-year-old female patient was evaluated for a 3 month history of rectal bleeding and a palpable mass in the anal region during defecation. A 2 cm hemorrhagic, mobile mass was detected on the anterior midline. On colonoscopic evaluation, a 0.2 cm polyp was detected in the ascending colon and polypectomy was performed. Abdominal ultrasonography revealed bilateral renal cysts and grade 2 hydronephrosis in the left kidney. Hemoglobin was 13.1 g/dL and other biochemical values were normal. The polyp was removed by transanal excision and identified in pathologic evaluation as a tubular adenomatous polyp with low-grade dysplasia. There was no dysplasia in the polyp stalk (Figure 1B).

Case 3

A 70-year-old female patient was evaluated for complaints of rectal bleeding, constipation, and mass that protruded from the anus during defecation for the last 6 months. The patient also had a history of ischemic heart disease and chronic obstructive pulmonary disease. Physical examination revealed a localized, mobile mass at the border of the distal rectum and anal canal which prolapsed from the anus upon straining. Tumor markers were within normal range. Total colonoscopy revealed a polypoid lesion surrounding one third of the rectum from the anus and covering an area of approximately 10 cm, and a biopsy was performed. The biopsy report indicated tubulovillous adenoma. Computed tomography with oral, rectal, and intravenous contrast revealed wall thickening in a 5 cm rectal segment near the anal canal. Under spinal anesthesia, dilute adrenaline was injected into the submucosal space. Beginning from the anal canal, clean surgical margins were achieved by transanal excision of the mass and underlying muscular layer as a single piece. No postoperative complications occurred. The 7.5x5.4x2.7 cm mass was determined in pathologic examination to be a villous adenoma. No recurrence was observed during 24 months of follow-up (Figure 1C).

Case 4

An 84-year-old female patient was evaluated for complaints of rectal bleeding, foul-smelling anal discharge, and a palpable mass for 4 months. On examination with the patient in knee-elbow position, a polypoid mass that prolapsed from the anal canal upon straining was detected at 6 o'clock,

Table 1. Demographic and clinical data of the patients

Patient	Sex	Age (years)	Polyp size (cm)	Additional polyp type	Surgery performed	Histopathology of the anorectal polyp	Follow-up time (months)
Case 1	Male	65	2.5	Hyperplastic adenoma	Transanal excision	Serrated adenoma	24
Case 2	Female	90	2	Tubular adenoma	Transanal excision	Tubular adenoma and low-grade dysplasia	9
Case 3	Female	70	10	No	Transanal excision	Villous adenoma	8
Case 4	Female	84	2.5	Serrated adenoma	Transanal excision	Villous adenoma and adenocarcinoma	15

as well as prolapsed hemorrhoids. The polypoid mass was 2.5x2.5 cm in size, foul-smelling, and had a necrotic surface and erosion. A total of three millimetric polyps in the descending colon and sigmoid colon were detected during colonoscopy and removed by polypectomy. Laboratory parameters were within normal range. Transanal polyp excision and hemorrhoidectomy were performed and the patient was discharged without complication. Pathologic examination revealed adenocarcinoma arising from villous adenoma, with invasion of the stalk. The surgical margin was 2.1 mm, there was no lymphovascular invasion, and the mass was well differentiated; therefore, no further treatment was recommended (Figure 1D, Figures 2A and 2B).

Discussion

Tissue extending from the intestinal mucosa or submucosa into the lumen is called a polyp. Polyps that exhibit epithelial atypia on histopathological evaluation are called neoplastic polyps. Neoplastic polyps are also referred to as adenomas. A certain level of dysplasia is the main

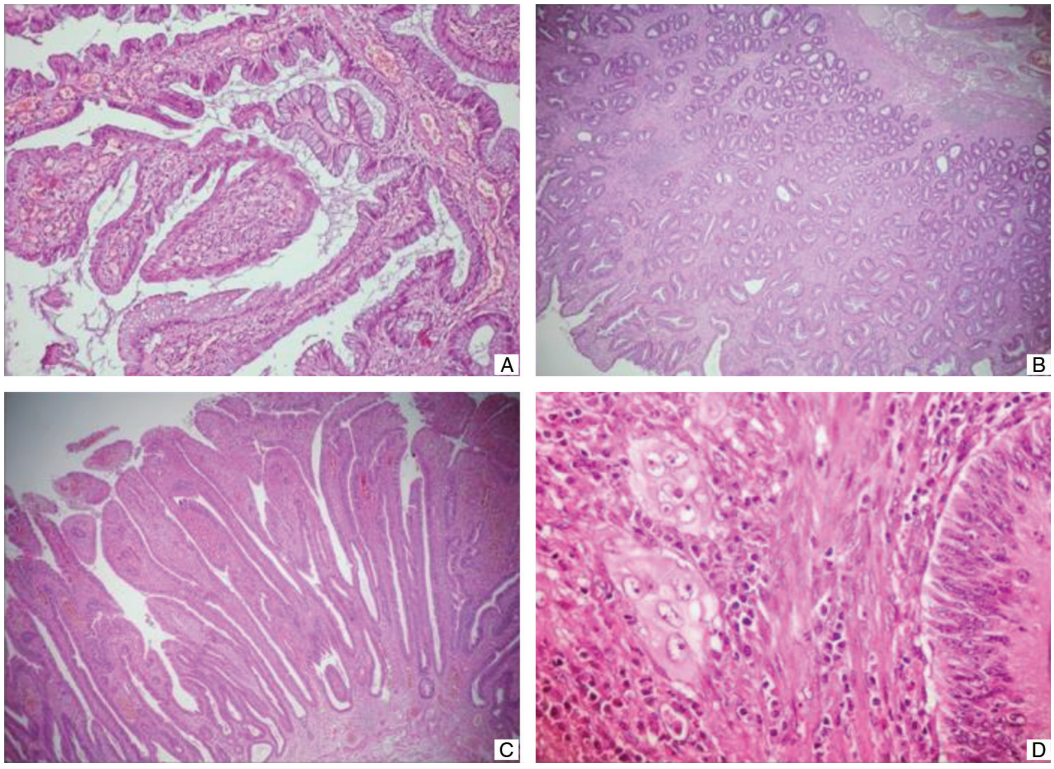

Figure 1. Microscopic images of anal polyps stained with hematoxylin and eosin (H&E). A) Serrated adenoma (x100), B) Tubular adenoma (x40), C) Villous adenoma (x100), D) Villous adenoma containing an invasive carcinoma focus (x400)

