ISSN 2536-4898

Volume 29

Issue 4

December 2019

Turkish Journal of COLORECTAL DISEASE

Official Journal of the Turkish Society of Colon and Rectal Surgery

www.turkishjcrd.com

Turkish Journal of COLORECTAL DISEASE

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Printing at: Üniform Basım San. ve Turizm Ltd. Şti.
Matbaacılar Sanayi Sitesi 1. Cad. No: 114
34204 Bağcılar, İstanbul, Turkey
Phone: +90 (212) 429 10 00 **Certificate Number:** 42419

Printing Date: December 2019
ISSN: 2536-4898 **E-ISSN:** 2536-4901
International scientific journal published quarterly.

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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), British Library, ProQuest, Root Indexing, Idealonline, Gale/Cengage Learning, Index Copernicus, Turkish Citation Index, Hinari, GOALI, ARDI, OARE, J-GATE** and **TürkMedline.**

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/.

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

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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), British Library, ProQuest, Root Indexing, Idealonline, Gale/Cengage Learning, Index Copernicus, Türk Atıf Dizini, Hinari, GOALI, ARDI, OARE, J-GATE 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.

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/).

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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

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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.

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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

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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.

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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").

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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.

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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.

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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.

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Telif hakkı devir bildirimi

Açıklama bildirimi

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Makale Hazırlama Kuralları

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İnsan katılımcılı araştırma ve/veya hayvan deneyleri

Bilgilendirilmiş Onam

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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).

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- Alan fonksiyonları kullanmayın.

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- 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.

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

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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. Deneysel hayvan çalışmalarında "Guide for the care and use of laboratory animals http://oacu.od.nih.gov/regs/guide/guide.pdf doğrultusunda hayvan haklarını koruduklarını belirtmeli ve kurumlarından etik kurul onay raporu almalıdırlar.

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."

"Bu makalenin yazarları insan katılımlı veya hayvan kullanılan bir çalışma olmadığını bildirmektedir."

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.

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

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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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YAZIŞMA

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Turkish Journal of
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COLORECTAL DISEASE

Editorial/Editöryal

Değerli Meslektaşlarım,

Bu sayıyla birlikte olduğumuz dört yılı tamamlamış bulunmaktayız. Aslında çok uzun olmayan bu zamanda dergimiz sizin de desteğiyle eskisiyle kıyaslanamayacak kadar yol aldı.

Hatırlayınız, dört yıl önce dergiye baş editör olarak atandığımda, dergi düzenli çıkmakta çok zorlanıyor, cazibesi düşük, yayın almada, özellikle araştırma makalesi almada bir hayli gerideydi. Tabi gelen araştırma makalelerinin kalitesini de sizlere bırakıyorum. Bu durum çalışanlarda ve TKRCD'de bir anlamda yılgınlığa sebebiyet vermiş ve dergi bir kenarda son derece atıl bir pozisyonda kendi yağıyla kavrulmaya çalışan bir haldeydi. Değerlendirilmeyi bekleyen bazı yayınlar, adeta unutulmuş, bir yılı geçkin değerlendirilmeyen ve bir yerde depoda bekleyen makaleler mevcuttu. Buna muhatap bazı yazarlar ile temasa geçildiğinde, dergiye yayın yollayıp yollamadıklarını veya ne zaman yollandığını hatırlamayan yazarlar mevcuttu. Dergiye gelen yazıların ulaşıp ulaşmadığı, değerlendirilmeye alınıp alınmadığı, alındıysa hangi aşamada olduğu belli değildi. Doğal olarak bu durum derginin tarandığı indekslere de yansımıştı. Dergi ulusal veya uluslararası hiçbir indekste taranmıyordu. Hatta dergi en temel indeks olan ve Türkiye'de çıkan her dergiyi tarayan "Türk Atıf Dizini İndeksi"nde bile görünmüyordu. Hatta derginin ISSN no'su bile yoktu, yani dergi adeta korsan basılıyordu. Daha kötüsü de bundan ne yönetim kurulunun ne de derneğin haberi vardı.

İşte yukarıda özetlediğim koşullarda dergi editör yardımcılarımla birlikte devir alındı. Önce dergiye makale kabul standartları çağdaş mukabil dergilerle yarışacak şekilde yeniden düzenlendi. Elde bulunan durumları malum tüm yayınlar bir şekilde temizlendi. Derginin adının önüne "Türk" isimi eklendi ve dergi formel hale getirildi. Derginin amatör dizgi ve basımından vazgeçildi ve profesyonel hale getirildi. Derginin dizaynı değiştirildi ve daha bir "kullanıcı dostu" hale getirildi. ISSN alınarak dergi kayıt altına alındı. Akabinde tüm "Kolon ve Rektum Hastalıkları" konusunda çalışan ve dahi akabinde tüm Genel Cerrahlara mailing yapılarak dergimizin yeni yüzü ve yayın politikası hatırlatıldı. Gelen yayınları mümkün olan en kısa zamanda sonuçlandırarak ve yazarlarla düzenli olarak iletişimde kalındı. Bu şekilde güven yeniden tazelendi. Düzenli ve mümkün olan en yüksek yayınla çıkılmaya başlandı. Arkasından önce ulusal akabinde uluslararası indekslerin koşulları sağlanarak, dünya çapında kabul gören birçok prestijli indeks tarafından kabul edildik ve hâlihazırda taranır durumdayız.

Buraya kadar özetlediğim derginin kısa tarihini kalıcı olması için dokümante eden bir "editöryal" yazmak istiyorum. Eğer ilginizi çekiyorsa, bana ulaşmanızı çok isterim.

Öte yandan, elbette daha gidecek çok ama çok yolumuz var. Bunu siz " Kolorektal Cerrahiye" gönül vermiş meslektaşlarımla birlikte yapacağız. Gelecek ile ilgili kısa ve orta vade planlarımı bir sonraki sayıda sizlerle paylaşmayı düşünüyorum. Elbette, hepinizin takip ettiği gibi önümüzde 12 Ocak 2020'de yapılacak olan TKRCD'nin olağan seçimi var. Bu seçimle "TKRCD Yönetim Kurulu" yenilenecek. Hepinizi seçime katılmaya ve gelecek politikaları belirleyecek olan yeni "yönetim kurulunu" seçmeye davet ediyorum.

Saygıyla…

Prof Dr Tahsin Çolak

Baş-Editör

DOI: 10.4274/tjcd.galenos.2019.2019-10-2
Turk J Colorectal Dis 2019;29:165-170

REVIEW

Anatomical Planes in Rectal Cancer Surgery

Rektum Kanser Cerrahisinde Anatomik Planlar

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ABSTRACT

This review outlines important anatomical landmarks not only for rectal cancer surgery but also for pelvic exentration.

Keywords: Anorectal anatomy, pelvic anatomy, surgical anatomy of rectum

ÖZ

Pelvis anatomisini derleme halinde özetleyen bu makale rektum kanser cerrahisi ve pelvik ezantrasyon için önemli topografik noktaları gözden geçirmektedir.

Anahtar Kelimeler: Anorektal anatomi, pelvik anatomi, rektumun cerrahi anatomisi

Introduction

Pelvic Anatomy

It is essential to know the pelvic anatomy because of the intestinal and urogenital complications that may develop after the surgical procedures applied to the pelvic region. The pelvis, encircled by bone tissue, is surrounded by the main vessels, ureters, and autonomic nerves. Success in the surgical treatment of pelvic organs is only possible with a good knowledge of the embryological development of the pelvic structures. Rectal cancer is a common disease both in our country and in the world. However, technical problems in surgical treatment are important because of postoperative complications and recurrence problems. Modern imaging studies have shown that the spread of the disease is related to the embryological development of the rectum. For this reason, dissection for curative surgery in rectal cancer can only be achieved with a good knowledge of the embryological and anatomical planes.[1]

Surgical Anatomy of the Rectum

The rectum extends from the promontory to the anal canal and is approximately 12-15 cm long. It fills the sacral concavity and ends with an anal canal 2-3 cm anteroinferior to the tip of the coccyx. The rectum contains three folds in the coronal plane laterally. The upper and lower are convex to the right, and the middle is convex to the left. The middle fold is aligned with the peritoneal reflection. Intraluminal projections of the lower boundaries of these folds are known as Houston's valves. Unlike the sigmoid colon, taenia, epiploic appendices, and haustra are absent in the rectum. The upper 1/3 part is covered with peritoneum anteriorly and laterally, and the middle 1/3 part is covered anteriorly. The lower 1/3 part is entirely extraperitoneal. The rectum is considered to be roughly divided into three sections as upper, middle, and lower rectum. Although these are not anatomically separate parts, the surgeon must distinguish these parts when planning the surgical treatment of rectal cancer. When viewed with a rigid rectoscope, from the anal verge, these three parts are defined as follows: the lower

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Received/Geliş Tarihi: 16.10.2019 **Accepted/Kabul Tarihi:** 22.10.2019

rectum, 0 to 7 cm; the middle rectum, 7 to 12 cm; and the upper rectum, beyond 12 cm. However, the length of the rectum may vary individually and may exceed 15 cm. The rectum is mostly extraperitoneal. However, the upper rectum is covered with a thin layer of visceral peritoneum at the anterior and lateral sides. This peritoneal layer extends downward and anteriorly, creating a peritoneal reflection in the anterior of the rectum. Peritoneal reflection corresponds to the level of middle Houston's valve. When dealing with rectal cancer surgery, the intestine and its mesentery, and perimesenteric planes should be removed as a block for surgical principles. In this context, the anatomy of the pelvic structures was divided into six regions for surgeons in order to understand the anatomy.[1,2,3,4,5] These six regions include:

Above the Pelvic Inlet

There is a thin facial sheath covering the inferior mesenteric artery, vein, and lymphatics. This sheath is centrally located in the anterior of the preaortic nerve plexuses. Laterally, it is close to the ureter and gonadal vessels. In complex pelvic surgery, the ureter may need to be fully mobilized up to the bladder (Figures 1, 2).

Below Aortic Bifurcation

The mesorectum, distal to the upper 1/3 rectum, is closely associated with hypogastric nerve bifurcation and presacral adipose tissue (Figures 3, 4). As the rectum is covered with peritoneum at the anterior, it is adjacent to the small bowel loops, bladder, and uterus.

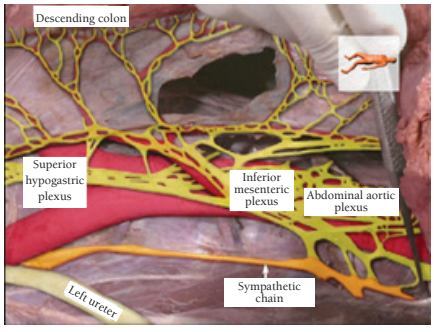

Figure 1. Above the pelvic inlet

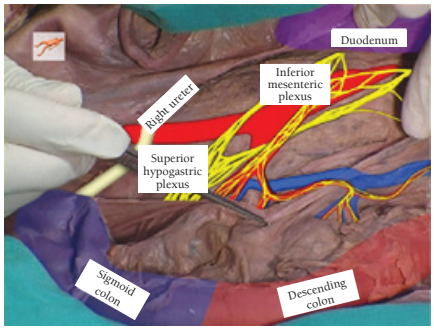

Figure 2. Above the pelvic inlet

Pelvic Side Wall

In this area, internal iliac vessels, piriformis muscle, fascia, and autonomic nerves covering these structures are found. The distance between the visceral leaf of the endopelvic fascia surrounding the mesorectum (fascia propria recti) and the autonomic nerves is 2-3 mm. More distally, the splanchnic nerve (erigent nerves), often originating from the S3 root of the sacral plexus, joins the hypogastric nerve and together form the inferior hypogastric plexus (Figure 5). The inferior hypogastric plexus is mostly adjacent to the small vessels. If these veins are thick enough, they may take the name of middle rectal veins. However, anatomical dissection studies of Sato showed that the incidence of the middle rectal artery is 22%, and according to the same studies, the middle rectal artery is often unilateral. The width of this artery is 2 mm

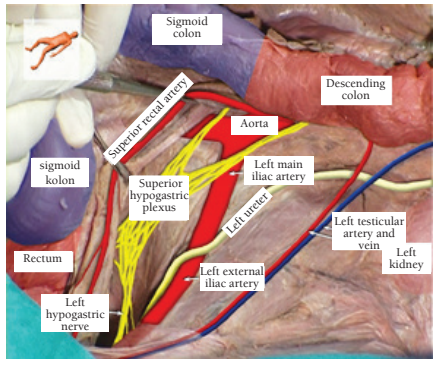

Figure 3. Below aortic bifurcation

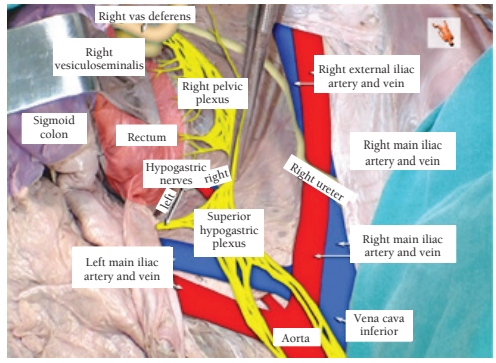

Figure 4. Below aortic bifurcation

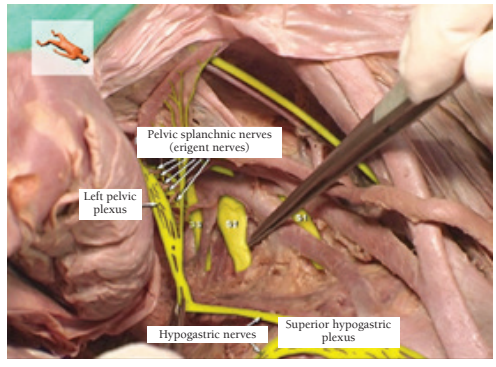

Figure 5. Important nerve structures of the pelvic sidewall

and can be cut with scissors or cautery without causing significant bleeding when dissecting. It rarely needs ligation. Therefore, as in the past, cutting the lateral ligaments of the rectum with forceps is no longer performed because it causes autonomic nerve damage rather than arterial control. Therefore, progression by visual dissection in the avascular plane is essential for the protection of the autonomic nerves.

Anterior Dissection Area

The middle rectum is surrounded by the Denonvilliers' fascia in the anterior aspect, and this fascia is located behind the seminal vesicles in men and behind the vagina in women. In men, this fascia progresses very closely to the posterior aspect of the prostate. Therefore, this region may cause severe problems in lower rectal dissections in men.

Posterior Dissection Area

Distally, the mesorectum is divided into two fatty lobes, and a pit known as anococcygeal raphe remains in the middle (Figure 6). This structure is likened to a "bipolar lipoma" (Figure 8). While both lobes extend a little lower, they show proximity to the pelvic autonomic nerves on the lateral wall due to the narrowing pelvis. Due to this convergence, autonomic nerve injury may occur during dissection.

Intersphincteric Dissection Area

While the rectum proceeds to the intersphincteric plane at the level of the pelvic floor, the rectum wall continues with the smooth muscles of the internal sphincter. At this level, the mesorectum becomes now very thin, and thus the avascular dissection plane (Holy plane) ends in the intersphincteric plane between the internal and external sphincters. This plane is important in coloanal anastomoses.

Vessels

Inferior Mesenteric Artery

The inferior mesenteric artery (IMA) emerges from the anterior aspect of the aorta and moves down to the left at the level of lumbar 2-3, 3-5 cm above the aortic bifurcation. IMA gives rise to the left colic artery and sigmoidal artery branches in the abdomen, which may vary between 2-6 branches. The left colic artery is the first branch of the IMA. The IMA is called the superior hemorrhoidal artery or superior rectal artery after crossing the left iliac artery. The superior hemorrhoidal artery proceeds down to S3 in the sigmoid mesocolon and then down the posterior side of the rectum. In 80% of the cases, it is divided into two terminal branches, right and left. These branches advance down the rectum submucosa and feed the lower rectum and anal canal. In addition to the superior hemorrhoidal artery, middle, inferior rectal (hemorrhoidal) and median sacral arteries are involved in arterial feeding of the rectum and anal canal. While the superior rectal artery is the continuation of the IMA, the middle rectal artery is the branch of the internal iliac artery. However, it is assumed that the middle rectal artery is not present in everybody (22% of the middle rectal arteries could be detected in the autopsy study) and is rarely seen, especially in women. The inferior rectal artery emerges from the internal pudendal artery and provides blood to the area from the anal canal to the pectinate line. The median sacral artery emerges just above the aortic bifurcation, extends downward in front of the lower lumbar vertebrae, sacrum, and coccyx, giving many thin branches to the posterior wall of the rectum (Figures 7, 8, 9). Although considered as a vascular dissection plane, these thin branches can be seen in the mesorectal dissection plane.[6,7,8,9,10,11]

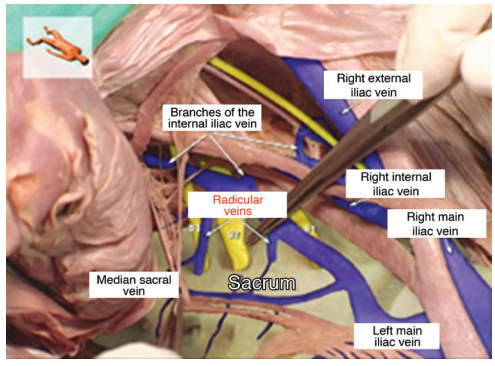

Figure 6. Posterior dissection wall

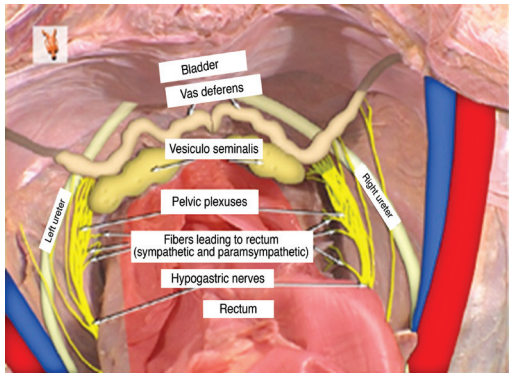

Figure 7. Important arteries and veins of the pelvic and anorectal regions

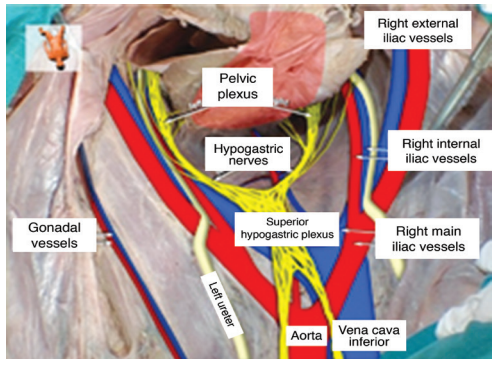

Figure 8. Blood supply of the pelvic and anorectal regions

Venous Drainage

The superior rectal vein draining the rectum is poured into the inferior mesenteric vein (IMV). IMV connects with splenic vein and superior mesenteric vein to form the portal vein. Middle and inferior rectal veins are poured into the internal iliac vein and therefore drained into the caval system (Figure 10). Therefore, cancers located in the lower 2/3 of the rectum have the potential to direct lung metastasis through iliac veins without liver metastasis. In this context, unlike colon cancer, lung metastasis rate is higher in rectal cancers.[6,7,8,9,10,11]

Lymphatic Drainage

The lymphatics of the rectum and anal canal form two extramural plexuses. One is located above, and one is located below the pectinate (dentate) line. The lymphatic drainage at the superior of the pectinate line proceeds backward and along the superior rectal artery, following the artery tracing to the root of the aorta. Also, drainage into the lateral pelvic lymph nodes is observed. In the inferior part of the pectinate (dentate) line, the spread is along with the inguinal lymph nodes.[12,13]

Nerves

Sympathetic nerves of the left colon and rectum emerge from L1-3, and the preganglionic fibers synapse in the preaortic plexus via the lumbar sympathetic nerves.

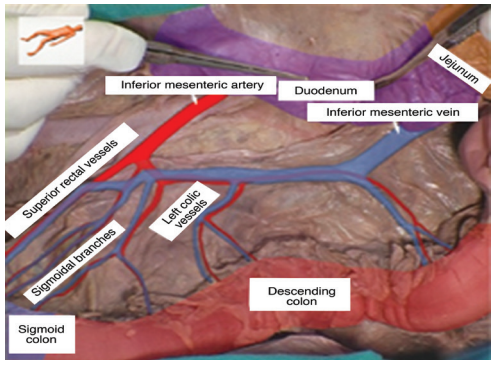

Figure 9. Blood supply of the pelvic and anorectal regions

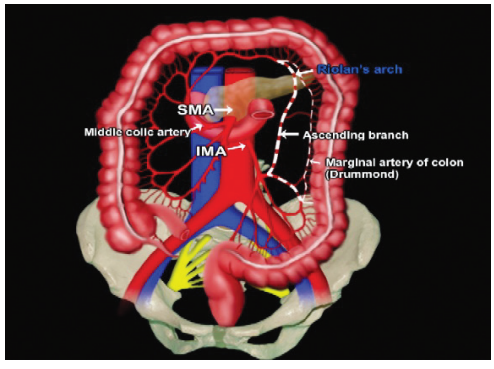

Figure 10. Veins of the pelvic and anorectal regions

Postganglionic fibers innervate the IMA feeding site and the upper part of the rectum. Presacral nerves formed by the combination of aortic plexus and lumbar splanchnic nerves innervate the lower part of the rectum. Presacral nerves form hypogastric plexus just below the sacral promontory. Anal hypogastric nerves on both sides of the rectum carry sympathetic innervation from the hypogastric plexus to the pelvic plexus. The pelvic plexus is located in the lateral part of the pelvis near the lateral ligaments at the level of the lower 1/3 rectum. The parasympathetic innervation of the rectum comes from the S2-4 splanchnic nerves. These fibers originating from the sacral foramen are called erigent nerves. These fibers advance laterally and upward to join the sympathetic hypogastric nerves in the pelvic plexus. Postganglionic parasympathetic and sympathetic fibers originating from the pelvic plexus reach the left colon and upper rectum via the inferior mesenteric plexus. They reach the upper rectal and anal canal directly. Periprostatic plexus, which is the lower part of the pelvic plexus, is located in the Denonvilliers' fascia and innervates the prostate, seminal vesicle, corpus cavernosum, vas deferens, urethra, ejaculatory canals, bulbourethral glands (Figure 11). Cutting of both superior hypogastric plexus or hypogastric nerve causes sympathetic denervation. If the erigent nerves are intact, bladder sphincter dysfunction results in retrograde ejaculation and erectile dysfunction. Dissection near the seminal vesicle and prostate margin may cause damage to the periprostatic plexus, resulting in sympathetic and parasympathetic damage. As a result, erectile dysfunction occurs. One of the main objectives of rectal surgery is to preserve organ functions as much as possible. Therefore, the localization of autonomic nerves according to the surgical dissection plane should be well known. While the left colon is released from the lateral peritoneum, the mesorectal dissection area is entered thorough passing first the gonadal vessels, then the ureter, and then the hypogastric nerve. One should perform sharp dissection by seeing in the mesorectal dissection area. During this dissection, the right and left hypogastric nerves are seen and preserved. In this dissection,

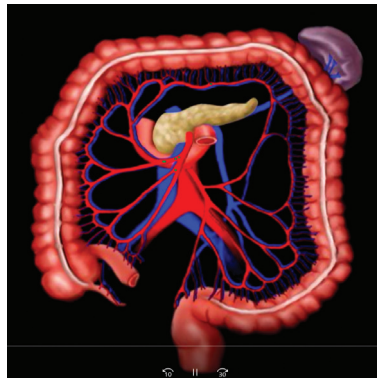

Figure 11. Pelvic plexus and structures innervated by pelvic plexus

the hypogastric nerves are located in the avascular loose connective tissue between the presacral fascia and the fascia propria recti surrounding the mesorectum, and on the pelvic sidewalls, they are parallel to the ureter. With a tampon placed here, the anatomic structures and nerves can be protected. By retracting the descending colon laterally to the left, a window is opened on the right side of the sigmoid mesocolon, and the previously detected hypogastric nerves can be preserved. Autonomic nerve fibers, which continue on the aorta, form superior hypogastric plexus just above the promontory below the aortic bifurcation. The superior hypogastric plexus is divided into two at the pelvis inlet (wishbone appearance). The right and left hypogastric nerves then form. While entering the mesorectal dissection plane in the pelvic inlet, injuries to the right and left hypogastric nerves may occur. When the peritoneum is opened, if the nerves are not followed from above, the possibility of injury increases. The hypogastric nerves lie parallel to the ureter and iliac artery in the caudal and lateral directions within the mesorectal plane lateral to the rectum. There are autonomic nerve branches from the rectum during this course. While the hypogastric nerves proceed caudally and laterally in the lateral wall of the pelvis, they combine with parasympathetic nerve fibers (erigent nerves) originating from the sacral 2-3-4th roots and the fibers from the pelvic sympathetic trunk and form the inferior hypogastric plexus. The thickest of the parasympathetic fibers from the sacral roots is the one originating from S3. Erigent nerves emerge from the sacral foramen and travel beneath the endopelvic fascia. Very rarely, during the mesorectal dissection, Waldeyer's fascia may be opened (retrorectal area is entered), and erigent nerves can be visualized.[14,15] In their anatomical studies, Walsh and Danker showed that the vessel nerve package, including pelvic autonomic nerve fibers, was observed at 10 and 2 o'clock at the edges of the seminal vesicles. In women, this vessel nerve package is located in the cardinal ligament in the front of the rectogenital fascia.[16] In their autopsy and surgical specimen studies, Yamakoski et al. showed that the distance between the rectal muscle layer and pelvic autonomic nerves was approximately 10 mm. They emphasized that the preservation of autonomic nerves may reduce the reliability of lateral resection margins in a cancer surgery performed by preserving the pelvic autonomic nerves. Autonomic nerve damage during rectal cancer surgery can happen at four critical sites: The first of these develops when the root of the IMA is ligated close to the aorta. Dissection and ligation very close to the aorta may cause damage to the aortic plexus. Second, the nerve may be damaged when entering the mesorectal dissection plane or dissection from the posterior. Hypogastric nerve damage may occur if the avascular plane is left during dissection or if the dissection is performed bluntly by hand. Due to damage of the sympathetic fibers in injuries located cranial to the joining of the parasympathetic fibers in the hypogastric plexus, ejaculation disorders are observed in men, whereas women do not have significant sexual dysfunction. The third most common site of injury to the autonomic nerves is the injury of the inferior hypogastric plexus formed by the junction of the sacral parasympathetic fibers with the hypogastric nerve. This type of injury can occur during lateral mesorectal dissection. In the past, this type of damage was seen frequently because of the ligation or clamping performed to control the lateral ligaments. Nowadays, it is assumed that the rectum does not have lateral ligaments. It has been shown that it consists only of branches entering the rectal artery and middle rectal artery and autonomic nerves. Therefore, lateral dissection should be performed visually, and clamping should not be used. Also, excessive rectal traction during mesorectal dissection may cause such nerve damage. Another injury site of the nerve occurs during anterior dissection of the rectum. Invisible cavernous nerve damage may occur in the dissection between the seminal vesicles and prostate with Denonvilliers' fascia. To prevent cavernous nerve damage, the Denonvilliers' fascia should be dissected proximally before reaching the base of the prostate. Pelvic autonomic nerves, including parasympathetic fibers, are affected when an injury occurs at the third and fourth possible damage sites of the nerve described above. As a result of this, erectile dysfunctions occur in men, and sexual dysfunctions such as decreased vaginal secretion, dyspareunia, lack of orgasm develop in women, and dysfunction of the bladder, including urinary retention or incontinence, may develop in both sexes (Figure 12). Studies have shown that the location of the tumor in the rectum is an essential factor for autonomic nerve injury. For example, nerve damage is higher in distal rectum tumors than in upper rectal tumors, whereas nerve damage may develop more in anterior tumors than posterior tumors. In case of any invasion, oncologically, the autonomic nerves on the invaded side should be resected without caring for an injury.[17,18,19]

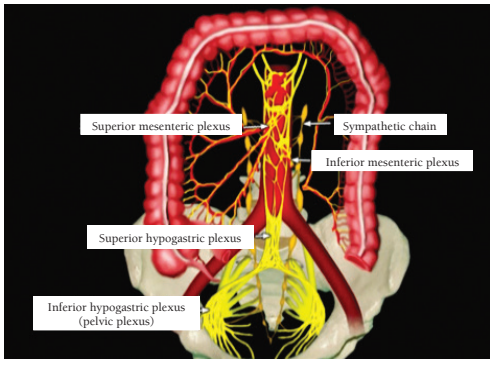

Figure 12. Innervation of the pelvic and anorectal regions

Ethic

Peer-review: Internal peer-reviewed.

Authorship Contributions

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

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

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

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DOI: 10.4274/tjcd.galenos.2019.76768
Turk J Colorectal Dis 2019;29:171-176

RESEARCH ARTICLE

Surgical and Early Oncological Outcomes of Laparoscopic Versus Open Rectal Surgery: A Comparative Study

Laparoskopik ve Açık Rektum Cerrahisinin Cerrahi ve Erken Dönem Onkolojik Sonuçları: Karşılaştırmalı Çalışma

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ABSTRACT

Aim: In this study, we aimed to evaluate the short-term clinicopathological outcomes of laparoscopic versus open surgery in patients undergoing rectal cancer surgery.
Method: Between May 2015 and July 2017, 46 patients who underwent curative surgery for rectal cancer were retrospectively analyzed. The patients receiving neoadjuvant therapy were administered long-term fractional chemoradiotherapy. All patients were divided into two groups as open surgery (Group 1, n=21) and laparoscopic surgery (Group 2, n=25). Data including demographic characteristics, type of surgery, postoperative complications, duration of surgery, length of hospital stay, the amount of intraoperative bleeding, and short-term oncological outcomes were recorded.
Results: Of the patients, 34 were males, and 14 were females. The median age was 55 (range= 28 to 82) years. The median follow-up was 20 months in Group 1 and 19 months in Group 2. The tumor was located in the upper rectum in 19 patients, in the mid-rectum in 14 patients, and the lower rectum in 13 patients. The median length of hospital stay was six days, and the median duration of surgery was 202.5 min. The recurrence rate was 13%, and the mortality rate was 6.5%. The rate of conversion from laparoscopic to open surgery was 21.8%. The complication rate was 54.3%. Anastomotic leak was detected in two patients. The amount of intraoperative bleeding was statistically significantly higher, and the length of the proximal surgical margin was statistically significantly longer in the open surgery group.
Conclusion: Our study results suggest lower hemorrhage with laparoscopic surgery and similar oncological outcomes with both laparoscopic and open rectal surgery.
Keywords: Rectal cancer, open surgery, laparoscopy, oncological outcomes

ÖZ

Amaç: Bu çalışmada rektal kanser cerrahisi yapılan hastalarda laparoskopi ve açık cerrahinin kısa dönem klinikopatolojik sonuçları değerlendirildi.
Yöntem: Mayıs 2015-Temmuz 2017 tarihleri arasında rektal kanser nedeniyle küratif cerrahi yapılan 46 hasta retrospektif olarak incelendi. Neoadjuvan tedavi verilen hastalara uzun dönem fraksiyonel kemoradyoterapi uygulandı. Hastalar açık cerrahi (Grup 1, n=21) ve laparoskopik cerrahi (Grup 2, n=25) olmak üzere iki gruba ayrıldı. Demografik özellikler, cerrahi türü, postoperatif komplikasyonlar, cerrahi süresi, hastanede kalış süresi, intraoperatif kanama miktarı ve kısa dönem onkolojik sonuçlar kaydedildi.
Bulgular: Hastaların 34'ü erkek, 14'ü kadın idi. Medyan yaş 55 (dağılım= 28-82) yıl idi. Medyan takip süresi Grup 1'de 20 ay, Grup 2'de 19 ay idi. Hastaların 19'unda tümör üst rektum, 14'ünde orta rektum ve 13'ünde alt rektum yerleşimliydi. Medyan hastanede kalış süresi altı gün ve medyan cerrahi süresi 202,5 dk idi. Rekürrens oranı %21,8 ve mortalite oranı %6,5 idi. Laparoskopik cerrahiden açık cerrahiye geçiş oranı %21,8 idi. Komplikasyon oranı %54,3 idi. İki hastada anastomoz kaçağı tespit edildi. Açık cerrahi grubunda intraoperatif kanama miktarı istatistiksel olarak anlamlı düzeyde daha fazla ve proksimal cerrahi sınır uzunluğu istatistiksel olarak anlamlı düzeyde daha uzundu.
Sonuç: Çalışma sonuçlarımız laparoskopik cerrahide daha az kanama ve laparoskopik ve açık rektum cerrahisi arasında benzer onkolojik sonuçlar elde edildiğini göstermektedir.
Anahtar Kelimeler: Rektum kanseri, açık cerrahi, laparoskopi, onkolojik sonuçlar

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Received/Geliş Tarihi: 18.02.2019 **Accepted/Kabul Tarihi:** 26.04.2019

Introduction

Surgical oncology has undergone a significant evolution over the last two decades. The fast-growing technological advancements have influenced the practice of new surgical techniques. As in many surgical fields, minimally invasive surgery, which has been widely used in cancer surgery, has become increasingly adopted by many surgeons in the practice of colorectal surgery owing to less tissue trauma and favorable outcomes. There is a growing number of clinical studies, systematic reviews, and meta-analysis comparing laparoscopic versus open rectal cancer surgery in the literature and oncological outcomes of both techniques are still debated.[1,2,3,4] In rectal cancer surgery, total mesorectal excision with specific rules has been adopted irrespective of the surgical technique applied.[5] In the present study, we aimed to evaluate the short-term clinicopathological outcomes of laparoscopic versus open surgery in patients undergoing rectal cancer surgery.

Materials and Methods

Between May 2015 and July 2017, all patients who underwent curative surgery for rectal cancer at our clinic were retrospectively analyzed. A single surgical team operated all patients. The patients receiving neoadjuvant therapy were administered long-term fractional chemoradiotherapy (1.8x28=50.4 Gy + 5-FU for 28 days). Chemoradiotherapy was applied to the patients with T3, T4, and/or N+ rectal cancer according to the tumor, node, metastasis staging system.[6] All patients were operated six to eight weeks after neoadjuvant therapy. Patients with missing data were excluded from the study. No written consent is required in such retrospective studies. The study protocol was approved by the Çukurova University Non-invasive Clinical Research Ethics Committee (01.02.2019/85). The study was conducted following the principles of the Declaration of Helsinki. Tumors were classified according to their distance to the anal verge: <8 cm lower rectum, 8-12 cm mid-rectum, and 12-15 cm upper rectum.[7] The patients were divided into two groups as open surgery (Group 1, n=21) and laparoscopic surgery (Group 2, n=25). Data including demographic characteristics such as age and sex, type of surgery, postoperative complications according to the Clavien-Dindo classification,[8] duration of surgery, length of hospital stay, the amount of intraoperative bleeding, and short-term oncological outcomes (location of the tumor, neoadjuvant therapy, radial surgical margin, proximal surgical margin, distal surgical margin, tumor stage, specimen size, the number of lymph nodes removed, recurrence, and survival) were recorded. The patients who were switched from laparoscopic to open surgery were included in the open surgery group (Group 1). In the surgical technique, high ligation of the inferior mesenteric artery, close ligation of the inferior mesenteric vein to treitz, and complete splenic flexure mobilization were performed similarly in all patients (both in laparoscopic and open technique). Total mesenteric artery ligation was performed in partial mesorectal excision of upper rectal tumors, in total mesorectal excision of mid-rectal and distal rectal tumors and in all operations (laparoscopic and open surgery) following oncological surgical principles.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) for Windows version 22 statistical software (IBM Corp., Armonk, NY, USA). Continuous variables were expressed in median (minimum-maximum) values, and categorical variables were expressed in number and frequency. The chi-square test was used to analyze qualitative data. The Mann-Whitney U test was used to analyze quantitative data. A p value of <0.05 was considered statistically significant.

Results

A total of 46 patients were included in the study. Of these patients, 32 were males, and 14 were females. The median age was 55 (range=28 to 82) years. A total of 21 patients (45.7%) underwent open surgery (Group 1), while 25 patients (54.3%) underwent laparoscopic surgery (Group 2). The median follow-up was 19 (range=14 to 34) months in Group 1 and 20 (range=13 to 37) months in Group 2. The tumor was located in the upper rectum in 19 patients, in the mid-rectum in 14 patients, and in the lower rectum in 13 patients. The median length of hospital stay was six (range=3 to 17) days, and the median duration of surgery was 202.5 (range=90 to 375) min. The recurrence rate was 13% (6/46), and the mortality rate was 6.5% (3/46). Baseline demographic and clinicopathological characteristics of patients are shown in Table 1. Anterior resection was performed in 12 patients (n=3 laparoscopic and n=9 open surgery), abdominoperineal resection in seven patients (n=3 laparoscopic and n=4 open surgery), intersphincteric resection with pull-through coloanal anastomosis in three patients (n=2 laparoscopic and n=1 open surgery), and low anterior resection in 24 patients (n=17 laparoscopic and n=7 open surgery). The rate of conversion from laparoscopic to open surgery was 21.8% (10/46). The rate of complication was 54.3% (25/46). Anastomotic leak was detected in two patients and was treated with interventional radiological techniques and conservative methods without the need for surgery. Postoperative complications are summarized in Table 2. First flatus were seen between days postoperatively

(po) 2-5 days (median=3), oral intakes were started po 1-4 days (median=2) days, urinary catheters were removed between po 2-10 days (median=3), drainage catheters were removed between po 2-7 days (median=3), mobilization was started between po 0-2. days (median=1), and pain relief intake was left to the patient's request after performed routine at po 0-1. days. There was no significant difference between laparoscopic and open surgery groups in terms of first flatus, oral intake, urine catheter removal, drainage catheter removal, need of painkiller (p>0.05). The number of patients receiving neoadjuvant chemoradiotherapy was statistically significantly higher in Group 2 than Group 1 (p=0.009). The amount of intraoperative bleeding was statistically significantly higher in Group 1 than Group 2 (p=0.000). The length of the proximal surgical margin was statistically significantly longer in Group 1 than Group 2 (p=0.048). However, there was no statistically significant difference in the length of distal and radial surgical margins between Group 1 and Group 2 (p=0.666 and p=0.277, respectively). Also, there was no statistically significant difference in the duration of surgery, length of hospital stay, the need for diverting ileostomy, number of lymph nodes dissected, specimen size, and recurrence rate between Group 1 and Group 2 (p>0.05 for both). The clinicopathological outcomes of both patient groups are presented in Table 3.