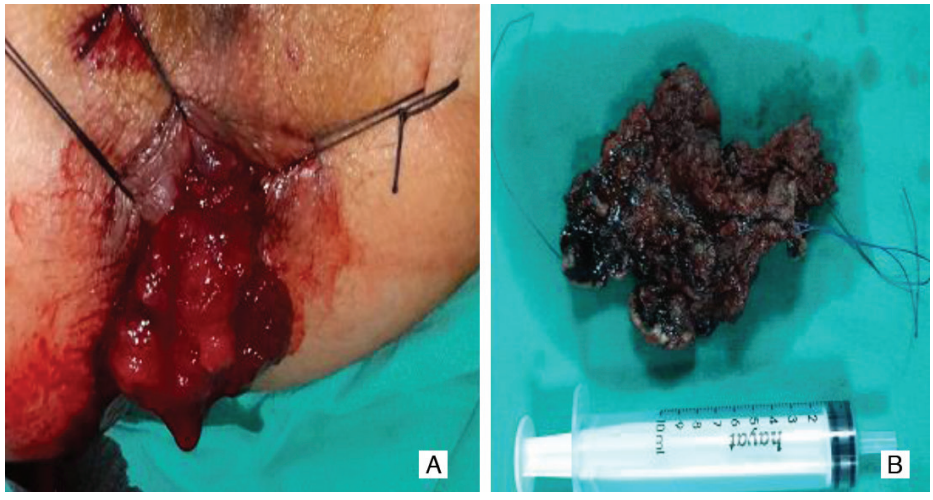

Figure 2. Images of patient 4. A) Preoperative image of giant, hemorrhagic rectal villous adenoma prolapsed from the anus, B) The excised specimen

criterion for adenomas; without dysplasia, a diagnosis of adenoma is invalid.[9] Aging is accompanied by increases in the frequency, size, and dysplasia of polyps in the digestive system.[10] The prevalence of adenomatous polyps increases with age, as do the polyps' size and degree of dysplasia.[7,10] WHO defines the elderly population as those over 65 years of age; therefore, we included patients aged 65 or older in our study.[11] Male gender and obesity are recognized risk factors for adenomatous polyps.[10] The patients presented herein were of advanced age; however, in contrast to the literature, none were obese and only one was male.

Colonic adenomas are commonly located in the rectosigmoid region and are generally smaller than 1 cm in size. The size of adenomas varies based on its composition, with the proportion smaller than 1 cm reported as 77% for tuberculous adenomas, 25% for villous adenomas, and 14% for tubulovillous adenomas. Non-neoplastic polyps are usually less than 5 mm in size.[10] Adenomas located in the low rectum and anal canal, as seen in our cases, are less common. All of the adenomas in our patients were larger than 1 cm, which we attribute to late awareness of symptoms and reluctance to see a doctor due to the patients' age.

Patients with neoplastic polyps are at increased risk of developing new adenomas and cancer in the future. Of patients who undergo polypectomy, the American Society for Colorectal Cancer Task Force defined those with polyps smaller than 10 mm and those with fewer than 3 polyps as the "low-risk" group. Patients with polyps larger than 10 mm, those with 3 or more polyps, and those whose polyps have villous features and/or high-grade dysplasia comprise the "high-risk" group.[12] Follow-up colonoscopies and polypectomies enable the early detection or prevention of future cancers. The American literature recommends a follow-up period of 5-10 years after the first colonoscopy for patients with one or two tubular adenomas smaller than 10 mm without high-grade dysplasia, whereas a follow-up colonoscopy is recommended after 3 years for patients with 3 or more adenomas, polyps larger than 10 mm, and high-grade dysplasia and villous structures.[13] As in three of our patients, polyps are also frequently detected in colon segments other than the anal region. Due to their age and the presence of neoplastic polyps, such patients should undergo a complete colon examination preoperatively. All of our patients were scheduled for regular follow-up; although we advised the patient with adenocarcinoma to return after 15 months for colonoscopy, she did not return for colonoscopy and oncologic follow-up because she lived in a rural area and had difficulty with transportation.

Colorectal polyps may manifest with various clinical manifestations such as hematochezia, diarrhea with mucous, obstruction, findings associated with intussusception, or anal prolapse of pedunculated rectal polyps. Because the polyps were very low in three of our patients and large in one patient, they prolapse from the anal canal and the main clinical findings were bleeding and palpable mass.[14]

All of our patients were successfully treated transanally under local or regional anesthesia. In recent years, different transanal excision and minimally invasive methods have been implemented successfully in patients with rectal adenomas, which is especially beneficial for elderly patients with high comorbidity and operative risk. Our patients were all elderly, but operative risk was high in one patient. Although the duration of follow-up was not very long (mean 14 months), the lack of recurrence in our patients suggests that this is a suitable treatment approach.

The main criteria for neoplastic change are size, histological type, and degree of dysplasia. In an Italian study of 16 patients with protruding isolated rectal and anal neoplastic polyps who underwent local transanal excision, 2 patients developed postoperative bleeding and urinary retention, and histopathologic examination revealed that 12.5% of the masses were tubular adenomas with no atypia, 18.75% were tubulovillous adenomas with moderate atypical, 50% were tubulovillous adenoma with severe atypia, 12.5% were tubulovillous adenoma with locally invasive foci of adenocarcinoma, and 6.25% were pT1 cloacogenic carcinoma. During a mean follow-up of 21.7 months, one patient had two recurrences, one at 8 months and another 6 months later.[15] In the cases presented here, we detected villous adenoma in one patient, villous adenoma and adenocarcinoma in one, serrated adenoma in one, and tubular adenoma with low-grade dysplasia in one patient.

It is well known that elderly patients presenting with classic hemorrhoid symptoms may have adenomatous polyps prolapsing from the anal canal and they should be evaluated by colonoscopy before surgical intervention. Patients can be treated successfully with transanal excision under the appropriate anesthesia based on the patient's risk/benefit ratio. Histopathologic examination of the excised polyps is imperative and if cancer is detected, further treatment should be planned according to the patient's condition.

Ethics

Informed Consent: Patients were informed about the study and written informed consent forms were obtained.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Z.Ö., A.B., Concept: U.A., B.G., A.B., Design: Z.Ö., A.N.G., Data Collection or Processing: A.B., B.G., Analysis or Interpretation: A.K., A.B., Literature Search: Z.Ö., A.B., A.N.G., Writing: Z.Ö., A.B.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