Table 1. Demographic and clinicopathological characteristics of patients (n=46)

Variable	Values n (%), median (range)
Age	55 (28-82)
Gender	
Male	32 (69.6)
Female	14 (30.4)
Stage	
1	10 (21.7)
2	17 (37)
3	19 (41.3)
Tumor location	
Upper rectum	19 (41.3)
Middle rectum	14 (30.4)
Lower rectum	13 (28.3)
Neoadjuvant chemoradiotherapy	
Yes	25 (54.3)
No	21 (45.7)
Operative time (min)	202.5 (90-375)
Length of hospital stay (day)	6 (3-17)
Amount of bleeding (mL)	440 (80-520)
Complication	
No	21 (45.7)
Grade 1-2	11 (23.9)
Grade 3-5	14 (30.4)
Surgical margins	
Distal (cm)	9.5 (0.5-10)
Proximal (cm)	15 (4-44)
Radial (mm)	13.5 (1-100)
Specimen size (cm)	23 (18-64)
Number of lymph nodes	11 (5-48)
Recurrence rate	6 (13)
Status	
Death	3 (6.5)
Alive	43 (93.5)
Median follow-up (month)	20 (13-37)

Discussion

Conventional treatment of rectal cancer includes open surgery and total mesorectal resection.[5] Currently, laparoscopic surgical techniques have been increasingly used in colorectal surgery, and it is a safe and feasible technique in colon surgery.[4,9,10] Although favorable non-oncological outcomes of laparoscopy have been reported in rectal surgery, there is still a controversy among surgeons since some have advocated that laparoscopy yields poor oncological outcomes.[1,2] The open versus laparoscopic surgery for mid-rectal or low-rectal cancer after neoadjuvant chemoradiotherapy trial[11] and the Colorectal cancer Laparoscopic or Open Resection II trial[12] demonstrated oncological equivalence with both techniques. However, the Australasian laparoscopic cancer of the rectum trial[1] and the American College of Surgeons Oncology Group-Z6051 trial[2] failed to show non-inferiority of surgical outcomes

Table 2. Postoperative complications (n=46)

Complication type	n (%)
Wound infection	6 (13)
Eventration	2 (0.04)
Intraabdominal abscess	1 (0.02)
Enteric fistula	1 (0.02)
Ileus	4 (0.08)
Anastomosis leak	2 (0.04)
Ureter injury	3 (0.06)
Urogenital problems	5 (0.1)
Bladder dysfunction	1 (0.02)
Erectile dysfunction	2 (0.04)
Ejaculation problems	2 (0.04)
Anastomotic stenosis	4 (0.08)

for laparoscopic vs. open resection. In a meta-analysis including 2.319 patients, Creavin et al.[13] reported that the mesorectal quality was slightly better with open surgery than laparoscopy; however, minor defects did not affect oncological outcomes. In a study, Yang et al.[14] concluded that laparoscopy was more likely effective in achieving complete total mesorectal excision. In another meta-analysis, including 3.258 patients with rectal cancer, Vennix et al.[15] reported similar long-term survival rates between laparoscopic and open rectal surgery. In our study, despite the lack of long-term outcomes, we found oncopathological equivalence with both surgical methods in the short-term; however, the length of proximal surgical margin was longer in open surgery. Longer proximal margin maybe because of the comfort of the surgeon in open surgeries regarding the decision of point of proximal margin. Also, none of the patients had positive surgical margins in any of the groups.

Previous studies have well-demonstrated that laparoscopic surgery is associated with favorable short-term non-oncological outcomes including shorter hospital stay, less pain, less postoperative complications, less scarring and less scar-related problems, a lower need for blood transfusion, a lower amount of bleeding and a lower rate of postoperative ileus, despite prolonged duration of operation, and that open surgery is associated with higher morbidity and mortality.[3,10,16] In the present study, consistent with the literature, we observed a statistically significantly lower amount of bleeding during laparoscopy compared to open surgery. However, we found no significant difference in the duration of operation, length of hospital stays, and complication rates between the two techniques. This discrepancy can be attributed to the small sample size and to the fact that more eligible cases for laparoscopic surgery were selected in our study. Furthermore, the number of patients receiving neoadjuvant chemoradiotherapy was statistically significantly higher in the laparoscopy group than open surgery in our study, and this can be explained by the non-homogeneous distribution of the patients due to the retrospective nature of the study and the small sample size. Also, the rate of conversion from laparoscopic to open surgery was 21.8%, which is consistent with the literature data [14.5% (range=0 to 35%)].[15] In their study, Yang et al.[14] reported a significantly shorter length of hospital stay in the laparoscopy group than open surgery

Table 3. Clinicopathological outcomes of open and laparoscopic rectal surgery

Variable	Group 1 (n=21) open surgery	Group 2 (n=25) laparoscopic surgery	p value
Age	61 (38-77)	48 (28-82)	0.014
Operative time (min)	205 (90-375)	200 (150-300)	0.446
Length of hospital stay (day)	7 (4-17)	5 (3-16)	0.074
Number of lymph nodes	12 (5-48)	11 (5-25)	0.264
Distal margin (cm)	4 (0.5-9)	3.5 (0.8-10)	0.666
Proximal margin (cm)	18 (4-44)	13 (6-25)	0.048
Radial margin (mm)	10 (3-30)	17.5 (1-100)	0.277
Amount of bleeding (mL)	310 (240-520)	150 (80-200)	0.000
Specimen size (cm)	24 (20-64)	22 (18-36)	0.057
Neoadjuvant chemoradiotherapy			
Yes	7/46 (15.2%)	18/46 (39.1%)	0.009
No	14/46 (30.4%)	7/46 (15.2%)	
Recurrence			
Yes	3/46 (6.5%)	3/46 (6.5%)	0.819
No	18/46 (39.1%)	22/46 (47.8%)	
Complication			0.302
1-2*	4/25 (16%)	7/25 (28%)	
3-4-5*	8/25 (32%)	6/25 (24%)	
Median follow-up (month)	19 (14-34)	20 (13-37)	0.930

*According to the Clavien-Dindo classification (8th reference)

(5.2±1.8 days vs. 7.0±2.1 days, respectively). In our study, we also found a shorter median length of hospital stay in the laparoscopy group (5 days vs. seven days, respectively), although it did not reach statistical significance. Also, the rate of wound infections was 13% in our study, consistent with the literature.[17] The rate of ureter injury was 3% in our study, which is also consistent with previous studies reporting a rate of 1 to 8%.[18] On the other hand, we found sexual dysfunction in 4% of our patients; however, this rate varies from 19 to 69% in the literature.[16] This discrepancy in the results can be attributed to the small sample size in our study and its retrospective design since we were unable to evaluate the complaints of the patients in detail. Also, the rate of anastomotic leak was significantly lower in our study (<1%) than reported in the literature.[19,20] This can be explained by the fact that there might be anastomotic leaks that were clinically undiagnosed in our series, as we performed diverting ileostomy in the majority of the patients who underwent lower anterior resection. In the present study, the rate of other postoperative complications is consistent with previous studies. The retrospective design with a small sample size is the main limitation of this study. Also, the non-homogeneous distribution of the patients can be regarded as another limitation. Lastly, the other limitation is that the majority of the patients have a diagnosis of upper rectal cancer in the study. Therefore, we recommend further large-scale prospective studies to establish a definite conclusion.

Conclusion

In conclusion, our study results showed similar oncological outcomes with both laparoscopic and open rectal surgery. However, the amount of intraoperative bleeding was higher, and the length of the proximal surgical margin was longer in the open rectal surgery group. Nonetheless, there was no significant difference in other clinical and short-term oncopathological outcomes between laparoscopic and open rectal surgery. Based on these findings, we suggest that both surgical techniques have oncological equivalence. However, further prospective, randomized clinical studies in a large-scale, homogeneous patient group are needed.

Ethics

Ethics Committee Approval: The study protocol was approved by the Çukurova University Non-invasive Clinical Research Ethics Committee (no: 01.02.2019/85).

Informed Consent: Retrospective study.

Authorship Contributions

Surgical and Medical Practices: N.İ., A.D., E.Ç., C.K.P., Concept: N.İ., A.D., Design: N.İ., A.D., Data Collection or Processing: N.İ., A.D., E.Ç., C.K.P., Analysis or Interpretation: N.İ., E.Ç Literature Search: N.İ., Writing: N.İ., A.D., E.Ç., C.K.P.

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

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

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DOI: 10.4274/tjcd.galenos.2019.2019-6-1
Turk J Colorectal Dis 2019;29:177-182

RESEARCH ARTICLE

The Use of Negative-pressure Wound Therapy with Instillation Before and After Grafting in the Surgical Management of Hidradenitis Suppurativa

Hidradenitis Suppurativanın Cerrahi Tedavisinde Greftleme Öncesi ve Greftleme Sonrası Yıkamalı Negatif Basınçlı Yara Kapama Kullanımı

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ABSTRACT

Aim: Hidradenitis suppurativa (HS) is a chronic infection of apocrine sweat glands. HS related morbidities such as chronic infection, and carcinoma development reduce the life quality of the patients. Non-surgical management cannot provide complete recovery. The aim of the surgical treatment of HS is full control of the illness and prevention of recurrence.

Method: From January 2014 to May 2018, ten male patients underwent treatment of HS in the gluteal and sacral area. A protocol of wide excision, followed by negative pressure wound therapy with instillation (NPWTi) to decrease bioburden and promote angiogenesis of defect area and a split-thickness skin graft was used. The mean age was 40 years. Patients are examined for granulation tissue formation, graft condition, hospitalization time, and recurrence.

Results: The period for granulation tissue formation was 5.4 (4-8) days. NPWTi was put off on the fifth day after surgical excision and graft were observed three more days with wound dressing. Patients were discharged on the 10th postoperative day. The mean hospitalization time was 14.3 (range=12-16) days. There was no graft loss in nine patients. Approximately 20% of graft loss was observed in one patient. Secondary healing was obtained with local wound care measures in this patient. The patients had neither contour irregularity nor contracture. There was no recurrence after a median of 23.4 (range=12-36) months follow-up time.

Conclusion: NPWTi can be used in the surgical management of HS either at graft preparation period or after grafting for better graft survival rate and shorter hospitalization duration.

Keywords: Hidradenitis suppurativa, negative pressure wound therapy with instillation, skin grafting

ÖZ

Amaç: Hidradenitis suppurativa (HS) apokrin ter bezlerininin kronik enfeksiyonudur ve hastanın yaşam kalitesini düşürerek birçok morbitideye sebep olur. Cerrahi olmayan tedaviler günümüzde tam olarak kür sağlamamaktadır. Cerrahi tedavi amacı hastalığı kontrol altına almak ve nüksü önlemektir.

Yöntem: Çalışmaya Ocak 2014-Mayıs 2018 arasında gluteal veya sakral bölgesindeki HS nedeniyle ameliyat edilen 10 hasta dahil edildi. Anjiyonegenezi hızlandırmak ve bakteri yükünü azaltmak amacıyla geniş eksizyonu takiben yıkamalı negatif basınçlı yara kapama uygulandı. Granülasyon formasyonunun ardından bütün defektler kısmi kalınlıkta deri grefti ile onarıldı. Hastaların ortalama yaşı 40 idi ve bütün hastalar granülasyon formasyonunun oluşma süresi, greft durumu, hastanede yatış süresi ve rekürrens açısından değerlendirildi.

Bulgular: Granülasyon dokusunun en kısa 4, en uzun 8. günde geliştiği görüldü (ortalama 5,4 gün). Cerrahi eksizyon sonrası 5. gün negatif basınçlı yara kapması çıkarılan hastalarda greft 3 gün daha pansuman ile takip edildi. Greft operasyonundan 10 gün sonra hastalar taburcu edildi. Ortalama yatış süresi 14,3 gündü (en kısa 12, en uzun 16). Hastalara uygulanan kısmı kalınlıkta deri greftinin 9 tanesinde problem izlenmezken 1 hastanın

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Received/Geliş Tarihi: 12.06.2019 **Accepted/Kabul Tarihi:** 05.07.2019

greftinde yaklaşık %20 kayıp gözlendi. Bu hasta lokal yara bakımı ile takip edildi ve sekonder iyileşme sağlandı. Hastaların uzun dönem takiplerinde rekürrens, deri greftine bağlı kontür bozukluğu ve kontraktür gözlenmedi.

Sonuç: HS cerrahisi sonrası yıkamalı negatif basınçlı yara kapama kullanımı gerek grefte hazırlık aşamasında, gerekse greft uygulandıktan sonra greft yaşam şansını artırmak için kullanılabildiği gibi hastaların hastanede yatış süresini kısaltmaktadır.

Anahtar Kelimeler: Hidradenitis suppurativa, damlatma ile negatif basınçlı yara tedavisi, deri grefti

Introduction

Hidradenitis (HS) is a chronic and relapsing inflammatory disease of the skin and subcutaneous tissue. The term HS comes from the Latin words hidros (sweat) and aden (gland). The obstruction of the hair follicles and sebaceous glands leads to this condition. Secondary infections due to the occlusion of apocrine sweat glands with keratin plug and stasis in the glandular component are responsible for the development of HS.[1] Rupture of the follicles after an acute infection causes the spreading of the infection through the subcutaneous fat tissue. HS is predominantly seen in the areas where apocrine sweat glands are abundant such as the axilla, breast, perianal, and gluteal regions. Prevalence is 1/300-600, and it is infrequent before puberty and after 40 years. Diabetes mellitus, cigarette smoking, immunosuppressive conditions, and poor hygiene are some predisposing factors. Familial forms of HS with autosomal dominant form were reported in some studies. It is more common in females than their male counterparts.[2,3,4] Hurley, in his study, divided HS into three groups based on sinus tract formation, tract connection, abscess volume, and presence of cicatrization (Table 1).[5] Different treatment modalities were defined concerning this classification. Proper hygiene measures, immunotherapy, local or systemic antimicrobials, and androgen treatment can be applied in Hurley stage 1, whereas Hurley stage 2 disease requires simple drainage, marsupialization, excision, and primary closure and various laser therapies can be done. Unfortunately, all the treatment modalities described above for both Hurley 1 and 2 stages are not enough for the prevention of disease spread. In the case of stage 3 disease, in which widespread disease is a case, wide excisions and reconstructive surgical interventions are mandatory. Repairment with skin grafts, negative pressure wound therapy (NPWT) with skin grafting, local flaps, and closure with perforator flaps can be listed for HS surgical treatment at Hurley stage 3 disease.[6,7,8,9] However, there is no gold standard for reconstructive treatment preferences. NPWT is a commonly used management method for chronic wounds, pressure ulcers, intractable venous ulcers, skin graft applications, and anterior chest wall wounds secondary to mediastinitis.[10,11,12,13] With the use of this method, easy wound dressing can be achieved at the sites where skin grafting is hard to apply. Besides this, reduced contamination, fastened granulation tissue formation, protection of the wound edges from sharing forces are beneficial effects of NPWT with instillation (NPWTi), which leads to reduced hospital stay time.[14] This study aimed to reduce wound dressing in terms of number, pain and hospitalization time, increase in graft survival, and send back the patients to their social life as early as possible by using continuous irrigation NPWTi in gluteal and perianal HS cases.

Table 1. Hurley's staging system for Hidradenitis suppurativa

Stage	Characteristics
1	Solitary or multiple isolated abscess formation without scarring or sinus tracts
2	Recurrent abscesses, single or multiple widely separated lesions, with sinus tract formation
3	Diffuse or broad involvement across a regional area with multiple interconnected sinus tracts and abscesses

Materials and Methods

Between January 2011 and December 2014, ten male patients with long-lasting gluteal and/or perianal HS were recruited in this study (Table 2). All patients were operated for diverting loop colostomy under spinal anesthesia in the supine position. Patients were repositioned at prone position afterward, and infected, bad-smelling tissues were excised with a two cm healthy margin until the deep subcutaneous fat level. After hemostasis NPWTi (VAC Ulta, Texas, KCI) was applied without prior wound size reduction procedure in the operating room. Standard saline solution was used for irrigation in all patients. Granulation tissue formation was examined by wound opening on the 2nd postoperative day. Patients thought to have enough granulation tissue formation were re-operated under spinal anesthesia. Split thickness skin graft obtained from the posterior thigh was laid down on to the wound bed and stabilized with a skin stapler. The skin graft was covered with gauze, and NPWTi were applied on it. Wound dressing was kept closed during the continuing four days. Graft condition was checked on the 5th postoperative day. After the fifth postoperative day, wound dressing was carried out with antimicrobial containing topical pomade for three more days. Patients were discharged after this 3rd day, and outpatient follow-up was carried out for graft loss, recurrence, contour deformity, and pain (Figure 1).

Table 2. Patient characteristics

Patient	Age	Smoking	Site	Defect size (cm)	Disease duration (year)	Granulation formation time (day)	Follow-up (month)	Complication	Hurley score
1	23	+	Gluteus	20x10x4	5	4	12	-	2-3
2	49	+	Gluteus	15x10x3	10	4	36	-	3
3	52	+	Gluteus and perianal region	14x10x3	17	6	34	-	3
4	35	+	Perianal region	17x9x2	9	4	13	-	3
5	40	+	Gluteus	26x15x4	12	6	14	-	3
6	26	+	Gluteus	30x20x5	4	8	18	20% skin graft loss	3
7	37	+	Perianal region	17x10x3	11	4	23	-	3
8	29	+	Gluteus	16x9x2	8	6	25	-	3
9	36	+	Gluteus	18x10x3	7	4	12	-	2-3
10	32	+	Gluteus	16x10x4	9	6	17	-	2-3

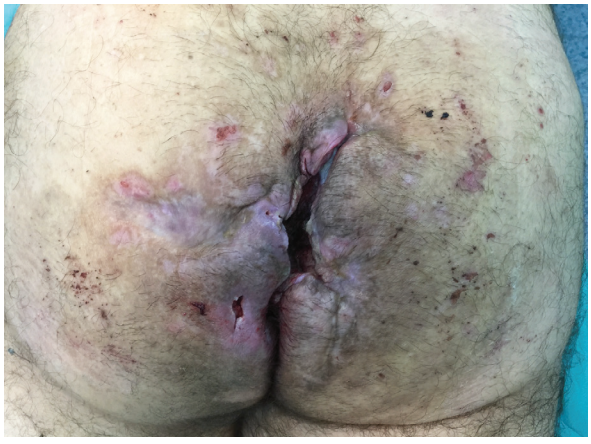

Figure 1. Patient with extensive disease in the buttock and sacral area

Results

The mean follow-up time was 12 months (range=8-18). All the patients were male, and the mean age was 41.3 (range=23-52). There were neither comorbidities nor a history of previous surgery present. The average time for the formation of granulation tissue was 5.4 days (range=4-8). Split thickness skin grafting was done after granulation tissue formation. NPWTi was applied for graft stabilization and sharing forces elimination. Grafts were kept under NPWT with instillation for five more days, and then standard wound dressing was carried out for three days. At the end of the eighth day, patients were discharged. The mean hospitalization time was 14.3 (range=12-16) days (Figure 2).