1. Morson BC, Sobin LH. Histological typing of intestinal tumours In: International Histological Classification of Tumours, No. 15. Geneva: World Health Organization, 1976.
2. Fenoglio-Preiser CM, Hutter RV. Colorectal polyps: pathologic diagnosis and clinical significance. CA Cancer J Clin 1985;35:322-344.
3. Lieberman DA, Smith FW. Screening for Colon Malignancy with Colonoscopy. Am J Gastroenterol 1991;86:946-951.
4. Terzi C, Canda AE. Kolorektal Polipler ve Polipozis Sendromları, Sayek İ.(editör) Temel Cerrahi. 1.Cilt Ankara: Güneş Kitabevi; 4. Baskı 2013;1397-1406.
5. Konishi F, Morson BC. Pathology of colorectal adenomas: A colonoscopic survey. J Clin Pathol 1982;35:830-841.
6. Bond JH. Polyp Guideline: Diagnosis, Treatment, and Surveillance for Patients With Colorectal Polyps. Am J Gastroenterol 2000;95:3053-3063.
7. Dölek Y, Karabulut YY, Topal F, Kurşun N. Gasrointestinal poliplerin boyut, lokalizasyon ve histopatolojik tipleri ile değerlendirilmesi. Endoskopi 2013;21:31-35.
8. O'Brien MJ, Winawer SJ, Zauber AG, Gottlieb LS, Sternberg SS, Diaz B, Dickersin GR, Ewing S, Geller S, Kasimian D. The National Polyp Study: Patient and polyp characteristics associated with high-grade dysplasia in colorectal adenomas. Gastroenterology 1990;98:371-379.
9. Yamaner S. Kolorektal polipler. Türk Kolon Rektum Hastalıkları Dergisi 2007:17:1-8.
10. Korkmaz H, Kendir İC, Akkaya Ö. Evaluation of size, localization and histopathologic structures of colonic polyps. Endoscopy Gastrointestinal 2016;13-17.
11. Tezcan S, Seçkiner P. Türkiye'de demografik değişim; yaşlılık perspektifi. Aslan D, Ertem M Editörler. Yaşlı sağlığı sorunlar ve çözümler 1. Baskı. Ankara: Palme Yayıncılık, 2012:1-3.
12. Lieberman DA, Rex DK, Winawer SJ, Giardiello FM, Johnson DA, Levin TR. Guidelines for Colonoscopy Surveillance After Screening and Polypectomy: A Consensus Update by the US MultiSociety Task Force on Colorectal Cancer. Gastroenterology 2012;143:844-857.
13. Levin B, Lieberman DA, McFarland B, Andrews KS, Brooks D, Bond J, Dash C, Giardiello FM, Glick S, Johnson D, Johnson CD, Levin TR, Pickhardt PJ, Rex DK, Smith RA, Thorson A, Winawer SJ; American Cancer Society Colorectal Cancer Advisory Group; US Multi-Society Task Force; American College of Radiology Colon Cancer Committee. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. Gastroenterology 2008;134:1570-1595.
14. Öğüş M, Dinçkan A, Gelen T, Aksoy N. Anüsten prolabe olan inen kolon tümörü: Olgu Sunumu. Ulus Travma Acil Cerrahi Derg 2005;11:247-249.
15. Fiducia G, Gandolfo L, Bosco V. Protruding isolated rectal and anal neoplastic polyps removed by local transanal excision: our experience with 16 cases. Chir Ital 2008;60:227-232.

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Turk J Colorectal Dis 2018;28:194-195

CASE REPORT

A Rare Cause of Acute Appendicitis after Appendectomy: Tip Appendicitis

Apendektomiden Sonra Akut Apandisitin Nadir Bir Nedeni: Uç Apandisit

Mustafa Uğur, Ozan Utku Öztürk, Hüseyin Çiğin, Akın Dedemoğlu, Ersin Rasim Arslan
Mustafa Kemal University Faculty of Medicine, Department of General Surgery, Hatay, Turkey

ABSTRACT

Acute appendicitis is a rare complication after appendectomy and usually occurs as a result of leaving a long stump in the initial surgery. However, a residual appendiceal tip with its feeding mesenteric arteries is much rarer and can also lead to acute appendicitis. In this report, we present a patient with acute appendicitis caused by the appendiceal tip remaining after appendectomy.
Keywords: Appendectomy, acute appendicitis, tip appendicitis, retrocecal exploration

ÖZ

Apendektomi sonrası gelişen nadir komplikasyonlardan birisi akut apandisit gelişmesidir. En önemli sebebi apendiks güdüğünün uzun bırakılmasıdır. Ancak apendiks uç kısmının kendisini besleyen mezenterik damarlarla bırakılması çok daha nadir görülen bir durumdur. Bu durumda da akut apandisit gelişebilir. Bu yazıda apendektomili bir hastada apendiks uç kısmının bırakılmasına bağlı olarak gelişen akut apandisit olgusu sunuldu.
Anahtar Kelimeler: Apendektomi, akut apandisit, uç apandisit, retroçekal eksplorasyon

Introduction

Acute appendicitis is one of the most common surgical causes of acute abdomenand the mainstay treatment of acute appendicitis is appendectomy. However, appendectomy has been shown to cause a number of complications including wound site infection, abscess, appendix stump leakage, peritonitis, and ileus. In addition, though rarely, appendectomy may also lead to acute appendicitisdue toleaving a long stump behind during the initial surgery, which has been shown to have an incidence of 1/50.000.[1,2]

In this report, we present a patient with acute appendicitis caused by the appendiceal tip left behind after the initial appendectomy.

Case Report

A 55-year-old male patient presented to our clinic with the complaint of abdominal pain. Patient history revealed that the patient had undergone appendectomy and subsequently undergone open abdominal surgery due to wound site infection and wound dehiscenceat another center one year earlier. The patient stated that the abdominal pain commenced after the abdominal surgery and occurred intermittently but gradually became highly severe before presenting to our clinic. The patient had no remarkable clinical history. Physical examination showed a median incision scar above and below the abdomen and a 10x15 cm fascial defect in the abdominal wall. Moreover, the patient also had rebound tenderness and defense in the right lower quadrant. Laboratory and biochemical parameters were normal except for the leukocyte count, which was 16.000/uL. On ultrasonographic examination, no abnormality was detected except for incisional hernia.

The patient was operated on with the diagnosis of acute abdomen. Surgical exploration showed the residues of the suture material of the stump in the appendectomy site and a normal stump. Moreover, the exploration also showed the tip of the free, inflamed appendix below the ileocecal joint, measuring 1.5 cm in length, with its mesentery ligated with one side of the

Address for Correspondence/Yazışma Adresi: Mustafa Uğur MD,
Mustafa Kemal University Faculty of Medicine, Department of General Surgery, Hatay, Turkey
Phone: +90 505 346 32 09 **E-mail:** drmustafaugur@gmail.com **ORCID ID:** orcid.org/0000-0002-5922-2367
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appendix (Figure 1). Total appendectomy was performed and the patient was uneventfully discharged at postoperative day 3. pathological examination confirmed the diagnosis of acute appendicitis. Informed consent form was obtained.

Discussion

Acute appendicitis after appendectomy results from incomplete appendectomy, mainly due to a long stump left behind after the initial surgery. Moreover, acute appendicitis typically occurs in the appendiceal stump and can occur at any age and even long years after the initial appendectomy.[3,4]

Literature reviews indicate that there has been a few cases reported with acute appendicitis caused by the appendiceal tip left behind with its mesentery. In that one patient, the appendiceal tip was left behind at the retrocecal joint away from the staple line, probably after the laparoscopic right hemilectomy performed due to a malignant polyp. Moreover, the appendiceal tissue maintained its vitality since its feeding vascular structures were left intact.[5] In our patient, the appendiceal tip was also left behind with its mesenteric arteries, similar to the case presented in the literature. However, the main differences between the two cases were the diagnoses of the patients and the surgical procedures performed in the initial surgeries. In our patient, the appendiceal tip left behind was located in the retrocecal area. The surgical records of the patient regarding the initial appendectomy revealed that the appendix was perforatedin the middle portion and the visibility of the appendix was obscured by the adhesions in the right lower quadrant and the accumulation of inflammatory material and debris. Depending on these records, we considered that a complete exploration of the retrocecal area was not performed due to the poor visibility of the appendix and since the tip of the appendix was localized in the retrocecal area. In addition, we also considered that the distal tip of the appendix was ligated since it was probably mistaken for the mesentery of the appendix and that the appendiceal tissue maintained its vitality since the mesenteric arteries of the appendix were left intact.