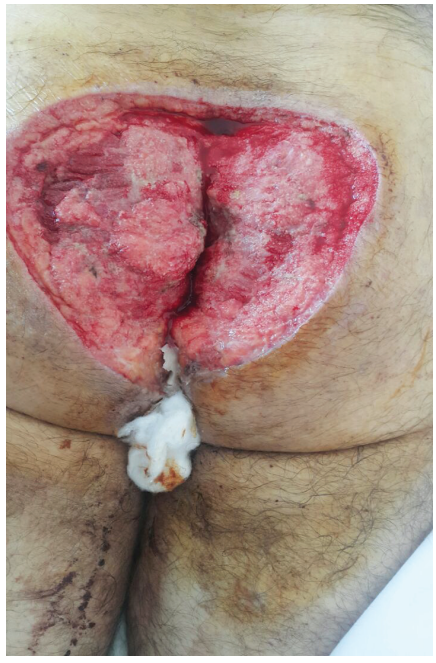

Figure 2. Defect of wide local excision

There was no graft loss in nine patients. One patient lost 20% of his graft. Secondary healing was achieved with local wound care for this patient. There was no recurrence after a mean follow up time of 23.4 (12-36) months. Neither

contour irregularity nor contracture was observed due to the graft loss.

Discussion

Patients with HS are generally sufferers of their disease for many years before surgery.[7] The purpose of the treatment is to control the disease at an acceptable cosmetic level for a comfortable life and prevent recurrences as much as possible.[5] Antibiotics, hormone replacement therapies, retinoids, and chemotherapy were shown to be effective in the management of HS.[3] However, a complete cure can only be achieved with surgical excision and reconstruction.[15] If left untreated, HS spreads to larger areas and mandates more extensive excisions. Most authors conclude that recurrence can only be avoided if complete excision with at least a 2 cm healthy tissue margin is performed, including adequate subcutaneous fatty tissue (not less than 5 mm) or deep fascia.[2,3,4,5] The complete excision of HS may result in a wide defect that does not allow primary closure. Secondary healing, skin grafting with or without NPWT, local or perforator flap treatments were proposed in the literature.[2,3,4,5,6,7,8,9] Secondary healing after excision will take a long time that will reduce the patient's quality of life. Even though reconstructions with local flaps are considered to be an ideal approach for the prevention of contour irregularities, however, they have some disadvantages; recurrence may be the expected result since local flaps are prepared from the skin of the same anatomic region that has HS development tendency.[7] Reconstruction considerations may also force surgeon for limited excisions that can cause unintentional leaving of the infected pilosebaceous gland and early recurrences.[4] Wider local flaps also create perfusion problems. Reconstructions with the use of perforator flaps nowadays have become more popular for the solution of perfusion and size limitations of the conventional flaps. Perforator flaps can more easily be adapted to defect sites with advancement or propeller type rotations. Vascular structure and physiology of the perforator flaps make them suitable for thinning. Better contouring can be achieved. However, dissection of the perforator flap requires experience at a certain level and results in longer operation time.[9] Closure of the wide defects with skin grafts is simple and quick. Chen et al.[3] have used NPWT to increase granulation tissue formation and accelerate graft fastening. If excision is carried out until the muscular layer, contour deformity will almost be inevitable after the closure of the created defect with a skin graft. Fatty tissue with poor perfusion will come in front after the excision of HS, and skin graft survival will be reduced.[6] The first two effects of NPWT treatment are the removal of tissue edema and augmentation of blood perfusion over the wound bed.[16] Negative pressure destroys the integrin bridges in the cellular skeleton and triggers intracellular

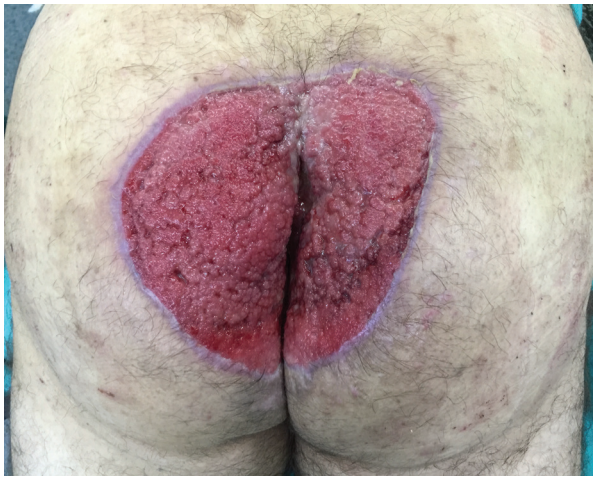

Figure 3. After negative pressure wound therapy with instillation treatment

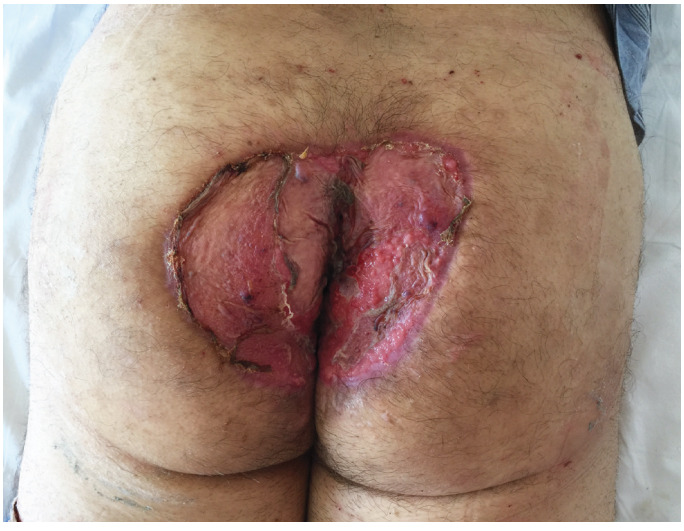

Figure 4. Autologous skin was grafted onto the wound base after negative pressure wound therapy with instillation treatment

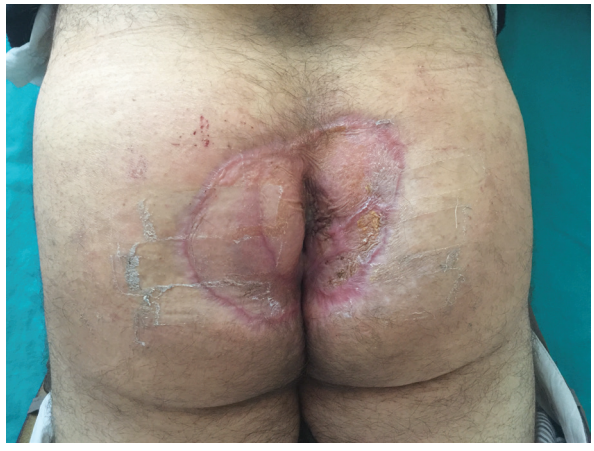

Figure 5. Post-op six month

messaging, which in turn increases the proliferation and granulation tissue formation. Early formation of granulation tissue and inhibition of edema development that impairs microcirculation and oxygenation improve graft survival rate.[17,18] NPWT application after grafting reduces the hematoma formation and graft lysis risks. It is also hard to immobilize the skin graft at the perianal and gluteal region.[6] Skin graft loss will be higher unless meticulous wound dressing is carried out. NPWT treatment permits movement liberation, and this enhances patient tolerance and comfort.[6] All devices used were portable. Even early mobilization of the patients was enabled; graft loss and health personnel workloads were reduced at the same time. The most frequent complication encountered after HS surgeries, including graft-flap reconstructions and secondary healing, is infectious events. Wound dehiscence and graft lysis events happen more frequent after infection that prolongs the recovery and hospitalization periods.[7] The bacterial load per gram wound tissue is reduced from 10^7 to 10^2 after the 4th or fifth days of NPWT therapy.[16] This data explains the absence of infection and low hospitalization periods that was 14.3 days in our study. Health care expenditure is reduced by reduction either in the hospitalization time preoperatively or post grafting intervention concerning conventional methods. Vuerstaek et al.[19] have shown in their study dealing with chronic leg ulcer disease that preparation of wound bed to the surgery with the use of NPWT therapy is seven days while it takes 17 days with conventional procedures and demonstrated the beneficial effect of NPWT therapy with significant reduction in cost, pain and healing time. The use of NPWT systems before and after grafting for tissue defects has developed rapidly in recent years.[16] The place of NPWT for the preparation of wound bed and granulation tissue formation is now unquestionable. On the other hand, NPWT may be insufficient for the wounds that are infected or require humidity balance establishment.[19] In order to solve this problem, a continuous irrigation apparatus was added to the NPWT system that offers the desired humidity condition. In this way, continuous debridement and pus removal can be possible at the same time. Continuous irrigation reduces debris and bacterial load in extremely dirty wounds and accelerates granulation tissue formation by providing desired humidity balance. The choice of solution to be used for irrigation is still subject to discussion. A variety of solutions from saline to fluids containing antibiotics were tried out, but none of them has shown to be superior.[20] NPWT techniques for perianal or gluteal regions give an advantage to the surgeons to improve patients' mobilization after reconstructions in these regions.[6] We used NPWTi to facilitate patient follow up, mobilization, and quicken to pass definitive surgery. While granulation tissue formation time after conventional NPWT techniques and skin grafting was seven days, it was found to be five days in our study. The other purpose of using NPWTi after grafting procedure was the removal of the hematoma at the wound recipient site. Infection due to coagulum and debris materials was tried to be prevented. The graft survival rate was improved with this application. One another problem for chronically ill patients is long hospitalization times. NPWTi application reduced hospitalization time compared to the NPWT system. Preparation of wound bed and NPWT application over the skin graft help protection of wound infection. Besides the reduction of quality of life of the patients with psychosocial problems, despite rarely seen, the development of squamous cell carcinoma is the most dangerous complication of HS.[21] That is why treatment and long term follow up is important for HS patients.

Concluison

In conclusion, HS is a chronic illness that has malignancy development potential if left untreated for a long time and creates personal hygiene and social problems. Surgical treatment is crucial for successful results. We demonstrate the time interval for the patients to be ready for excision and recovery time after grafting were significantly reduced. We concluded that NPWTi and grafting after excision for treatment of HS is beneficial when complication rate, cost, and allied achievement of health personnel workload reduction are considered.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

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

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

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

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DOI: 10.4274/tjcd.galenos.2019.2019-4-1
Turk J Colorectal Dis 2019;29:183-187

RESEARCH ARTICLE

A Single-center Experience of Clinical Outcomes of Surgical Management for Rectocele Disease

Rektosel Hastalığının Cerrahi Tedavisi ve Klinik Sonuçlarımız

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ABSTRACT

Aim: Different surgical management options have been described for rectocele disease. However, there is no consensus on the best surgical technique and mesh use. In this study, we present the clinical outcomes of patients who received surgical management for rectocele disease.

Method: In our study, we analyzed the files of 78 patients who underwent surgery for rectocele between January 2002 and December 2018. We retrospectively reviewed the treatment outcomes and clinical and demographic characteristics of these patients.

Results: The mean age of the patients was 52 (range=31-88) years and the mean parity was 3 (range=1-11). The most common complaints were constipation and defecation difficulties. The diagnosis of rectocele was confirmed by a physical examination in 58 patients (75%) and confirmed by defecography in 20 patients (25%). Primary repair was performed in 72 patients (92%), and polypropylene mesh repair was performed with a perineal approach in six patients (8%). Hemorrhage and infection were seen as early complications in only five patients (6.4%). The mean hospital stay was 1.6 (range=1-11) days. The mean follow-up was 54 (range=3-218) months. There was a recurrence in two patients (2.5%).

Conclusion: Rectocele can be successfully treated with low morbidity rates when properly diagnosed and managed by appropriate specialists. Factors such as coexisting pelvic floor diseases, age of the patient, and whether the patient is in the reproductive period should be considered when choosing the appropriate surgical technique. Also, clinicians should keep in mind that rectocele is preventable and that incidence can be reduced by lifestyle changes.

Keywords: Rectocele, surgical treatment, obstructive defecation

ÖZ

Amaç: Rektosel hastalığın tedavisinde birçok farklı cerrahi teknik tanımlanmıştır. Ancak altın standart yönteminin ne olacağı ve yama kullanımı konusunda henüz bir fikir birliği yoktur. Çalışmamızda rektosel nedeniyle farklı tekniklerle ameliyat ettiğimiz hastalarımızın klinik tedavi sonuçlarını sunmayı amaçladık.

Yöntem: Çalışmamızda Ocak 2002 ve Aralık 2018 tarihleri arasında rektosel tanısıyla ameliyat edilen 78 hastanın dosyaları tarandı. Klinik ve demografik bilgileri ile tedavi sonuçları retrospektif olarak değerlendirildi.

Bulgular: Hastaların yaş ortalaması 52 (31-88), ortalama doğum sayısı 3 (1-11). En sık başvuru şikayeti kabızlık ve defekasyonda zorluk idi. Fiziki muayenede 58 (%75) hastada rektosel saptandı ve 20 (%25) hastada defekografi ile doğrulandı. Yetmiş iki (%92) hastaya transvajinal, transanal veya perineal yaklaşımlarla primer onarım uygulanırken 6 (%8) hastaya perineal yaklaşımla polipropilen mesh onarımı uygulandı. Erken dönemdeki komplikasyonlara bakıldığında sadece 5 (%6,4) hastada kanama ve enfeksiyon görüldü. Hastanede yatış süresi ortalama 1,6 (1-11) gün idi. Ortalama takip süresi 54 (3-218) ay olup; 2 (%2,5) hastada nüks görüldü.

Sonuç: Rektosel doğru tanı ve uygun tedavi planı konu ile ilgili spesifik cerrahlar tarafından yapıldığında düşük morbidite oranı ile başarılı bir şekilde tedavi edilebilmektedir. Cerrahi teknik seçiminde rektosele eşlik eden ek pelvik taban hastalıkları, hastaların yaşı ve reprodüktif dönemde olmaları gibi bireysel faktörler göz önünde bulundurulmalıdır. Rektoselin belli oranda önlenebilir bir hastalık olduğu akıldan çıkarılmamalı ve yaşam tarzı değişiklikleri ile görülme sıklığının azaltılabileceği unutulmamalıdır.

Anahtar Kelimeler: Rektosel, cerrahi tedavi, obstrüktif defekasyon

The abstract of this study was presented as a poster presentation (P-075) at the 17th Turkish Colon and Rectal Surgery Congress held between 9-13 April 2019 in Antalya.

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Received/Geliş Tarihi: 28.06.2019 **Accepted/Kabul Tarihi:** 18.07.2019

Introduction

Rectocele is defined as the prolapse of the anterior rectal wall from recto-vaginal fascia or the herniation into the posterior vagina. The prevalence in women is 0.4%. It is especially seen in multiparous and older women.[1] However, in a study conducted with a limited number of patients, the incidence of rectocele in healthy and asymptomatic women was reported to be 93%.[2] This situation, which may cause deterioration in the quality of life of the patients and severe problems in their social life, presents with symptoms such as constipation, defecation difficulty, and feeling of not fully emptying. Rectocele may present as an isolated disease and may also accompany many pelvic floor diseases. Although anamnesis and physical examination are usually sufficient for the diagnosis, defecography is currently the most reliable diagnostic method, which allows to dynamic visualization of the shape, size, length, and depth of the rectocele to confirm the diagnosis.[3] Treatment decision is based on whether the disease is symptomatic or not, and the size of the rectocele. Many different surgical techniques have been described in surgical treatment, such as transanal, transperineal, transvaginal, and transabdominal approaches. However, a gold standard treatment method is still undefined. Also, there is no consensus on the use of meshes in repair. In this study, we aimed to present the results of clinical treatment in patients who underwent surgery with the diagnosis of rectocele.

Materials and Methods

In this study, the files of 78 patients who underwent surgery with the diagnosis of rectocele between January 2002 and December 2018 were analyzed retrospectively. In the majority of patients, the diagnosis was made after the physical examination of the clinician, and the diagnosis was confirmed by defecography in some patients. Additional investigations such as colonoscopy and pelvic magnetic resonence imaging (MRI) were requested for differential diagnosis in eligible patients. All patients were female. Patients were evaluated in terms of age, comorbidity, the number of deliveries, previous pelvic floor surgery, complaints, physical examination findings, defecography, and/or additional radiological tests, if any, surgical technique and duration, length of hospitalization, complication, post-operative control, and recurrence.

Surgical Technique

All patients received 1 gram intravenous cefazolin for prophylaxis 30 minutes before the operation. Empirical antibiotic treatment was continued in some patients postoperatively. The patients were prepared in the lithotomy position, and the surgical procedure was performed under general anesthesia in all patients. In the anterior transvaginal repair technique, the posterior vaginal mucosa was cut to the posterior fornix, and a V-shaped flap was formed. The loose recto-vaginal septum was exposed. Plication was performed with interrupted ethibond sutures from posterior fornix to inferior, and reinforcement was provided with continuous suture technique. The vaginal mucosa was closed with continuous sutures. The rectum was checked by a digital examination. For the perineal repairs, a transverse incision was performed, and the local anesthetic was injected with saline diluted with adrenaline behind the posterior vaginal wall. Posterior fornix was reached after sharp and blunt dissection. The rectocele width and localization were determined anatomically by rectal examination. For primary repair, plication was performed with absorbable suture material, and the layers were approached. For mesh repair, polypropylene mesh was prepared to fit the defect and was laid in this area, and no fixation was made. Following hemostasis, the perineal incision was closed primarily, and the operation was terminated. Since the present study consists of retrospective data, the estimation of the degree of prolapse is based on physical examination and surgery notes. According to the International Continence Society staging system, it is understood that patients have stage 1 or more disease (Table 1). In the evaluation of post-operative symptoms, patient feedback was taken into consideration, and no scale was used for evaluation. The effect of advanced age and the number of vaginal births on the development of rectocele disease was investigated. Recurrence and complication rates of patients with isolated rectocele were compared to patients who underwent other pelvic floor surgery in addition to rectocele repair. Four different surgical techniques were applied to each patient, and each group was examined in terms of recurrence and complications.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) 17.0 program was used for statistical analysis to evaluate the demographic and clinical data of the patients and to interpret the results. Categorical measurements were summarized as

Table 1. International Continence Society pelvic organ prolapse quantification system

Stage 0	**No prolapse**
Stage 1	Greater than 1 cm above the hymen
Stage 2	1 cm or less proximal or distal to the plane of the hymen
Stage 3	Greater than 1 cm below the plane of the hymen, but protruding no farther than 2 cm less than the total vaginal length (Example; incomplete vaginal prolapse)
Stage 4	Eversion of the lower genital tract is complete

numbers and percentages, and continuous measurements were summarized as mean and standard deviation (median and minimum-maximum where necessary). Kaplan-Meier method was used for the survival curve.

Results

The mean age of the patients was 52 years (range=31-88), and the number of previous births was 3 (range=1-11). Thirty-two (41%) patients had various chronic diseases such as hypertension, diabetes, and so on. Thirteen patients had previously undergone pelvic or perianal surgery for non-rectocele reasons. The most common presenting complaint was constipation and difficulty in defecation with 22 patients (28%). Complaints and rates of admission in other patients are presented in Table 2. Four patients (5%) had non-specific complaints, and four patients (5%) had no complaints due to rectocele and were noticed during the operation. On physical examination, rectocele was detected in 58 (75%) patients, and 20 patients had no specific physical examination findings. All of the 20 patients (25%) who underwent defecography had various degrees of rectocele findings. Nineteen patients (24%) were operated by general surgery clinic, and 59 patients (76%) were operated by obstetrics and gynecology clinic. Seventy-two (92%) patients underwent primary repair via transvaginal, transanal, or perineal approaches. Six patients (8%) who underwent surgery in the general surgery clinic underwent polypropylene mesh repair with a perineal approach. All patients operated by gynecology clinic underwent primary repair with the transvaginal approach. Regarding patients operated by general surgery clinic, six (8%) had anterior repair by transvaginal approach, six (8%) had perineal polypropylene mesh repair, six (8%) had transperineal flap method, and one (1%) had posterior transanal repair. Fifty patients (64%) underwent pelvic floor surgery for another reason, and additionally, rectocele repair was performed. The mean operative time was 75 minutes. Operative time was significantly higher in patients who had co-session pelvic floor surgery. Bleeding and infection were seen in only five patients (6.4%) in the early period. Four of these patients were patients who also underwent pelvic floor surgery. The mean hospital stay was 1.6 days (range=1-11). In the post-operative outpatient controls, 61 patients (78%) did not have any complaints, and the chief complaints in the remaining patients were urinary complaints, constipation, and pain at the incision site. The mean follow-up period was 54 months (range=3-218), and recurrence was seen in two patients (2.5%). One of them was a patient who underwent posterior transanal repair, and the other had transvaginal primary repair. Clinical and demographic data of the patients are presented in detail in Table 2.

Table 2. Demographic and clinical characteristics of patients

Mean age (years)	52 (range=31-88)
Number of births	3 (range=1-11)
Additional disease (with/without)	32/46
Previous surgery (n=13)	Cystocele surgery: 4 patients Sacrocolpopexy: 3 patients TAH-BSO: 3 patient Hemorrhoidectomy: 2 patients Rectocele repair: 1 patient
The presenting symptoms (n%)	Constipation and difficulty in defecation: 22 patients (28%) Prolapse of the uterus: 18 patients (23%) Cystocele symptoms: 18 patients (23%) Other: 16 patients (21%) None: 4 patients (5%)
Repair type (n%)	Anterior transvaginal: 65 patients (83%) Transperineal mucosal flap: 6 patients (8%) Perineal polypropylene mesh: 6 patients (8%) Posterior transanal: 1 patient (1%)
Complication (n=5)	3 wound infection 2 post-op bleeding
Duration of hospital stay (days)	1.6 (range=1-11)
Recurrence	2 (2.5%)
Follow-up (months)	54 (3-218)

TAH-BSO: Total abdominal hysterectomy-bilateral salpingo-oophorectomy

Discussion

Rectocele with asymptomatic or mild symptoms is an anatomical change and is not reflected in the clinic except some morphological changes that are not accepted pathological in defecation. It is mostly observed in multiparous and elderly women, and it is stated in the literature that the number of vaginal births is the primary risk factor causing rectocele.[4] Recurrent vaginal births lead to weakness due to high pressure, wear, and decrease in support in the recto-vaginal septum.[5] In our study, the mean number of vaginal births was 3, supporting the literature. The main symptoms seen in the clinic are common complaints in obstructive defecation syndromes such as constipation, difficulty in defecation, incomplete emptying, hand-assisted emptying.[6] Our patients with isolated rectocele had similar complaints. A scoring system

was developed by Watson et al.[7] (Table 3) according to the frequency of clinical symptoms such as the frequency of digitation, the severity of straining, the feeling of inadequate discharge, and the vaginal mass. Changes in these scores before and after treatment can be evaluated and commented on the effectiveness of the method. However, the data in our study did not provide a detailed assessment in this respect. Sometimes the diagnosis can be delayed for various reasons. These delays can be caused by delayed hospital visits due to social reasons (embarrassment, etc.), lack of assistance from specific surgical departments, or insufficient experience of the physician concerned. The weakened and worn recto-vaginal septum, together with pelvic floor disease, may also contribute to rectocele formation. In our study, more than half of the patients underwent rectocele repair during pelvic floor surgery. In these patients, both the operative time and length of hospitalization were significantly higher than in isolated cases as expected. Also, the majority of the patients with complications were these patients. When these results are evaluated, we think that the surgical treatment of isolated rectoceles can be performed mostly ambulatory and with a low complication rate. In our study, symptoms of the disease were significant only in all patients with a rectocele. However, asymptomatic rectocele was detected in four of the patients who underwent pelvic floor surgery, and primary repair was performed with the anterior transvaginal approach.

The diagnosis of rectocele can be made only by anamnesis and physical examination by experienced surgeons. However, sometimes, the gold standard to confirm the diagnosis and to reveal the status of rectocele is defecography, and the appearance is typical (Figure 1). Pelvic MRI or computed tomography and rectoscopy/colonoscopy are sometimes used for diagnosis. In the differential diagnosis, it should be remembered that it might be confused with other pelvic floor diseases such as cystocele and uterocele and perianal disorders such as rectal prolapse and hemorrhoidal disease.

In appropriate patients in the initial treatment of the disease, conservative methods such as daily lifestyle changes, weight loss, avoidance of heavy lifting, treatment of constipation, and pelvic floor muscle exercise can be tried.[8] When conservative treatments are inadequate, surgical treatment options are considered. There is no consensus on which surgical method to choose. This situation generally varies according to the surgeon's experience and treatment plan for diseases associated with rectocele.[9] In the selection of surgical technique, individual evaluation should be made. Individual factors such as additional pelvic floor diseases accompanying the rectocele, age of the patients, and whether they are in the reproductive period should be considered. The principles of surgery are to repair the weak point between the rectum and vagina, to reconstruct the anterior wall of the rectum and to restore the normal anatomy of the rectum in the defecation. Surgical methods include many methods with different success rates, such as transanal surgery, transvaginal surgery, transperineal mesh repair, stapled transanal rectal resection (STARR), and laparoscopic-assisted STARR.[10,11,12,13,14] STARR was first described by Longo for rectocele treatment and is a transrectal operation that resects the submucosa and partially the muscular layer with the aid of the stapler for reducing the depth and width of the lower rectum.[15] This method is a new method developed in the last ten years and provides satisfactory treatment.[16] In previous studies, it has been reported that sexual dysfunction and recurrence rates are high in patients who underwent primary repair by transvaginal route.[17] Although most of the patients in our study were repaired in this way, we could not comment on this issue since the patients were not questioned for post-operative sexual dysfunction. However, in our study, recurrence was seen in only one of 65 patients (83%) who underwent transvaginal repair. The transvaginal approach can be safely recommended for patients with isolated rectocele and required an additional gynecological operation. It is seen that the use of perineal prolene mesh repair method, which has gained more popularity in recent years and attracts attention with low recurrence rates, has been increasing and becoming widespread in our clinic (Figure 2). The main advantage of this method is that it eliminates the limitations of tissue repair, such as weak tissue strength and restores normal anatomical support without tension.[18] No complications or recurrences have been observed in

Table 3. Scoring system of the frequency of digitation, the intensity of straining, insufficient discharge and clinical symptoms of vaginal mass

Symptoms	Score
Always/severe	3
Usually/moderate	2
Sometimes	1
None	0

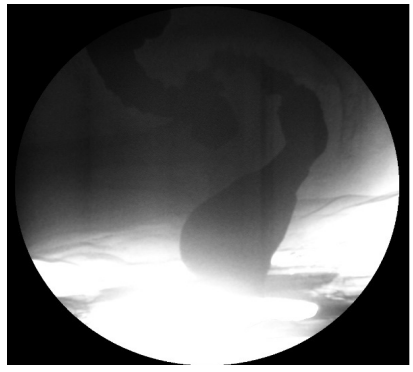

Figure 1. Defecography image of the anterior rectocele

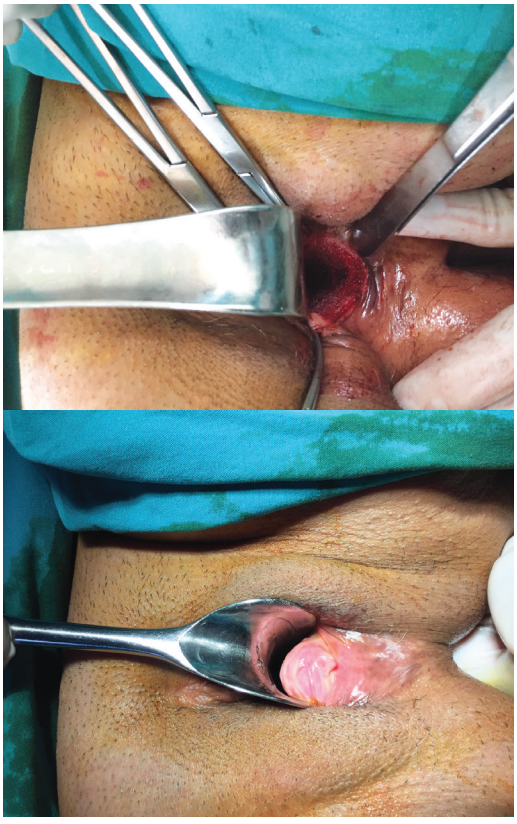

Figure 2. Rectocele repair with perineal prolene mesh (pre-operative, per-operative, and post-operative images in operation were sent separately.

any of the six patients we have used this technique so far. However, long-term results are still incomplete, and long follow-up is needed to evaluate mesh-related complications.

Conclusion

As a result, rectocele is a common disease in society, especially in patients with pelvic floor dysfunction. When appropriate diagnosis and early treatment plans are made by specific surgeons, it can be treated successfully with a low morbidity rate. It should be kept in mind that rectocele is a preventable disease to a certain extent, and it should be remembered that its incidence could be reduced by lifestyle changes.

Ethics

Ethics Committee Approval: This study was approved by Başkent University Institutional Review Board (Project No: KA 19/83 Date: 05/03/2019).

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

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: H.Y., M.K., Concept: R.S., H.Y., Design: H.Y., Data Collection or Processing: M.K., Analysis or Interpretation: İ.M.A., Literature Search: R.S., H.Y., Writing: R.S.

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

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

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DOI: 10.4274/tjcd.galenos.2019.2019-6-5
Turk J Colorectal Dis 2019;29:188-192

RESEARCH ARTICLE

The Outcome of Combined Electro-fulguration and Surgical Excision Techniques in the Management of Anogenital Condylomas

Anogenital Kondilom Tedavisinde Elektro-fulgurasyon ve Cerrahi Eksizyon Tekniklerinin Birlikte Kullanımının Sonuçları

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ABSTRACT

Aim: Condyloma accuminata (anogenital warts) refers to an epidermal manifestation attributed to human papilloma virus (HPV). It is the most common sexually transmitted disease. In this study, we present our experience with anogenital warts and surgical treatment outcomes.

Method: From 2013 to 2018, 53 patients with anogenital warts underwent electro-fulguration (cauterization) and surgical excision under local or general anesthesia. Demographics, localization of lesions, serological tests, final histopathological results, outcomes and recurrence rates were documented.

Results: There were 37 men (69.8%) and 16 women (30.1%). The mean age was 37 years (range= 17-53). Local or general anesthesia was applied according to the localization, distribution and volume of the lesions (n=46, 86.7% vs. n=7, 13.2%, respectively). Surgical excision was performed for histopathological examination, and electro-fulguration was applied for multiple smaller lesions. The perianal region was the most common location for HPV-related warts (n=24, 64.8% for men vs. n=14, 87.5% for women). Human immunodeficiency virus (HIV) positivity was seen in three patients (5.6%). Hepatitis serology was positive in two cases (3.7%). There was no permanent surgical morbidity. During a mean follow-up period of 31 months (range: 5-61 months), recurrence was seen in five cases (9.4%), and two of them were HIV positive (40% of recurrent cases).

Conclusion: HPV-related anogenital warts remain one of the most common sexually transmitted diseases. Surgical excision to confirm diagnosis and fulguration of the remaining lesions can be recommended in practice. HIV positivity and high recurrence rates are the most important problems to be encountered.

Keywords: Anogenital condyloma, warts, human papilloma virus, surgical excision, electro-fulguration, cauterization

ÖZ

Amaç: Kondiloma akümünata (anogenital siğiller), insan papilloma virüsünün (HPV) yol açtığı epidermal lezyonların adıdır. En sık rastlanan cinsel yolla bulaşan hastalığı oluşturmaktadır. Bu çalışmada, anogenital bölge siğilleri ve cerrahi tedavinin sonuçlarına dayanan deneyimimizi aktarmayı hedefledik.

Yöntem: 2013-2018 arası dönemde, anogenital kondilom nedeniyle toplam 53 hastaya lokal veya genel anestezi altında elektro-fulgurasyon (koterizasyon) ve cerrahi eksizyon işlemi yapıldı. Demografik bilgiler, lezyonların lokalizasyonu, serolojik test sonuçları, histopatolojik tanı ile elde edilen sonuçlar ve nüks oranları değerlendirildi.

Bulgular: Hastaların 37'si erkek (%69,8), 16'sı kadın (%30,1) idi. Yaş ortalaması 37 yıl (17-53 arasında) olarak hesaplandı. Lezyonların lokalizasyonu, dağılımı ve büyüklüğü dikkate alınarak lokal veya genel anestezi uygulandı (sırasıyla, n=46, %86,7 ve n=7, %13,2). Tüm hastalara histopatolojik örnekleme amaçlı cerrahi eksizyon ve diğer daha küçük lezyonlar için elektro-koterizasyon uygulandı. HPV'ye bağlı lezyonların en çok perianal bölgeye yerleştiği tespit edildi (n=24, %64,8 erkek; n=14, %87,5 kadın). Üç hastada (%5,6) insan immün yetmezliği virüsü (HIV) pozitifliği saptandı. Hepatit serolojisi ise 2 hastada (%3,7) pozitif idi. Kalıcı cerrahi morbidite görülmedi. Ortalama 31 aylık (5-61 ay arasında) takip süresi boyunca 5 hastada (%9,4) nüks görülürken bu hastaların 2'si HIV pozitif idi (tüm nükslerin %40'ı).

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Received/Geliş Tarihi: 30.07.2019 **Accepted/Kabul Tarihi:** 06.08.2019

Sonuç: HPV'ye bağlı gelişen anogenital siğiller, cinsel yolla bulaşan hastalıklar arasında önemli bir yer tutmaktadır. Günlük pratikte, teşhisin ispatı için cerrahi eksizyon ile kalan lezyonların fulgurasyonunun birlikte yapılması önerilebilir. HIV pozitifliği ve yüksek nüks oranları en çok karşılaşılan problemleri oluşturmaktadır.
Anahtar Kelimeler: Anogenital kondiloma, siğiller, human papilloma virüs, cerrahi eksizyon, elektro-fulgurasyon, koterizasyon

Introduction

Anogenital condyloma (condyloma acuminata) is a sexually transmitted disease that starts as brown small spot lesions around the genital area or anus with ability to grow and spread over time. When the lesions are small, they may not even be recognized because they do not cause pain or discomfort. Itching, hemorrhage, mucous discharge and causing a feeling of mass as it grows are the most common symptoms. The causative agent of the disease is human papilloma virus (HPV) and it is sexually transmitted by direct contact.[1] Depending on the patient's immunological structure (organ transplant, immunosuppressive drug use, patients with chronic immune diseases such as inflammatory bowel disease or rheumatoid arthritis), the time of onset of symptoms varies.[2,3] The disease is also frequently seen in people infected with human immunodeficiency virus (HIV). Following detailed physical examination and serological tests, there is controversy as to whether condylomas should be removed or medically treated. However, in the current literature, the necessity of coagulation or excision is suggested, considering that the untreated disease will spread and the lesions will grow.[4,5,6] Knowing increased risk of anal carcinoma is another factor in this patient group.[6] The efficacy of podophylline, topical pomades containing bi or tri-chloro-acetic acid and agents such as imiquimod or 5-fluorouracil (5-FU) is controversial.[7,8] These drugs are known to cause irritation, burning and painful ulcers in the skin.[8] Cryotherapy treatment of condylomas with liquid nitrogen can also be made.[9] Its effectiveness in large and widespread lesions appears to be limited. The most commonly used surgical treatment methods are fulgurization or surgical excision of lesions under local or general anesthesia. It can be applied in combination according to the number, location and size of the lesions.[4] It has advantages such as rapid results, allowing histopathological evaluation and faster return to the sexual life of the patient, as well as the disadvantages of anesthesia and surgery. In this study, we aimed to report the outcomes of patients who were diagnosed with anogenital condyloma at the general surgery outpatient clinics of our hospital and who underwent fulguration and surgical excision with electro-cautery.

Materials and Methods

The Ethics Committee approval was obtained from our hospital (23.01.2019/B.10.1.TKH.4.34H.GP.0.01/4). During the five-year period between December 2013 and December 2018, the files of 53 patients who were diagnosed and treated by a single surgeon in surgical outpatient clinics were evaluated. Serological tests (hepatitis B, C and HIV) were requested in all patients who were diagnosed as anogenital condyloma by physical examination. According to the localization, distribution and size of the lesions, procedures were performed under local anesthesia in the outpatient clinic conditions or under general anesthesia in the operating room following the necessary preparation. All patients were discharged on the same day with a prescription containing prophylactic antibiotics (oral and externally on the skin) and painkillers. After the consent form was signed for all patients, the technique applied was the same: surgical excision using thin-tipped tissue scissors for histopathological diagnosis and electro-cautery fulguration of smaller burnable lesions in sterile environment. Large or large-base lesions were also excised with thin-tipped tissue scissors. If the wound margins were distant after excision, 3 or 4/0 prolene suture (prolene, Ethicon, USA) was used for closure. In the technique we applied, electro-cautery fulguration was done in the form of burning deep to the subcutaneous tissue, since it is known that condyloma could reach subcutaneous tissue and survive in the latent period. All patients were informed about the ways of transmission, prevention methods and the possibility of recurrence, and histopathological diagnosis was obtained. Patients were followed up by the same surgeon under the conditions of the outpatient clinic. All patients were informed about the general characteristics of the disease and virus, and the ways of protection were explained and all patients with positive serology were referred to the infectious diseases outpatient clinics. Demographic data, localization of lesions, serological test results, histopathological diagnoses, clinical course and recurrence rates were recorded.