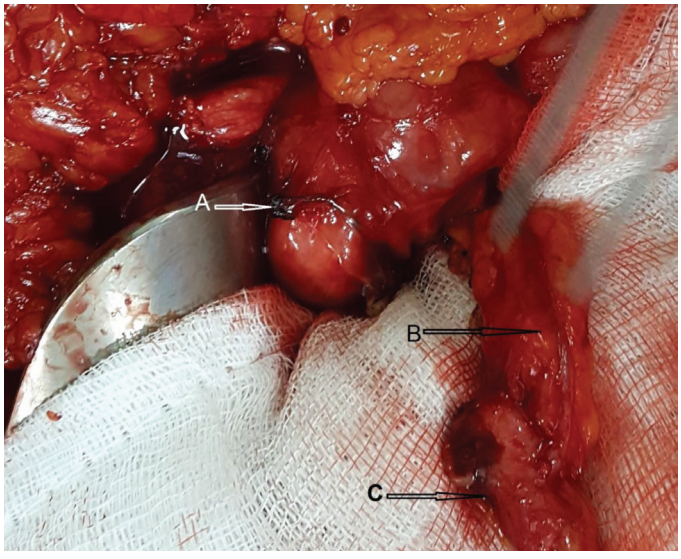

Figure 1. Intraoperative image showing the appendiceal tip and its feeding vascular structures left behind after appendectomy A) Normal appearance of the stump ligated during the initial surgery, B) Mesenteric arteries feeding the appendiceal tip left behind, C) Appendiceal tip with one side of it ligated with the mesenteric artery

After appendectomy due to acute appendicitis, several cases of tip appendicitis have been reported in the literature. We had similar features in this cases that we have presented in these cases.[6,7]

Stump appendicitis that occurs after the appendectomy performed due to acute appendicitis is a frequent occurrence; however, to our knowledge, acute appendicitis caused by the tip of the appendix has been reported in several cases. In patients undergoing a second surgery due to acute abdomen following initial appendectomy, the retrocecal area should be explored completely, particularly if the stump has a normal appearance.

Ethics

Informed consent: Consent form was filled out by the patient.

Peer-rewiev: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.U., A.D., E.R.A., Concept: M.U., O.U.Ö., H.Ç., Design: H.Ç., O.U.Ö., A.D., E.R.A., Data Collection or Processing: O.U.Ö., H.Ç., Analysis or Interpretation: M.U., A.D., O.U.Ö., Literature Search: H.Ç., E.R.A., H.Ç., Writing: M.U., O.U.Ö.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Mangi AA, Berger DL. Stump appendicitis. Am Surg 2000;66:739-741.
2. Martinez Chamorro E, Merina Castilla A, Munoz Fraile B, Koren Fernandez L, Borruel Nacenta S. Stump appendicitis: preoperative imaging findings in four cases. Abdom Imaging 2013;38:1214-1219.
3. Geraci G, Di Carlo G, Cudia B, Modica G. Stump appendicitis.A case report. Int J Surg Case Rep 2016;20:21-23.
4. Rios RE, Villanueva KM, Stirparo JJ, Kane KE. Recurrent (stump) appendicitis: a case series. Am J Emerg Med 2015;33:480.e1-2.
5. Tan V, Stevignon T, Chaddad M, Dugue L. Appendicitis after right colectomy? How can this be possiple? J Visc Surg. 2014;151:477-478.
6. Parthsarathi R, Jankar SV, Chittawadgi B, Sabnis SC, Kumar SS, Rajapandian S, Raj PP, Palanivelu C. Laparoscopik management of symptomatic residual appendicular tip: A rare case report. J Minim Access Surg 2017;13:154-156.
7. O'Leary DP, Myers E, Coyle J, Wilson I. Case report of recurrent acute appendicitis in a residual tip. Cases J 2010;3:14.

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CASE REPORT

Cecal Volvulus as a Cause of Acute Abdomen: A Report of Two Distinct Cases

Akut Karın Nedeni Olarak Çekal Volvulus: İki Farklı Olgu Sunumu

Mustafa Göksu[1], Sabri Özdaş[2], Mehmet Sertkaya[2]

[1]Adıyaman University Faculty of Medicine, Department of General Surgery, Adıyaman, Turkey
[2]Adıyaman University, Training and Research Hospital, Clinic of General Surgery, Adıyaman, Turkey

ABSTRACT

Cecal volvulus is one of the rare causes of acute abdominal pain that is life-threatening and requires urgent treatment. Herein, we present two cases of cecal volvulus with differing features. The first case was a 32-year-old female patient who was diagnosed with cecal volvulus 2 days after surgery for ectopic pregnancy. The second case was a 58-year-old female patient who was referred to our hospital with a diagnosis of cecal volvulus caused by a giant lipoma. Right hemicolectomy was performed in the first case and right hemicolectomy with partial ileal resection in the second case, and both patients were discharged with no complications. Radiography and clinical suspicion are extremely helpful in the diagnosis of cecal volvulus. Computed tomography should be performed when necessary. The primary treatment is surgery, though this may change depending on the situation.
Keywords: Cecal volvulus, acute abdomen, right hemicolectomy

ÖZ

Çekal volvulus, hayatı tehdit eden ve acil tedavi gerektiren akut karın ağrısının nadir nedenlerinden biridir. Bu yazımızda, farklı özelliklere sahip iki çekal volvulus olgusu sunuyoruz. İlk olgu ektopik gebelik nedeniyle ameliyattan iki gün sonra çekal volvulus tanısı alan 32 yaşında kadın hastaydı. İkinci olgu ise hastanemize dev bir lipomun neden olduğu çekal volvulus tanısı ile sevkedilen 58 yaşında kadın hastaydı. Birinci hastaya sağ hemikolektomi ve ikinci hastaya kısmi ileal rezeksiyonlu sağ hemikolektomi uygulandı ve her iki hasta da sorunsuz olarak taburcu edildi. Çekal volvulus tanısında düz radyografi ve klinik şüphe son derece yardımcıdır. Bilgisayarlı tomografi gerektiğinde yapılmalıdır. En önemli tedavi, duruma göre değişmekle birlikte cerrahidir.
Anahtar Kelimeler: Çekal volvulus, akut karın, sağ hemikolektomi

Introduction

Cecal volvulus is one of the rare causes of acute abdominal pain that is life threatening and requiring urgent treatment. Cecal volvulus is a folding of the terminal ileum and descending colon with its mesentery on its own axis. Cecal volvulus is the cause of 1-1.5% of all intestinal obstructions and constitutes 25-40% of all volvulus.[1] Due to its non-specificity with clinical manifestations and symptoms, it causes difficulties and delays in the treatment of cecal volvulus. Today, the most important treatment is surgical intervention. In this article, we aim to present two different cases of cecal volvulus with acute abdomen.

Case Reports

Case 1

A 32 year female patient who was operated on due to ectopic pregnancy in the obstetric clinic was consulted to our clinic due to abdominal pain on the 2nd postoperative day. She had complaints of colicky abdominal pain, vomiting and gas-gaita failure. In the past history, there was no feature except ectopic pregnancy story. On physical examination, there was tenderness in his entire abdomen. Asymmetric distension was present on the right side of the abdomen. There was no peritoneal irritation. Hemoglobin was 8.65 g/dL, white blood cell (WBC) was 12.7 K/uL, albumin was 2.7 g/dL and creatine kinase was 3484 U/L in the laboratory

Address for Correspondence/Yazışma Adresi: Mehmet Sertkaya MD,
Adıyaman University, Training and Research Hospital, Clinic of General Surgery, Adıyaman, Turkey
Phone: +90 505 221 43 34 **E-mail:** drsertkaya@gmail.com **ORCID ID:** orcid.org/0000-0001-8966-0619
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findings. Direct abdominal X-ray showed abdominal dilatation and air fluid level on the right upper abdomen (Figure 1). Abdominal computed tomography (CT) revealed excessive dilatation and air fluid levels in the right-colon and in the cecum as closed loop (Figures 2, 3). The patient underwent laparatomy with intestinal obstruction diagnosis. At exploration, ischemic changes and advanced dilatation were detected in the cecum secondary to volvulus. A right hemicolectomy and side-by-side transversostomy were performed (Figure 4). The patient was discharged uncomplicated on postoperative day 7. The patient's pathology was reported as ischemic findings.

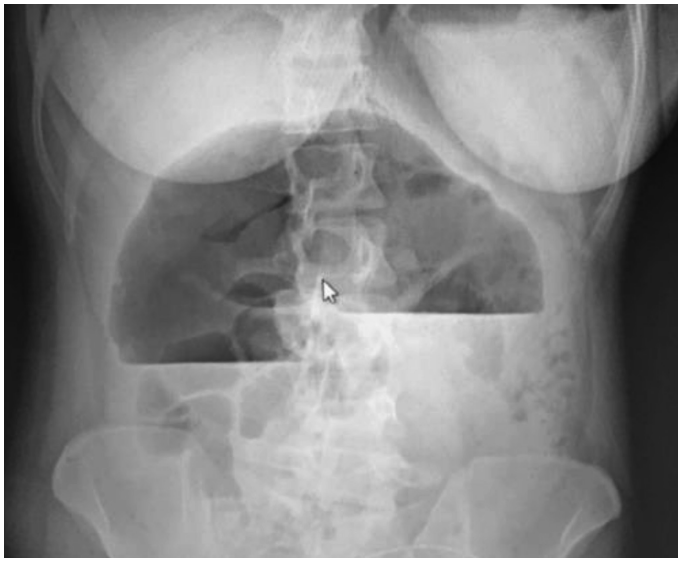

Figure 1. Plain radiograph shows dilated colon with gas and air fluid level at the upper right quadrant

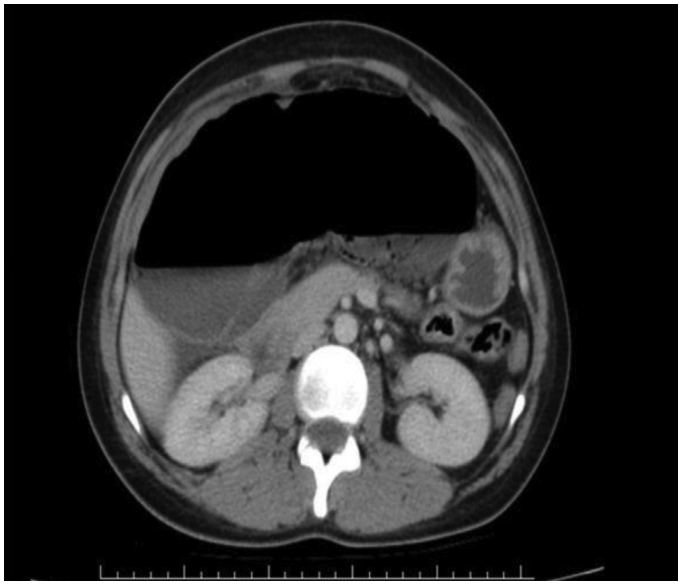

Figure 2. Computed tomography image showing excessive dilatation and air fluid levels in the colon segment

Case 2

A 58-year-old overweight female patient was referred to emergency department with acute abdomen diagnosis from the district hospital. CT at the district hospital revealed suspicious mass in the abdomen and cecal volvulus findings (Figure 5). The patient's complaints included difficulty in passing gas and stool for 2 days, distension, nausea and abdominal pain. Four months ago, she had been operated on the left hip due to femur neck fracture and had been mobilized with support, but had no abdominal surgery. On physical examination, there was a massive mass on the right side of the abdomen with excessive distension, rebound and defensive palpation. The rectum was empty on the rectal digital examination. WBC was 18000 K/uL

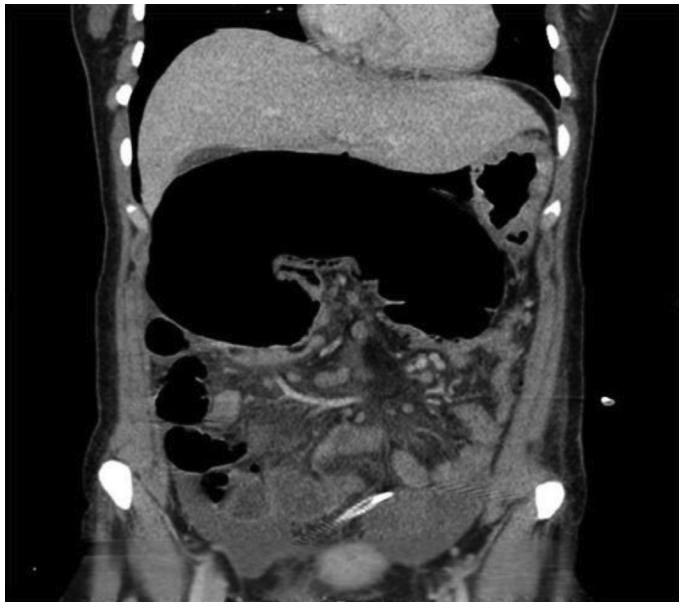

Figure 3. Computed tomography image of the cecum and right colon as a closed loop