Results

Of the 53 patients, 37 were male (69.8%) and 16 were female (30.1%). The mean age was 37 years (range=17-53). Most of the procedures (n=46, 86.7%) were performed under local anesthesia in outpatient clinics. General anesthesia was applied to patients with large and widespread lesions under operating room conditions (n=7, 13.2%). HPV-related lesions were mostly located in the perianal region

(n=24, 64.8% male; n=14, 87.5% female). HIV positivity was detected in three patients (5.6%). Hepatitis serology was positive in two patients (3.7%). Both of these patients had hepatitis B antigen.

All patients were discharged on the same day and no patient had permanent surgical morbidity (Figures 1 and 2). In the follow-up and outpatient follow-up visits, it was seen that all patients had complete wound healing until the end of the first month. During the mean follow-up period of 31 months (range= 5 to 61 months), five patients (9.4%) developed recurrence and two of these patients were treated for HIV (40% of all relapses). Demographic data, distribution of lesions, serology results and recurrence rates of our patients are summarized in Table 1. Histopathologic diagnosis was consistent with HPV lesion in all patients included in the study. Patients with histopathological diagnosis of molluscum contagiosum, fibroepithelial polyp and squamous papilloma were excluded from the study. Rectosigmoidoscopy was performed in patients who developed recurrence and same procedure was applied. Rectal mucosal involvement was not observed in these patients. In all three of our patients (all males, patients with anal region involvement), HIV positivity was determined by serological tests routinely requested at the time of first admission. These patients were referred to the infectious diseases outpatient clinic and their treatments were arranged. Two patients who developed recurrence were found to be under antiretroviral therapy and to receive anti-opportunistic prophylaxis. CD4 levels of these patients were recorded as 120 and 180 mm^3 despite treatment.

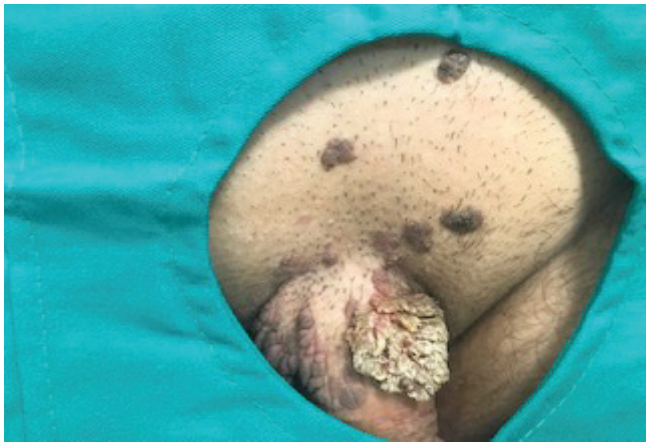

Figure 1. Human papillama virus-induced genital warts (condyloma accuminata)

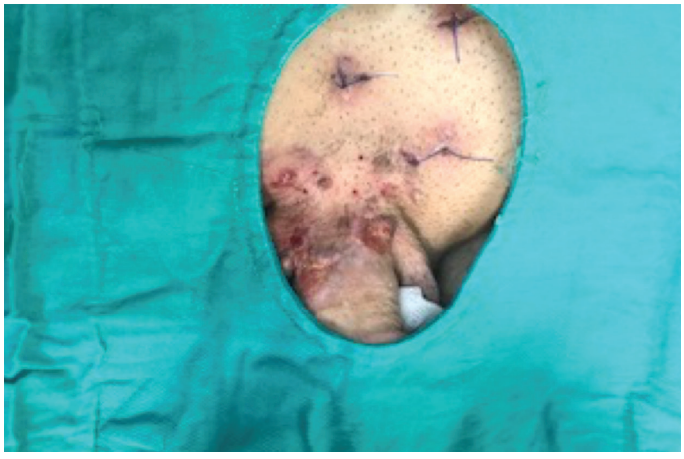

Figure 2. Early recovery period after surgical treatment (combined surgical excision and electro-fulguration)

Discussion

Anogenital condyloma is the most common sexually transmitted disease in the United States, where 500.000 to one million new cases are added each year, and is caused by HPV, a member of the double-deoxyribonucleic acid stranded papova virus family with more than 120 subtypes.[4,10] Although at least 40 types can be isolated in the anogenital region, HPV types 6 and 11, which have a high risk of contamination but low incidence of intraepitalial dysplasia, are the main factors in anogenital condylomas.[11] HPV types 16 and 18, which have a high oncologic potential, can remain latent for a long time in both epidermal keratinocytes and mucosal epithelium, leading to large condylomas (Buschke-Lowenstein tumor) and cervical and anus carcinomas after intraepithelial dysplasia.[12] Although the incubation period for the occurrence of lesions after HPV infection has been

Table 1. Demographic data, distribution of lesions, serology results and recurrence rates of patients presenting with anogenital condyloma

Recurrence	Number (n)	Age (average.)	Lesion distribution		Serology positivity	
			Anus (pubis, penis/vagina)	Genital	HIV	HBV
Total 5 (9.4%)	53	37 (17-53)	38 (71.6%)	15 (28.3%)	3 (5.6%)	2 (3.7%)
Man 4 (80%)	37 (69.8%)	29 (17-46)	24 (63.1%)	13 (86.6%)	3 (100%)	2 (100%)
Woman 1 (10%)	16 (30.1%)	42 (19-53)	14 (36.8%)	2 (13.3%)	-	-

HIV: Human immunodeficiency virus, HBV: Hepatitis B virus

reported between 3 weeks and 8 months, it is known to remain silent for many years in the majority of epithelial cells.[4] It has been suggested that subclinical HPV infection can reach 40%.[13] However, risk factors such as polygamous sexual life, smoking, immunosuppressive diseases and HIV infection have been shown to cause earlier symptoms in patients infected with HPV.[3] In some studies on HIV positive patients, HPV coinfections have been reported in 30% of this patient group during their lifetime.[3,4] High risk of transmission and malignancy potential of the disease necessitates treatment. The efficacy of tetravalent vaccines developed for the high-risk population and introduced in many countries is controversial.[14] The treatment methods known and practiced today are directed to the elimination of lesions rather than elimination of viral load, and are based on a number of applications in which different costs, dosages and treatment times, side effects and outcomes occur, and cannot prevent common recurrences. Podophylline (0.05-0.15%) which inhibits mitotic division by binding to intracellular microtubules can be used as solution, cream and gel three times a week for a maximum of four weeks and causes erosion on the lesions and necrosis.[7] Although the success rate of treatment is reported to be between 45 and 77%, the recurrence rate of the lesions is 40%.[4,15] It can cause pain, itching, erosion, burning and inflammation, and is not recommended for use in pregnant women. Bi- or tri-chloro-acetic acid (80-90%) is an inexpensive chemical agent that burns and erodes the skin and mucous membranes, and is usually applied by the physician for several sessions, with a success rate of 70-80% and recurrence rates close to 40%.[4,16] Pain and burning sensation and ulceration are the most common side effects. Imiquimod (3.75-5%) is a topical immunomodulatory agent that can be administered by the patient and is used in cream form.[8] It can be used up to 16 weeks, three times a week before bedtime, and may cause itching, erythema, tenderness, ulceration and pain. The success rate is between 40 and 77%, and the recurrence is low (13%); however, local inflammatory side effects are more severe.[4] 5-FU and interferon treatments are not recommended today. Cryotherapy of condylomas with liquid nitrogen can also be performed.[16] However, its efficacy in larger and widespread lesions appears to be limited. In addition, painful bullae and permanent scar formation, local pigment loss and infection are common. Although it provides 79-88% elimination in the first three cycles, recurrence rates are between 25-40%.[4,9] Surgical procedures performed in anogenital condylomas are usually performed in outpatient clinics or operating room conditions depending on the location, number and extent of the lesions. Electrocautery technique provides thermal coagulation and fulguration of lesions by applying high frequency electric current. Local anesthesia is required. It is not recommended, as it will cause permanent scar tissue in large lesions. Long-term results are similar to cryotherapy, but are contraindicated in patients with cardiac pacemakers.[4,17] Surgical excision is the only option in the treatment of large lesions that cover the urethral meatus or anus and should be performed under general anesthesia.[4] Tissue scissors or scalpel can be used. It allows histopathological diagnosis especially in lesions suspected of malignancy. Besides side effects of local or general anesthesia, infection, hemorrhage, serous discharge or hematoma may be seen. Our preferred method is combined use of fulguration and surgical excision. Surgical excision of large-based or large lesions can be performed under local anesthesia, without pain, in combination with the fulguration method, which is mostly used to eliminate small lesions. In our series, only 13% of patients had to receive general anesthesia because of the size or extent of the lesions. The combined use of these two methods allowed for the rapid evacuation of small lesions by cautery and excision of larger lesions to allow histopathological identification; thus, a definitive histological diagnosis was obtained in all patients. In addition, rapid results were obtained in a single session, allowing patients to return to their sexual life faster and labor loss was minimized. In our series, no significant morbidity was observed, and the recurrence rate was also very low (close to 10%) during the follow-up period of approximately three years. HIV positive patients accounted for 40% of the recurrence cases. In large series including all treatment modalities, the early recurrence rate of the disease (first 3 and 5 years) is generally reported to be around 30 to 50%.[4,10,11] It is important for patients to be aware of possible new lesion development early and patients should be trained to prevent HPV spread. In our practice, serological tests including hepatitis B and C as well as HIV tests are requested in all patients with anogenital condyloma, and the results are consulted to relevant specialists after surgical treatment. In our study, histopathological examination was requested in all patients, so that differential diagnosis of lesions similar to HPV warts in physical examination such as molluscum contagiosum, fibroepithelial polyp and squamous papilloma could be made.

Conclusion

In conclusion, HPV-induced anogenital warts play an important role among sexually transmitted diseases. Topical, immune and surgical treatment methods are prominent in the treatment of the disease. However, in order to eliminate all small or large lesions in a single session and to allow histopathological examination, it may be recommended to perform surgical excision and fulguration of the remaining lesions. HIV positivity and high recurrence rates continue to be the most common problems.

Acknowledgements

We would like to express our love and gratitude to our clinic secretary Esma Mekancan and our health officer Fuat Kaya for their great efforts and efforts in the surgical procedures we performed under local anesthesia.

Ethics

Ethics Committee Approval: The Ethics Committee approval was obtained from Ümraniye Training and Research Hospital (23.01.2019/B.10.1.TKH.4.34H.GP.0.01/4).

Informed Consent: Was taken.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

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

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

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

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DOI: 10.4274/tjcd.galenos.2019.2019-10-3
Turk J Colorectal Dis 2019;29:193-197

RESEARCH ARTICLE

Excision of Retrorectal Tumors: Comparing Outcome Regarding Surgical Approach

Retrorektal Tümörlerin Eksizyonu: Cerrahi Yaklaşıma Göre Sonuçların Karşılaştırılması

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ABSTRACT

Aim: Tumors of the retrorectal space are very rare, and the clinical characteristics of these tumors, such as their complex anatomy, origin, and surgical techniques used in the treatment are yet to be elucidated. Although several surgical approaches have been identified, the question remains as to which approach provides better results.

Method: A total of 29 patients who underwent surgical excision of retrorectal tumors at Department of General Surgery, İstanbul Cerrahpaşa Faculty of Medicine, were retrospectively evaluated. All characteristics of patients were assessed from their medical files, and patients were informed about the study by phone.

Results: Among the 29 patients, four were male and 25 were female. The mean age was 44.07±16.15 years, and the mean follow-up duration was 7.5±4.4 years. Twenty patients underwent surgery via posterior (perineal) approach, seven via anterior (transabdominal) approach, and two via combined (abdominoperineal) approach. There were three deaths and six tumor recurrences during the follow-up period. The length of hospital stay was significantly higher with the combined approach. Coccygectomy was performed in 11 patients, of which only one had a recurrence, while the remaining five recurrences were in patients without coccygectomy.

Conclusion: The most advantageous surgical approach to retrorectal tumors remains unclear. Various factors (resection success, coccygectomy, tumor features, and type) are thought to affect the outcome. Further studies and structured, systematic reviews may be necessary to identify the role of each factor in the surgical outcome of retrorectal tumors.

Keywords: Retrorectal tumors, transabdominal approach, coccygectomy

ÖZ

Amaç: Retrorektal boşluğun tümörleri çok nadirdir ve bu tümörlerin kompleks anatomileri, kökenleri ve tedavide kullanılan cerrahi teknikler gibi klinik özellikleri henüz açıklığa kavuşturulmamıştır. Cerrahiye yönelik birkaç yaklaşım tanımlanmasına rağmen, hangi yaklaşımın daha iyi sonuçlar sağladığı sorusu halen gündemdedir.

Yöntem: İstanbul Cerrahpaşa Tıp Fakültesi, Genel Cerrahi Anabilim Dalı'nda retrorektal tümörlerin cerrahi eksizyonu yapılan toplam 29 hasta retrospektif olarak incelendi. Hastaların tüm özellikleri tıbbi dosyalarından değerlendirildi ve hastalar telefonla çalışma hakkında bilgilendirildi.

Bulgular: Yirmi dokuz hastanın 4'ü erkek, 25'i kadın; yaş ortalaması 44,07±16,15, ortalama takip süresi 7,5±4,4 idi. Yirmi hasta posterior (perineal), 7'si anterior (transabdominal) ve 2'si kombine (abdominoperineal) yaklaşımla opere edildi. Takip süresi boyunca 3 ölüm ve 6 tümör nüksü saptandı. Hastanede kalış süresi kombine yaklaşımla opere edilen hastalarda anlamlı derecede yüksekti. Koksektomi yapılan 11 hastanın birinde nüks izlenirken, diğer 5 nüks olgusu koksektomi yapılmayan kişilerdendi.

Sonuç: Retrorektal tümörlere en avantajlı cerrahi yaklaşım hala belirsizliğini korumaktadır. Sonuç olarak, çeşitli faktörlerin (rezeksiyon başarısı, koksektomi, tümör özellikleri ve tipi) sonuçları etkilediği düşünülmektedir. Her faktörün retrorektal tümörlerin cerrahi sonuçlarındaki rolünü belirlemek için daha ileri çalışmalar ve sistematik derleme çalışmaları gerekli olabilir.

Anahtar Kelimeler: Retrorektal tümörler, transabdominal yaklaşım, koksektomi

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Received/Geliş Tarihi: 14.11.2019 **Accepted/Kabul Tarihi:** 22.11.2019

Introduction

The retrorectal space (presacral space) is defined as the gap between the rectum and the sacrum/coccyx. Tumors of the retrorectal space are very rare.[1] In adults, the annual incidence has been reported as 1/40000-60000 with being more frequent in females.[2] Even though benign-malignant distinctions of these tumors are unclear, many case series in literature have concluded that the majority of tumors show benign features.[3] Retrorectal tumors present with nonspecific symptoms, and the majority of cases are initially misdiagnosed despite advanced imaging techniques.[4] However, after the clinician suspects a retrorectal tumor, magnetic resonance imaging (MRI) results can be instrumental in the differential diagnosis, may reveal important characteristics of the tumor, and determine treatment approach.[5] Computerized tomography (CT) may also be used to evaluate retrorectal lesions and involvement of surrounding tissue; however, better resolution of soft tissue in MRI may place it a step ahead of CT.[4] The use of biopsy in retrorectal lesions is disputed due to concerns about biopsy-related complications and the almost-absolute requirement of total resection regardless of the biopsy result.[6] A consensus on this matter is that definitive diagnosis should be based on the pathological evaluation of the lesion after surgical resection. Thus, surgery and surgical approach can be considered to be the most crucial aspects of the management of retrorectal tumors. When a patient is diagnosed with a retrorectal tumor, the standard approach for treatment is surgical resection.[7] Various surgical approaches for retrorectal tumors exist, including anterior (trans-abdominal), posterior (perineal), and combined abdominoperineal approaches. Due to the rareness of these tumors, large case series of retrorectal tumors have not been published.[8] Thus, the clinical characteristics of these tumors, such as their complex anatomy, origin, and surgical techniques used in the treatment are yet to be elucidated. The objective of the study was to determine the outcome and clinical features of retrorectal tumors based on surgery type.

Materials and Methods

Our study was a retrospective study conducted in İstanbul Cerrahpaşa Faculty of Medicine, Department of General Surgery. The study group consisted of 29 patients who underwent surgery for retrorectal tumors between 2001 and 2015. Two patients who refused to participate in the study were excluded from the study. Our pathology department made the diagnoses via histopathological examination and immunohistochemistry analysis of tissue samples obtained during surgery. All patients included in the study had undergone tumor resection. Surgeries were performed using the anterior, posterior, or combined transabdominal approach. We used the open surgical technique with complete resection of tumors. The appropriate approach was determined after the evaluation of each patient by the multidisciplinary team following a review of tumor characteristics. Ethical approval was obtained from İstanbul Cerrahpaşa Faculty of Medicine, Clinical Research Ethics Committee. The study was performed according to the principles put forth by the Helsinki Declaration and Good Clinical Practice Guidelines. The informed consent of patients was taken by phone or in follow-up examinations. Demographics, complaints, radiological results, pathologic reports, surgical approach, length of hospital stay (LoS), follow-up duration, and presence of recurrence and deaths were obtained from the medical records of patients.

Statistical Analysis

All analyses were performed by using SPSS v20 (IBM, Armonk, NY, USA). The Shapiro-Wilk test was used for the normality test of variables. Continuous variables were given as mean ± standard deviation for normally distributed data and median (interquartile range=IQR) for non-normally distributed data. Survival at up to 15 years was reported using the Kaplan-Meier cumulative survival plots. Comparisons between groups were made with the Mann-Whitney U and Kruskal Wallis tests. Analysis of categorical variables was made with the chi-square test. Fisher's exact test was used where sample sizes were small. $P \leq 0.05$ values were accepted as statistically significant.

Results

Four of the patients (13.8%) were male, and 25 (86.2%) were female. Their ages ranged from 21 to 77 years, with a mean of 44.07±16.15 years. The mean follow-up period was 7.5±4.4 years. Two cases were diagnosed incidentally, while 13 patients admitted with rectal pain, four with low back pain, two with femoral pain, three with inguinal pain, three with abdominal pain, one with constipation, one with gluteal pain, and one with perianal fistula. Among the study group, seven patients (24.1%) underwent surgery due to tailgut cysts and six (20.7%) due to epidermoid cysts. Eighteen of the cases (62.1%) were cystic, 11 (37.9%) had solid (or heterogeneous) pathology. One tumor was determined to be a malignant adenocarcinoma based on the tailgut cyst. Recurrence occurred in six patients (20.6%). Fourteen patients (48.3%) had rectal pain, and seven (24.1%) had waist-to-groin pain. The majority of patients (72.4%) did not undergo biopsy. Three patients died during the follow-up period; two of these cases died due to causes other than retrorectal tumors. The characteristics of the

patients are given in Table 1. In terms of surgical approach, 20 patients (68.9%) underwent posterior, seven (24.1%) underwent anterior, and two (6.9%) underwent combined abdominoperineal surgery. The posterior approach was used in patients in whom the upper border of the tumor reached the S2 level, but was palpable and mobile during a rectal examination. The LoS of patients who were operated with the combined method was significantly higher than patients who underwent surgery with other approaches. However, no statistically significant difference was found between the anterior and posterior methods in terms of LoS [anterior, median=9 days (IQR=6-12), posterior, median=6 days (IQR=4-9), p>0.05]. No significant differences were found between surgical procedures in terms of follow-up period [anterior, median=63.84 months (IQR=39.23-114), posterior, median=86.21 months (IQR=49.95-130.74), combined median=50.78 months (IQR=24.90-76.65), p>0.05].