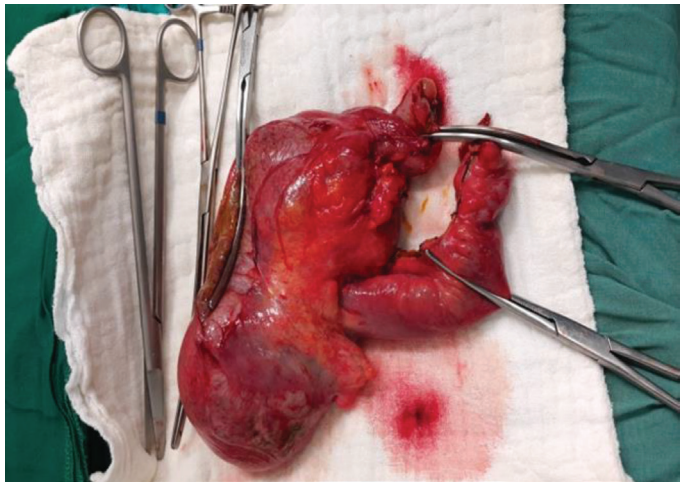

Figure 4. Operation specimen containing right hemicolectomy and partial ileal resection material

in the laboratory values. We operated on the patient in urgent conditions to prevent further deterioration of the patient's clinical status. Operative findings revealed 500-600 cc of serous fluid spread in the abdomen, necrotic changes and serosal opening in the cecum, and a giant lipoma with a size of 20-25 cm in diameter completely obstructing the lumen of the colon (Figure 6). In addition, there was edema and partial necrosis in the last 50 cm of the terminal ileum. A right hemicolectomy and 60 cm terminal ileum resection and ileotransversostomy were performed (Figure 7). Postoperative 5th day regimen was started and 9th day she was discharged without any problems. Histopathologically, the mass was reported as lipoma and reported as necrotic findings in the cecum.

Informed consent was obtained from the patients in this article.

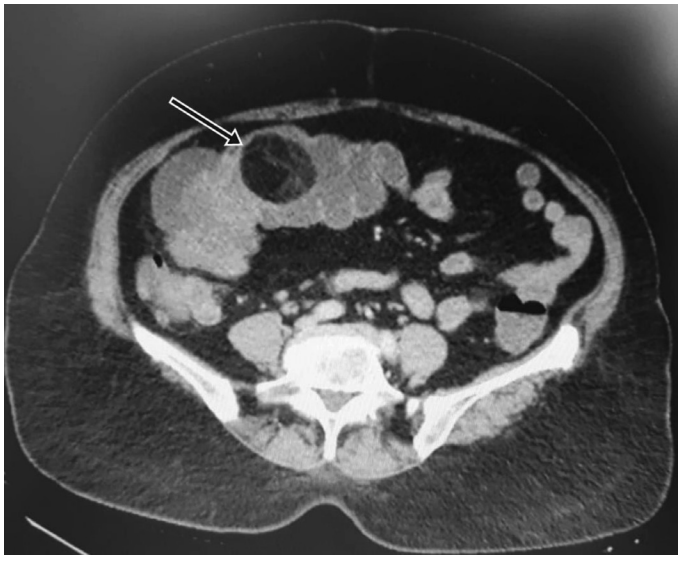

Figure 5. Computed tomography scan for case 2; the mass evaluated as lipoma is observed in mesenchial fat tissue density

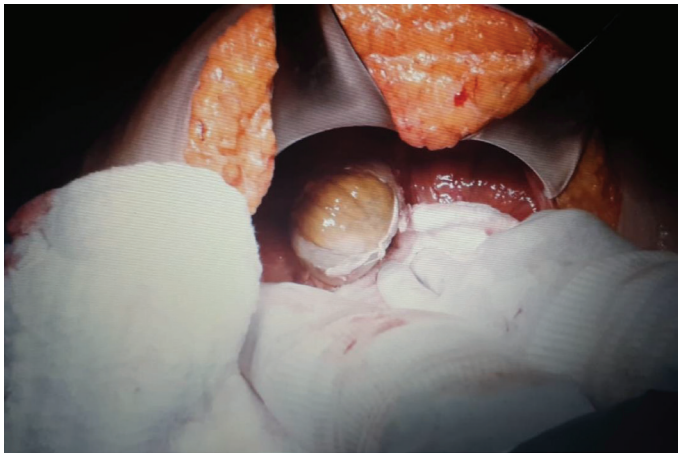

Figure 6. Cecal mass felt during surgery in case 2

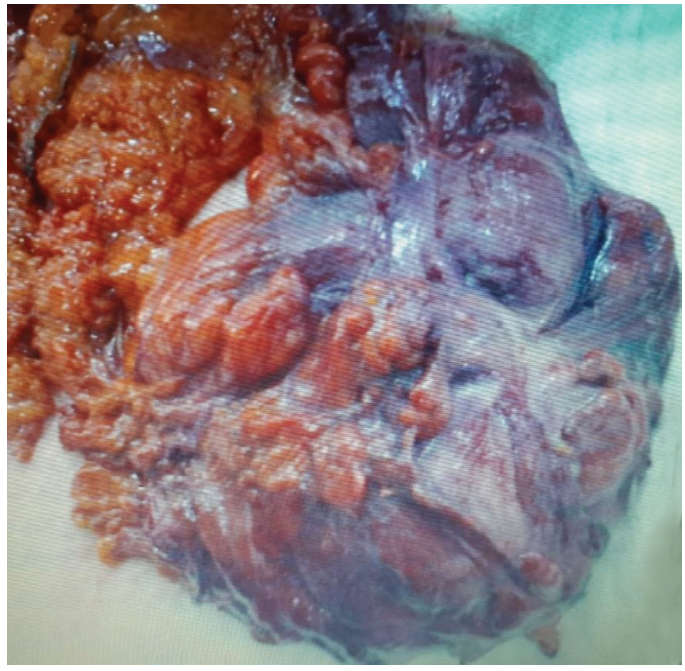

Figure 7. The specimen removed at the end of the operation for case 2; right hemicolectomy

Discussion

Colonic volvulus is a condition requiring urgent surgery in which a segment of the colon causing obstruction and ischemic necrosis of the intestine folds around its own mesentery. It can be seen most commonly in the sigmoid colon, less frequently in the cecum, descending colon and transverse colon. Chronic constipation, varios abdominal masses, previous abdominal surgery, abnormal mobilization of the cecum and paralytic ileus were reported as etiologic and predisposing factors.[2,3] It has been determined that 23%-53% of patients with cecal volvulus have a history of previous surgery.[1] The release of the cecum in various abdominal surgeries is thought to be an important contributor to the formation of cecal volvulus. In our first case, there was a history of abdominal surgery due to ectopic pregnancy. The immediate postoperative symptom of the patient was interfered with postoperative pain, which caused a delay in the diagnosis. In our second case, a giant lipoma was the cause of cecal volvulus. The incidence of cecal volvulus is reported to be 2.8-7.1/1 million per year.[4,5] In developed countries, cecal volvulus is more common between the ages of 50-65, but it has been reported in younger ages in far eastern countries.[1] These patients usually present with non-specific symptoms such as cramp-like abdominal pain, nausea-vomiting, abdominal distension and constipation.[6] For this reason, there is a delay in the diagnosis. In our first case, the fact that the symptoms were primarily thought of as a result of past surgery period led to a delay in the diagnosis.