Patients with cystic pathology had higher mean survival than those with solid pathologies (p=0.036). The 5 year survival rate of patients with solid pathology was 77.9%. We were able to obtain the radiological results of 27 cases in our study. Radiologically determined diameters of the tumors were compared with diameters determined after pathology. Median radiological diameter was 6.3 cm (IQR=5-12.75), while median pathological diameter was 7.2 cm (IQR=3.5-12.5); the difference was not significant (p>0.05). There were no surgical complications in any of the patients. Six patients had a recurrence. One patient (a 68-year-old female) died 60 months after the surgery. She had a diagnosis of squamous cell cancer with perineural invasion. Additionally, two patients died during the follow-up period due to causes unrelated to retrorectal tumor, one at 63 months, and the other at 128 months. The characteristics of patients are summarized in Table 1.

Discussion

Although many studies have presented findings for retrorectal tumors and their treatment, the majority of these studies have a low number of cases. Thus, determining the most appropriate surgical approach to retrorectal tumors is still a controversial matter. We aimed to evaluate and compare the surgical methods utilized for the treatment of retrorectal tumors at our center. Studies have shown that retrorectal tumors are mostly benign. However, it is important to keep in mind that cystic lesions with solid walls and heterogeneous components have a higher chance of malignancy.[9,10,11] In our study, 79.3% of the cases were benign. It was found that one of the malignant cases occurred based on tailgut cysts. The most frequent symptom in this study was a pain in the rectal region and lower back. Among those with benign masses, 82.6% had pain, while all (100%) patients with malignant mass had pain. However, the difference was not statistically significant, presumably due to the low number of malignant cases. In previous case series studies, 86-88% of patients with malignancies were reported to have pain, while in benign cases, this value was 22-39%, which is much lower than our result.[4] In a review, the most common symptom was also reported as pain in the rectal area, which was often associated with infection and malignancy.[12] Surgical resection is the best therapeutic choice for retrorectal tumors, even in asymptomatic patients. Many lesions are considered to contain malignant elements; thus, they may have the potential for growth or transformation to malignancy, or they may cause complications such as infection.[13] Depending on the pathology, radiological results, and the location of the retrorectal lesion, three different surgical approaches can be utilized: posterior, anterior, and combined. In general, lesions above S4 are operated with the anterior or combined approach, and lesions below S4 are operated through the posterior approach. However, higher lesions that are palpable and mobile during the rectal examination may also be operated with the posterior approach,[3] which provides relatively better access to the caudal component of the mass and also ensures excellent results with minimal morbidity. Furthermore, in a study including 1708 patients, Baek et al.[12] reported that the posterior approach was the preferred method of retrorectal tumor surgery and provided the lowest morbidity rate. Therefore, at our center, the posterior approach was chosen in the majority of cases (68.9%), as long as the mass was palpable and mobile during the rectal examination.

Resection of the coccyx during surgery is also a controversial matter. Removal of the coccyx improves surgical exposure of the tumor site, and some authors claim that the coccyx may contain tissue remnants that lead to cystic formations (and cause recurrence).[14,15] However, whether the coccyx truly causes recurrence remains unknown, and studies have shown that recurrence mostly occurs in malignant tumors and cases where total resection could not be performed.[8,16] The majority of recent studies suggest that the coccyx should not be resected unless the lesion is directly attached to the coccyx.[16,17] In the current study, coccygectomy was performed on 11 (37.9%) patients, and only one (9.1%) of these patients developed recurrence. A total of five recurrences were found in the remaining 18 patients (27.7%). Our results are in agreement with contemporary literature, which reports that the rate of local recurrence is around 25-56% in cases with incomplete resection of the tumor and without coccygectomy.[15,18] Although this finding may encourage the idea that coccygectomy should be performed in retrorectal tumors, further studies in which patient groups are adjusted for various factors (surgical approach, tumor features, age, comorbidities, resection success) are needed to conclude.

Table 1. The characteristics of patients

			Pre-operative period			Operation				Post-operative period			
No	Gender	Age	Complaints	MRI	CT	Bx	Approach	RoC	Area (cm^2)	Pathology	LoS	Rec.	D
1	F	77	Cons.	+, c	-		P	-	10.8	Tailgut cyst	1	-	-
2	F	68	RP	+	-	+	P	-	3.5	Squamous cell ca	16	+	+
3	F	66	Low back pain	+	-	+	P	+	99	Schwannoma	6	-	-
4	F	65	RP	+, c	+, c	-	P	-	132	Dermoid cyst	6	+	-
5	F	61	Rectal pain	-	+, c, 2	-	A	+	72	Tailgut cyst	16	-	-
6	F	61	Femoral pain	-	+	-	A	-	99	Solitary fibrous tumor	12	+	+
7	F	59	Rectal pain	+, 2	-	-	P	-	5.5	Retrorectal cyst	10	-	-
8	F	54	Incidental	+, c	-	-	P	-	123.5	Epidermoid cyst	24	-	-
9	F	50	Low back pain	+, c	+	+	A	-	32.4	Epidermoid cyst	6	-	-
10	M	49	Rectal pain	+	-	-	P	+	16	GIST	2	-	+
11	M	48	Incidental	+	-	-	A	-	117	Schwannoma	8	-	-
12	F	43	Inguinal pain	-		-	A	-	63	Mature cystic teratoma	6	-	-
13	F	41	Rectal pain	+, c	+, c	-	P	+	33	Tailgut cyst	3	-	-
14	F	37	Abdominal pain	+		-	P	-	182	GIST	4	+	-
15	M	36	Abdominal pain	+	+	-	A	-	48.7	Schwannoma	9	-	-
16	F	35	Inguinal pain	-	+, c	-	P	-	130	Tailgut cyst	4	-	-
17	F	35	Rectal pain	+, c	-	-	P	-	8.7	Hindgut malformation	6	-	-
18	F	34	Rectal pain	NA	-	-	P	-	11.3	Epidermoid cyst	11	-	-
19	M	32	Low back pain	-	-	+	P	+	4.5	Epidermoid cyst	4	-	-
20	F	31	Rectal pain	+	-	-	P	+	5.1	Mature cystic teratoma	10	+	-
21	F	30	Low back pain	+, c	-	-	P	+	19.3	Epidermoid cyst	6	-	-
22	F	26	Inguinal pain	+, c	-	-	P	+	4.5	Epidermoid cyst	3	-	-
23	F	24	Rectal pain	+, c	+	-	P	+	13	Tailgut cyst	2	-	-
24	F	23	Rectal pain	+, c	-	+	P	+	13	Cystic hamartoma	7	-	-
25	F	22	Perianal fistula	+	-	+	cap	-	40	Hindgut malformation	34	+	-
26	F	62	Femoral pain	NA	-	-	P	-	12	Tailgut cyst	6	-	-
27	F	31	Rectal pain	-	-	+	A	-	6	Neuroectodermal tumor	10	-	-
28	F	57	Gluteal pain	-	-	+	P	-	262	Adenocarcinoma	7	-	-
29	F	21	Rectal pain	+, c	-	-	cap	+	46.8	Tailgut cyst	26	-	-

NA: Not applicable, M: Male, F: Female, MRI: Magnetic resonance imaging, CT: Computed tomography, LoS: Length of hospital stay, GIST: Gastrointestinal stromal tumors, RP: Rectal pain, Cons: Constipation, RoC: Resection of coccyx, Rec: Recurrence, Cap: Combined approach

In the literature, the recurrence rate of malignant tumors is reported to be around 30-75%; this rate is significantly lower (0-11.1%) in benign lesions.[5,19,20] In the current study, recurrence was observed in 50% of malignant cases and 13% of benign cases [with a total of six (20.6%) recurrences]. In studies where complete resections were reported, the rates of recurrence were reported as 0% at 10-year follow-up in one study[6], and 6.2% at 5-year follow-up in another.[2] A study by Hjermstad and Helwig[21] reported a recurrence rate of 11.1% during a 11-year follow-up of patients with tailgut cysts, and Gao et al.[8] reported 17.9% recurrence in their series of patients with presacral lesions, which are closer to our findings. In addition to the malignancy of the initial tumor, complete excision of the lesion and any involved entity seems to be the most important factor in the prevention of recurrence.

The limitations of this study include its retrospective design that may introduce assessment bias. However, the design was unavoidable, given the rarity of these tumors. Another limitation is the fact that radiological results of two patients could not be obtained, which may reduce the feasibility of comparisons. The long follow-up duration of patients and the relatively high number of patients (although from a single center) are strengths of the study.

Conclusion

Retrorectal tumors are mostly benign. However, total resection is the only viable treatment course; thus, evaluation of surgical outcome in terms of approach is an important topic. The posterior approach was the most preferred surgical method with relatively shorter LoS. The rarity of retrorectal tumors leads to a limited number of cases, especially in single-centered studies. Therefore, multicenter and prospectively designed studies may be useful for a better understanding of the characteristics of retrorectal tumors and may contribute to a better surgical approach.

Ethics

Ethics Committee Approval: Ethical approval was obtained from İstanbul Cerrahpaşa Faculty of Medicine, Clinical Research Ethics Committee. The study was performed according to the principles put forth by the Helsinki Declaration and Good Clinical Practice Guidelines.

Informed Consent: Retrospective study.

Peer-review: External and internal peer-reviewed.

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

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DOI: 10.4274/tjcd.galenos.2019.25593
Turk J Colorectal Dis 2019;29:198-203

CASE REPORT

Acute Hemorrhagic Incarceration of Prolapsed Giant Rectal Tubulovillous Adenoma: A Rare Case of Anorectal Emergency

Prolabe Dev Rektal Tübülovillöz Adenomun Akut Hemorajik İnkarserasyonu: Nadir Bir Anorektal Acil Olgusu

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ABSTRACT

Colorectal adenomas are polyps that arise from the mucosa and demonstrate neoplastic features. Increasing dysplasia and malignant potential of adenomas are related to their size, villous component, and patient's age. Giant villous polyps of the rectum represent a real potential for an anorectal emergency. They may be involved in rectal bleeding, obstruction, prolapse, or incarceration. We herein present a case of a 57-year-old man presented to the emergency department because of an incarcerated transanal prolapse of a giant hemorrhagic tubulovillous rectal adenoma, which caused clinical symptoms and signs that were mistaken for prolapsed hemorrhoids, and was treated successfully by transanal excision.

Keywords: Rectal polyp, tubulovillous adenoma, prolapse, incarceration, transanal excision

ÖZ

Kolorektal adenomlar, mukozadan kaynaklanan ve neoplastik özellikler gösteren poliplerdir. Artan displazi ve malignite potansiyeli, adenomun boyutu, içerdiği villöz komponent ve hasta yaşı ile ilişkilidir. Dev rektal villöz polipler, gerçek bir anorektal acil potansiyeli taşırlar. Rektal kanama, obstrüksiyon, prolapsus ve inkarserasyona sebep olabilirler. Biz de bu yazımızda acil servisimize başvuran 57 yaşında erkek bir hastada, klinik semptom ve bulguları prolabe hemoroid ile karışan, başarılı bir şekilde transanal eksizyon yaptığımız, anüsten prolabe olmuş inkarsere hemorajik dev rektal tübülovillöz adenom olgusunu sunmayı amaçladık.

Anahtar Kelimeler: Rektal polip, tübülovillöz adenom, prolapsus, inkarserasyon, transanal eksizyon

Introduction

Colorectal polyps are classified histologically as either neoplastic (which may be benign or malignant), adenomatous polyps (including serrated adenomatous) or non-neoplastic polyps (including hyperplastic, mucosal, inflammatory, and hamartomatous). Adenomatous polyps are found in approximately 33% of the general population by age 50 and in approximately 50% of the general population by age 70. Most lesions are less than 1 cm in size, with 60% of people having a single adenoma and 40% having multiple lesions. Sixty percent of lesions will be located distal to the splenic flexure.[1] Prolapsing anorectal polyps may mimic benign anorectal conditions such as prolapsed hemorrhoids and cause treatment dilemmas in an emergency setting. This study aimed to present a patient with acute hemorrhagic incarceration of prolapsed giant rectal adenomatous polyp that was treated successfully by transanal excision.

Case Report

A 57-year-old male patient was admitted to our emergency department with an incarcerated hemorrhagic mass protruding from the anal canal. He had a prolapsing rectal

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Received/Geliş Tarihi: 17.03.2019 **Accepted/Kabul Tarihi:** 17.04.2019

mass approximately for two years, although he always refused further colonoscopic evaluation or surgical treatment since the mass was relocated spontaneously. On admission, he did not refer to abdominal pain or diarrhea. He mentioned chronic constipation and rarely the urgency of defecation. Physical examination did not reveal abdominal pain or signs of intestinal obstruction. On rectal inspection in the lithotomy position, an incarcerated prolapsed mass of 15 cm in diameter that looked like cauliflower was seen (Figure 1). The mass was foul-smelling and had a necrotic surface and erosion. Hemoglobin was 11.7 g/dL, and other biochemical values were normal. Computed tomography with oral and intravenous contrast revealed prolapsing rectum and perirectal fat tissue from the anal canal. The hemorrhagic polyp protruding from the anal canal was removed by transanal excision under general anesthesia. Clean surgical margins were obtained by transanal excision of the mass and underlying muscular layer as a single piece (Figure 2). No postoperative complications occurred. The 12x8x5 cm mass was determined in pathologic examination to be a tubulovillous adenoma with intramucosal carcinoma (Figure 3). There was no lymphovascular invasion, and the mass was low-grade and well-to-moderately differentiated. No further treatment was recommended.

Discussion

Polyps occur in all parts of the colon. There are three main histologic variants of adenomatous polyps, namely tubular, villous, or tubulovillous. According to the World Health Organization criteria, tubular adenomas have less than 25% villous component, tubulovillous have 25-75%, and villous have greater than 75%.[2] Tubular adenomas are the most common type of adenoma, followed by tubulovillous and villous. Tubular adenomas are found with equal distribution throughout the colon. Villous adenomas have a predilection for the rectum. They may be asymptomatic or related to mucous excretion, diarrhea, electrolyte imbalance, bleeding, or obstruction.[3,4] Tubular adenomas have <5% of harboring cancer, while the risk of tubulovillous is 20-25%, and villous adenomas are 35-40%.[5]

Polyps are characterized by their size and morphology, which are two important features that may predict underlying malignancy and should guide how polyps are managed. They may be pedunculated (usually tubular or tubulovillous), sessile (usually tubulovillous or villous), or non-polypoid (flat or depressed). Small adenomas (<1 cm) are associated with malignancy in only 1.3% of cases, while adenomas >2 cm harbor malignancy 46% of times. Adenomatous polyps with mild, moderate, and severe dysplasia are found to have malignant cells on complete excision of the polyp in 5.7%, 18%, and 34.5% of the time, respectively.[1] As defined by the United States National Polyp Study, an advanced adenoma is one that is ≥1 cm in size or contains high-grade dysplasia or invasive cancer. Villous change, left-sided location, and age ≥60 were also associated with advanced pathologic features.[6] Approximately 3% to 5% of adenomatous polyps harbor invasive carcinoma at the time of diagnosis. If a

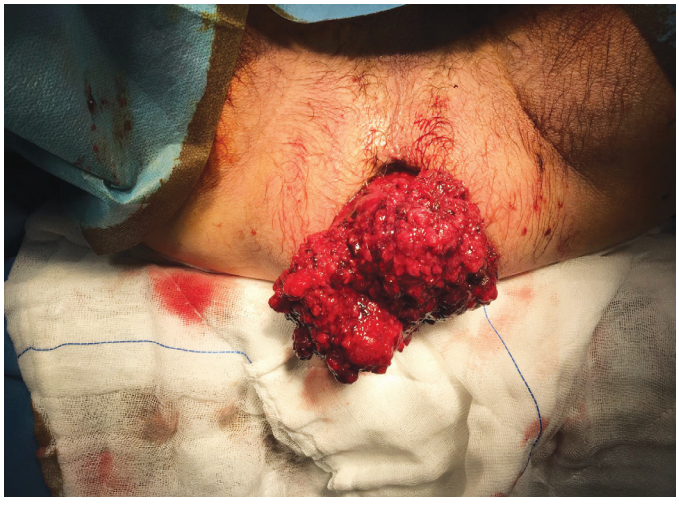

Figure 1. Preoperative image of giant rectal tubulovillous adenoma protruded from the anus

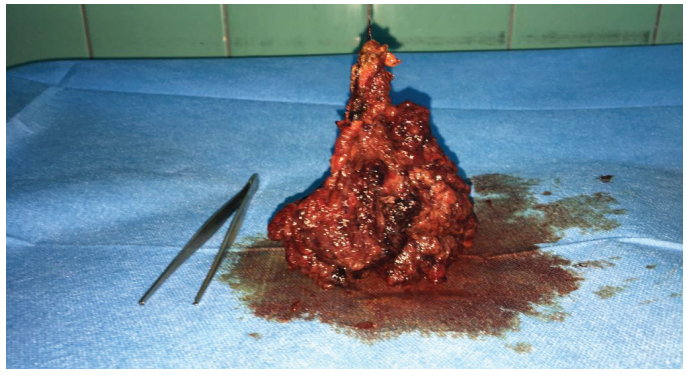

Figure 2. The excised specimen

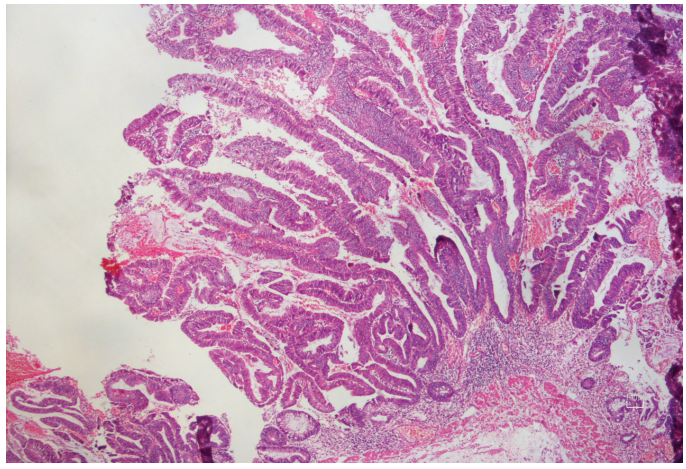

Figure 3. Microscopic image of rectal polyp stained with hematoxylin and eosin. Tubulovillous adenoma containing an intramucosal carcinoma focus (x10)

polyp containing high-grade dysplasia is completely excised, the patient may be considered cured. A negative resection margin has consistently been shown to be associated with a decreased risk for an adverse outcome (recurrence, residual carcinoma, lymph node metastases, and decreased survival). Our patient's polyp was removed with a negative resection margin and identified in the pathologic evaluation as a tubulovillous polyp with intramucosal carcinoma in the polyp head. There was no invasion of the polyp stalk. Multiple mechanisms are related to polyps that prolapse through the anus. It seems that this condition is seen more often in children because during the first years of life there is less fat in the ischiorectal fossa, and so there is less pressure provided for this functional component of the perineum.[7,8,9] Increased straining during bowel movements triggered by diarrhea, a common condition at this age, may also play a role.[7,8] In adults, the main predisposing factors for prolapse include defects or dysfunction of the anal sphincter or conditions that induce increased intra-abdominal pressure, such as chronic constipation.[10] In our case, the patient had no apparent alterations in the integrity of the anal sphincter that predispose to prolapse, but he suffered from constipation. Although there is no consensus as to how to treat prolapsed polyps, the options include conservative treatment, endoscopic resection, or even ultralow anterior resection.[11] Colonoscopic polypectomy is safe and effective for the excision of nearly all pedunculated polyps. For polyps not amenable to polypectomy such as large sessile villous lesions, surgical resection is recommended. Fungating, ulcerated, or distorted lesions destroying the surrounding bowel wall indicate the presence of invasive cancer and are contraindications to polypectomy. Surgical resection is also indicated for patients with residual invasive carcinoma and those at high risk for lymph node metastases despite complete endoscopic polypectomy. Large villous adenomas of the rectum may be amenable to transanal local excision, and this provides complete diagnostic evaluation for malignancy, and if excised with negative margins (with other favorable prognostic features), it may be the only therapeutic procedure needed. In our case, the transanal polypectomy was successful.