Although the abdominal radiographs of these patients can help the diagnosis in just 44-46% of the cases, our present radiograph has a specific image for cecal volvulus. In our case, dilatation and obstruction of the intestinal segment, but not gas at the distal colon with plain radiography, showed significant findings for cecal volvulus diagnosis. In order to investigate the cause of obstruction due to abdominal surgery 2 days ago and to exclude the possible complications of the operation, abdominal intrevenous contrast-enhanced CT was applied to the patient. Performed abdominal CT revealed advenced dilatation of the cecum, free air and fluid in the abdominal cavity and normal width of terminal ileum. Cecal volvulus was diagnosed with present findings. In our second case, the patient was referred to our clinic because of a suspicious mass in the abdomen and cecal volvulus findings. The patient was urgently operated because of the presence of acute abdomen in the patient. In the current surgical perspective, surgical procedures in cecal volvulus are hemocolectomy, detorsion, cecopexy and cecostomy operations performed with open or laparoscopic methods.[1] We performed right hemicolectomy in our first case and right hemicolectomy with terminal ileum resection in our second case. In both of our patients, we did not encounter any problems postoperatively. Timely surgical treatment should be applied to cecal volvulus to avoid necrotic changes in the bowel and their possible complications. Abdominal radiographs can play a major role in early diagnosis. CT, however, should be added to exclude post-surgical complications, especially in patients undergoing surgery. Especially in patients undergoing gynecologic surgery, cecal volvulus should be considered in constipation and abdominal pain in the postoperative period. In addition, excessive distension seen on one side of the abdomen should be thoughtful for cecal volvulus.

Ethics

Informed Consent: Informed consent was obtained from the patients in this article.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Consept: M.G., Design: M.Ş, Data Collection or Processing: M.G., S.Ö., Literature Search: M.G., S.Ö., Writing: M.G., M.S.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

1. Consorti ET, Liu TH. Diagnosis and treatment of caecal volvulus. Postgrad Med J 2005;81:772-776.
2. Hasbahceci M, Basak F, Alimoglu O. Cecal volvulus. Indian J Surg 2012;74:476-479.
3. Montes H, Wolf J. Cecal volvulus in pregnancy. Am J Gastroenterol 1999;94:2554.
4. Gingold D, Murrell Z. Management of colonic volvulus. Clin Colon Rectal Surg 2012;25:236.
5. Ballantyne GH, Brandner MD, Beart Jr RW, Ilstrup DM. Volvulus of the colon. Incidence and mortality. Ann Surg 1985;202:83.
6. Aydın R, Gül SB, Nural MS, Özaydın İ, Güngör BB. Radyolojik görüntüleme bulguları ile tanı alan nadir bir akut batın nedeni: Tip 3 Çekal Volvulus. Anatolian Journal of Clinical Investigation 2014;8:88-91.

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CASE REPORT

Villous Adenoma with High-Grade Dysplasia of the Appendix: A Case Report

Appendiks Kaynaklı Yüksek Derecede Displazi İçeren Villöz Adenom: Olgu Sunumu

Birgül Tok[1], Duygu Demiriz Gülmez[2], Mehmet Gülmez[3]

[1]Akçaabat Haçkalı Baba State Hospital, Clinic of Pathology, Trabzon, Türkiye
[2]Op. Dr. Ergun Özdemir Görele State Hospital, Clinic of Anesthesia and Reanimation, Giresun, Turkey
[3]Op. Dr. Ergun Özdemir Görele State Hospital, Clinic of General Surgery, Giresun, Turkey

ABSTRACT

Villous adenomas of the appendix are rare and usually diagnosed incidentally after appendectomy due to acute appendicitis. Appendicular villous adenomas have potential risk for progression to invasive carcinoma, just as other adenomas located in colon and rectum. Appendectomy can be considered sufficient treatment if the tumor measures less than 2 cm, there is no mesoappendicular or nodal spread, and the resection margins are healthy. We present a patient diagnosed with villous adenoma with high-grade dysplasia detected in histopathological examination of appendectomy specimen.

Keywords: Appendix, villous adenoma, dysplasia

ÖZ

Appendiks kaynaklı villöz adenomlar oldukça nadirdir ve genellikle akut apandisit nedeniyle yapılan appendektomi sonrasında rastlantısal olarak tespit edilmektedir. Appendiks kaynaklı villöz adenomların kalın barsağın diğer villöz adenomları gibi invaziv karsinoma ilerleme riski mevcuttur. Tümör boyutu 2 cm'den küçük, mezoappendiks veya lenf nodu yayılımının olmadığı ve temiz cerrahi sınır sağlandığında tedavi için appendektomi yeterlidir. Biz de akut apandisit ön tanısıyla opere edilen ve histopatolojik inceleme sonucunda appendiks kaynaklı yüksek derecede displazi içeren villöz adenom saptanan hastayı sunmayı amaçladık.

Anahtar Kelimeler: Appendiks, villöz adenom, displazi

Introduction

Adenomas of the appendix account for approximately 0.02-0.14% of appendiceal lesions.[1] They are usually seen in individuals 60-80 years of age. Although most appendiceal adenomas are detected incidentally in appendectomy specimens, cases associated with intussusception, appendiceal perforation, and rectal hemorrhage have also been described in case reports.[2,3] Here, we present a case of villous adenoma with high-grade dysplasia detected in histopathological examination following appendectomy due to acute appendicitis.

Case Report

A 41-year-old male patient was admitted to the emergency department of our hospital with abdominal pain, nausea, and vomiting. On physical examination his blood pressure was 130/70 mmHg, temperature 37.1 °C, and heart rate 98/min. Abdominal examination revealed tenderness and rebound in the lower right quadrant. Laboratory test results showed his leukocyte count was $12.5x10^3/\mu L$ (95% neutrophils). Other biochemical markers were normal. The appendix was found to be noncompressible and dilated on ultrasonography and the findings were reported as consistent with acute appendicitis. The patient

Address for Correspondence/Yazışma Adresi: Mehmet Gülmez MD,
Op. Dr. Ergun Özdemir Görele State Hospital, Clinic of General Surgery, Giresun, Turkey
Phone: +90 532 656 66 81 **E-mail:** mehmetgulmez86@hotmail.com **ORCID ID:** orcid.org/0000-0001-8803-6160
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was admitted for surgery with a preliminary diagnosis of acute appendicitis and underwent appendectomy. The patient was discharged on the first postoperative day with no complications. On histopathological examination of the specimen, the appendectomy material was 5 cm long, 0.9 cm in diameter with capillary vessels on the surface and areas of adipose tissue. There was sporadic shedding of the lumen epithelium, and a structurally complex focus of high-grade dysplasia characterized by an area of enlarged nuclei, pleomorphic appearance, and increased mitotic activity was noted (Figure 1). This area was limited to the mucosa, with no sign of wall invasion. The muscularis mucosa was intact (Figure 2). The patient provided consent for the publication of this case report.

Discussion

Adenomas of the appendix account for approximately 0.02-0.14% of appendiceal lesions.[1] They usually manifest clinically as acute appendicitis and most are diagnosed during histopathological examination of the appendectomy specimen. In addition, several cases of intussusception, appendiceal perforation, rectal hemorrhage, or incidental detection during colonoscopy have also been reported.[2,3] Colon and appendiceal adenomas are dysplastic polypoid lesions and are divided into three groups: tubular, villous, and tubulovillous. The potential for malignant conversion is associated with tumor size (<5% for those smaller than 1 cm; >50% for those larger than 2 cm) and pathological type (5% for tubular adenoma, 20% for tubulovillous adenoma, and 40% for villous adenoma).[4,5] Villous adenomas usually develop in the rectum and sigmoid colon.[6] The incidence of primary appendiceal villous adenoma was determined as approximately 0.006% in appendectomy series.[3] Only 71 cases of villous adenoma have been reported in the literature.[7] Appendiceal villous adenomas pose a risk of progression to invasive carcinomas such as other villous adenomas of the large bowel.[2] Appendectomy is sufficient when the tumor is less than 2 cm in size, mesoappendiceal and lymph node involvement is absent, and a clean surgical margin is achieved. Right hemicolectomy and lymph node dissection are recommended in cases with tumors larger than 2 cm, mesoappendiceal invasion, lymph node involvement, positive surgical margin, and lymphatic or vascular embolism.[8] The follow-up approach for appendiceal adenomas is similar to those of the colon and rectum.[9] Due to the relationship between adenomas of the appendix and colon adenocarcinoma, colonoscopy is recommended for patients with incidentally detected appendiceal tumors.[10]

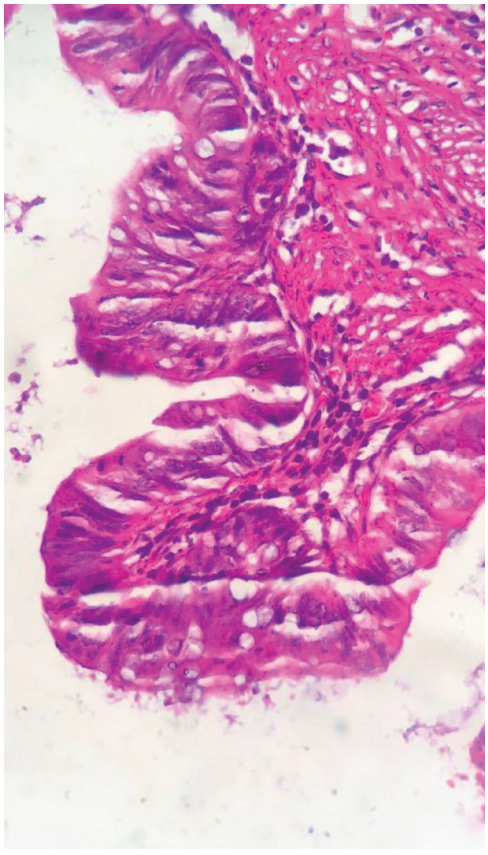

Figure 1. Villous adenoma with high-grade dysplasia

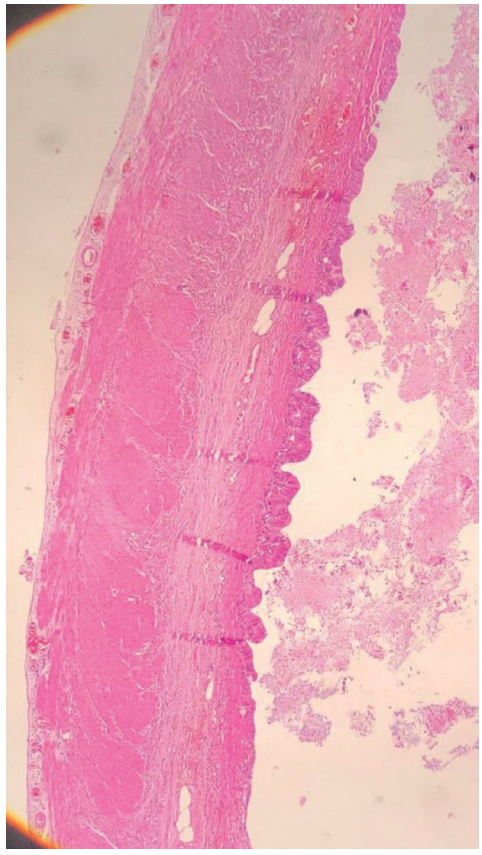

Figure 2. Villous adenoma with high-grade dysplasia

Ethics

Informed Consent: Informed consent was taken from the patient.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: B.T., D.D.G., M.G., Consept: B.T., D.D.G., Design: B.T., D.D.G., Data Collection or Proceeing: B.T., M.G., Analysis or Interpretation: M.G., Literature Search: B.T., M.G., Writing: M.G.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

1. Wolff M, Ahmed N. Epithelial neoplasms of the vermiform appendix II (exclusive of carcinoid). Cystadenomas, papillary adenomas, and adenomatous polyps of the appendix. Cancer 1976;37:2511-2522.
2. Ohno M, Nakamura T, Hori H, Tabuchi Y, Kuroda Y. Appendiceal intussusception induced by tubulovillous adenoma with carcinoma in situ: report of a case. Surg Today 2000;30:441-444.
3. Stroppa I, Lionetti R, Andrei F, Cocco A, Farinon AM, Pallone F. Large villous adenoma of the appendix: a case treated with sequential endoscopic-minimal surgical technique. Dig Liver Dis 2009;41:451-452.
4. Muto T, Bussey HJ, Morson BC. The evolution of cancer of the colon and rectum. Cancer 1975;36:2251-2270.
5. Fenoglio CM, Kaye GI, Lane N. Distribution of human colonic lymphatics in normal, hyperplastic, and adenomatous tissue. Its relationship to metastasis from small carcinomas in pedun- culated adenomas, with two case reports. Gastroenterology 1973;64:51-66.
6. Hanley PH, Hines MO, Ray JE, McPherson F, Hibbert WA. Villous tumors: experience with 163 patients. South Med J 1962;55:233-238.
7. Eakin J, Ruiz OR, Fannin E. Villous adenoma of the appendix: management recommendations. Am Surg 2013;79:49-51.
8. Fernández Blanco CM, Fraguela JA, Gulías A, Sánchez Blas M, Freijoso C. Villous adenoma of the appendix. Diagnos- tic and therapeutic approach. Rev Esp Enferm Dig 2002;94:537-543.
9. Hata K, Tanaka N, Nomura Y, Wada I, Nagawa H. Early appen- diceal adenocarcinoma. A review of the literature with special reference to optimal surgical procedures. J Gastroenterol 2002;37:210-214.
10. Chen YG, Chang HM, Chen YL, Cheng YC, Hsu CH. Perforated acute appendicitis resulting from appendiceal villous adenoma presenting with small bowel obstruction: a case report. BMC Gastroenterol 2011;11:35.

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