Finally, since patients with anorectal adenomatous polyps have a well-established increased risk of malignancies, screening, and surveillance programs are recommended.[12] Patients with 3-10 adenomas, any adenoma ≥1 cm, any adenoma with villous features, or high-grade dysplasia should have their next colonoscopy in 3 years provided the entire polyp was removed in a non-piecemeal fashion.[13,14]

Ethics

Informed Consent: Patient was informed about the study and written informed consent form was obtained.

Peer-review: Extenally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: O.E., İ.A., Concept: O.E., Z.T., A.R., Design: O.E., Z.T., A.R., Data Collection or Processing: O.E., İ.A., Z.T., Analysis or Interpretation: O.E., Z.T., A.R., Literature Search: O.E., Z.T., A.R., Writing: O.E., Z.T., A.R.

Conflict of Interest: The authors declare there is no conflict of interest.

Financial Disclosure: The authors declare that this study did not receive any financial support.

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DOI: 10.4274/tjcd.galenos.2019.2019-5-3
Turk J Colorectal Dis 2019;29:201-203

CASE REPORT

Melanosis Coli: Case Report

Melanozis Koli: Olgu Sunumu

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ABSTRACT

Melanosis coli is an incidental benign finding characterized by the deposition of dark brown pigment in the colonic mucosa. The cause of this situation is due to long-term laxative use. We report a female patient who underwent surgery for colon adenocarcinoma and diagnosed as melanosis coli during histopathological examination.

Keywords: Colon, melanosis coli, tumor

ÖZ

Melanozis koli kolonik mukozanın siyah kahverengi pigmentasyonuyla karakterize benign bir hastalıktır. Uzun süreli konstipasyon yakınmaları olan olgularda laksatiflerin kullanımı sonucu daha sık izlenmektedir. Biz burada sigmoid kolon tümörü nedeniyle opere edilen ve histopatolojik inceleme sonrası adenokarsinom ve melanozis koli tanısı alan kadın hastayı sunmayı amaçladık.

Anahtar Kelimeler: Kolon, melanozis koli, tümör

Introduction

Melanosis coli is characterized by increased macrophages localized in the colonic mucosa, with black-brown pigment in their cytoplasm. It is asymptomatic and is often incidentally detected during colonoscopic or histopathological examination.[1] Histochemically, the intracellular pigment cross-reacts with Fontana-Masson and is lipofuscin-like. Ultrastructural studies have shown that this pigment is formed by the destruction of apoptotic colonic epithelial cells.[2] Melanosis coli is detected during the investigation of the causes of constipation due to malnutrition especially in the elderly. Recently, the incidence has increased as a result of colonoscopic examinations.[1,3]

Case Report

A 56-year-old woman was admitted to the emergency department with the complaints of constipation, nausea, vomiting and abdominal pain, and she was hospitalized with pre-diagnosis of colon tumor. In the emergency ultrasonographic examination, abdomen could not be evaluated due to abdominal gas distension. Computed tomography revealed that the distended appearance in the right and descending colon was sharply terminated in the proximal segment of the sigmoid colon, and that from this point, it was found that there was significant thickening in the colon wall, serosa irregularity and dirty appearance in the paracolic fatty planes along the intestinal segment of 3.5 cm in length. The patient was operated on with the preliminary diagnosis of primary colon tumor. Macroscopic examination of the left column resection material revealed a 2.4x0.8 cm ulcerous tumor that partially obliterated the lumen. It was noted that the mucosa remaining proximal to the tumor and all serosal surfaces were diffuse black-brown except for the tumor and the distal mucosa (Figure 1). In histopathological examination of the tumor, moderately differentiated adenocarcinoma composed of cribriform adenoid structures

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Received/Geliş Tarihi: 07.09.2019 **Accepted/Kabul Tarihi:** 13.09.2019

invading the pericolorectal adipose tissue was seen and adenocarcinoma metastasis was detected in three of the 13 lymph nodes dissected from the pericolic fat. In the sections of non-tumoral black mucosal areas, macrophages in the lamina propria and the presence of black-brown pigment in the cytoplasm of macrophages were noted (Figure 2a, b). Histochemical study showed positive staining of these pigments with Fontana-Masson, while staining with iron was not observed (Figure 2c). It was learned that the patient had a history of laxative use with anthraquinone for three months in the preoperative period due to constipation. The patient was diagnosed with "adenocarcinoma" and "melanosis coli". Clinical follow-up of the patient who received six cycles of chemotherapy after the operation continues.

Discussion

Although there is no clear information about the incidence of melanosis coli, rates ranging from 1-59.5% have been reported.[4,5] It is more common in women as in our case and in older age.[1,6] Pigment can be observed more intensively in the cecum and ascending colon than in the distal column.[1,2] In our case, melanosis coli was detected in the sigmoid colon. The use of laxatives, especially laxatives containing anthraquinone, is a well-known cause for melanosis coli. It can usually develop after 4-9 months of use. With the discontinuation of use, it may recede within months.[7] It can be seen in varying rates in inflammatory bowel disease, colonic diverticulum, chronic diarrhea, non-steroidal anti-inflammatory drug use, colorectal polyps and tumors.[5,8] It has been reported in the literature that it is frequently associated with colonic polyps.[5,9] In one study, it was emphasized that pigment-free polyps were more easily detected in endoscopic examination because of the black-brown color of the mucosa.[5] These polyps may include adenomatous polyps, which may include carcinoma focus. Biopsy from the non-pigmented areas in the recognition and exclusion of these lesions is also among the recommendations.[10] In a study that reported the association with non-neoplastic polyps that contain pigment, the toxic effect resulting in the destruction of the apoptotic colonic epithelial cells was claimed to cause the development of the colorectal polyps, as well as melanosis coli.[8] Although no polyp was detected in our case, it was observed that there was no macroscopic and microscopic pigment accumulation in ulcerated tumor tissue in accordance with the literature. Diffuse black-brown pigment was observed on the mucosa and serosal surface of the tumor proximal. Melanosis coli is a benign and reversible lesion. However, the findings in the studies on whether there is a relationship between colorectal tumors seen in similar age groups are controversial. In some of the studies, an increased risk for the tumor was reported in cases with melanosis coli, while some did not suggest a relationship.[6,9] In conclusion, as in our case, melanosis coli can be defined as a lesion that may arise as a result of long-

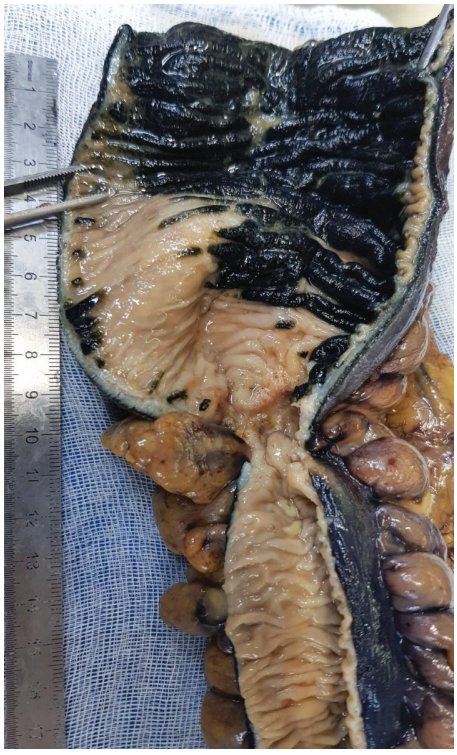

Figure 1. Tumor tissue and diffuse black-brown mucosa proximal to tumor tissue

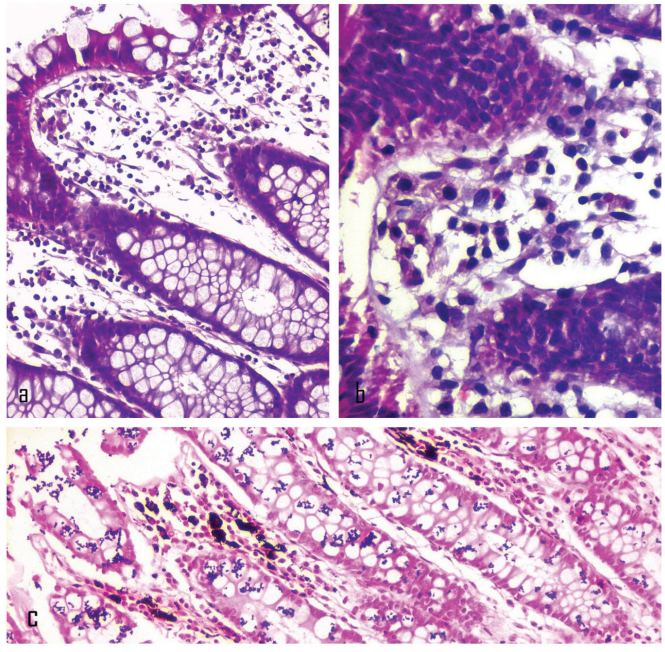

Figure 2. Macrophage clusters in the mucosa and the presence of black-brown pigments in the cytoplasm of macrophages [a: hematoxylin and eosin (H&E), x200, b: H&E, x400). Positive staining with Fontana-Masson c: x200]

term laxative use in order to correct the changing bowel habit due to tumor.

Ethics

Informed Consent: Was taken.

Peer-review: External peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: S.Ş.E., G.K., D.K., M.G., Concept: S.Ş.E., G.K., Design: S.Ş.E., G.K., D.K., M.G., Data Collection or Processing: S.Ş.E., G.K., M.G., Analysis or Interpretation: S.Ş.E., G.K., D.K., M.G., Literature Search: S.Ş.E., G.K., D.K., Writing: S.Ş.E., G.K.

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

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

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DOI: 10.4274/tjcd.galenos.2019.2019-7-3
Turk J Colorectal Dis 2019;29:204-205

CASE REPORT

A Rare Complication of Anticoagulant Use: Colonic Intramural Hematoma-Case Report

Antikoagülan Kullanımının Nadir Bir Komplikasyonu: Kolonik İntramural Hematom-Olgu Sunumu

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ABSTRACT

Oral anticoagulants are used in the treatment of cardiac and thromboembolic diseases. Thromboembolic and hemorrhagic complications are seen in the use of medicine. In this case report, we report the case of colonic intramural hematoma due to warfarin use treated conservatively in the light of the literature.

Keywords: Anti coagulant, intramural hemotoma, warfarin, case report

ÖZ

Oral antikoagülanlar, kardiyak ve tromboembolik hastalıkların tedavisinde kullanılmaktadır. İlacın kullanımında tromboembolik ve hemorajik komplikasyonlar görülmektedir. Bu olgu sunumunda, varfarin kullanımına bağlı gelişen konservatif olarak tedavi edilen kolonik intramural hematom olgusunu literatür eşliğinde sunmaya amaçladık.

Anahtar Kelimeler: Anti koagülan, intramural hematom, varfarin, olgu sunumu

Introduction

Oral anticoagulants are currently widely used in the treatment of atrial fibrillation, deep vein thrombosis, pulmonary embolism, hypercoagulability syndromes, and in case of heart valve replacement. However, the use of anticoagulants leads to an increased risk of bleeding. The risk of bleeding is increased by 1-3% for each year of anticoagulant use.[1] International Normalized Ratio (INR) monitoring should be done regularly. Awareness about the use of the drug should be established to reduce the risk of bleeding. Intracranial, gastrointestinal, and intraabdominal hemorrhages due to anticoagulant use can be seen; however, intestinal intramural hematoma (IMH) is a rare condition. While the incidence of small bowel IMH with anticoagulant use is estimated to be 1/25.000, colonic IMH is rarer.[2] In this case report, we aimed to investigate a case of colonic IMH due to warfarin overdose presenting with acute abdominal pain.

Case Report

An 89-year-old female patient was admitted to the emergency department with complaints of abdominal pain and diarrhea for about two days. It was learned from the anamnesis that she had a lung mass and used warfarin for deep vein thrombosis for a month. It was also learned that no laboratory examination was performed since she started using warfarin. On admission, the patient's blood pressure was 95/58 mmHg, and the pulse was 113 beats/min. On physical examination, skin turgor and tonus were decreased, and abdominal tenderness was present. In the rectal examination, the rectum was empty, and a watery stool without hemorrhage was observed in the patient's diaper.

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Received/Geliş Tarihi: 15.08.2019 **Accepted/Kabul Tarihi:** 12.09.2019

INR was measured as 14.93, and creatinine was 1.35 mg/dL. The hemoglobin value as 11.8 g/dL and the hematocrit was 35.7%. Other biochemical parameters were within normal limits. Abdominal ultrasonography showed marked wall thickening in the sigmoid colon. Abdominal computed tomography showed IMH in the terminal ileum and sigmoid colon (Figure 1). No intra-abdominal fluid and hematoma was observed. The INR value decreased to 1.66, and hemoglobin value was 11.1 g/dL, and hematocrit was 34.9% after two units of fresh frozen plasma transfusion. After pain control, the patient was hospitalized. Anticoagulant treatment was stopped. After 24 hours of follow-up, low-molecular-weight heparin therapy was initiated. The patient was discharged after two days without pain.

Discussion

Gastrointestinal system IMHs develop spontaneously or due to blunt trauma. The cases caused by blunt trauma are usually in duodenum due to the anatomic location of the retroperitoneum.[3] In the literature, IMH was first described by McLauchlan in 1838 at the level of the duodenum.[3] Spontaneous hematoma cases are caused by anticoagulant use or bleeding disorders. It is thought that 36% of all gastrointestinal IMHs are due to anticoagulant use.[3] IMHs occur with different symptoms and signs, depending on the level of the gastrointestinal system. Gastric IMH may present as an infrequent complication of anticoagulant use with upper abdominal pain and vomiting with or without hemorrhage.[4] A duodenal IMH may present with clinical and laboratory findings of jaundice and/or acute pancreatitis.[3,5] The patients can admit with obstruction at the level of the small intestine and colon.[6] In addition, abdominal pain is the most common symptom.[7] Our patient was admitted with abdominal pain and diarrhea. In patients with IMH, hemorrhage is frequently caused by slowly bleeding vessels at the submucosal level. In the presence of anticoagulant toxicity, the increased wall thickness in the gastrointestinal tract on computed tomography is characteristic.[8] Diagnosis is difficult without advanced radiological imaging. Cases with diagnostic laparotomy have been described in the literature.[6] The first thing that should be done in the treatment of IMH is to stop anticoagulants and to give fresh frozen plasma and vitamin K to correct coagulation parameters. Conservative treatment is the primary treatment approach, but surgical treatment should be performed in the presence of obstruction, necrosis, or signs of peritonitis.[7] In patients undergoing laparotomy, a diversion stoma is a treatment option.[6] The complete resolution of the hematoma is between 10 days and two months. The anticoagulants should be initiated after the complete resolution of the hematoma. If anticoagulant use is required, low molecular weight heparin should be preferred, as in our case. Recurrence of hematoma has been reported in patients in whom anticoagulant treatment is initiated without complete resolution of the hematoma.[9] In conclusion, IMH is a rare complication of anticoagulant use. Although these cases present with acute abdomen or mechanical intestinal obstruction, they should be treated conservatively.

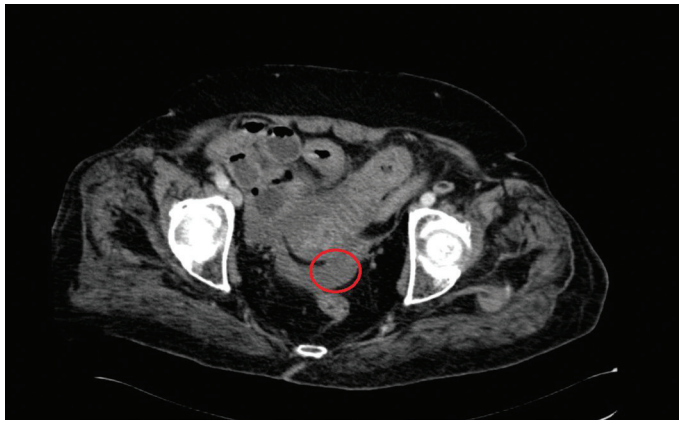

Figure 1. Abdominal computed tomography
*Intramural hematoma in the sigmoid colon

Ethics

Informed Consent: Was obtained.

Peer-review: External peer-reviewed.

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

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DOI: 10.4274/tjcd.galenos.2019.2019-5-4
Turk J Colorectal Dis 2019;29:206-210

CASE REPORT

Fournier's Gangrene

Fournier Gangreni

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ABSTRACT

Fournier's gangrene is a disease of the perineal, genital or perianal regions characterized by necrositic fasciitis due to synergistic polymicrobial infection. Fourteen patients diagnosed with Fournier's gangrene between 2009-2018 in our clinic were evaluated retrospectively. All patients were admitted to the emergency department or outpatient clinic of our hospital. The mean age of the patients was 58.6 (37-81) years. Diabetes mellitus (42%) and hypertension (42%) were the most common comorbidities in our patients with Fournier's gangrene. Surgical debridement of necrotic tissues, broad-spectrum antibiotic therapy and nutritional support were applied to all patients. In the second session, reconstructive surgery was performed to repair the wound defect in 3 patients, hyperbaric oxygen therapy in 8 patients, negative pressure dressing in 5 patients, diversion colostomy in 3 patients. Mortality rate was 7% (1 patient). In conclusion, Fournier's gangrene is a serious disease which is seen rarely in the emergencies of general surgery and urology clinics but has high mortality due to its insidious clinic.

Keywords: Debridement, Fournier's gangrene, necrositic fasciitis

ÖZ

Fournier gangreni perineal, genital veya perianal bölgelerin, sinerjistik polimikrobiyal enfeksiyonuna bağlı gelişen nekrozitan fasitisi ile karakterize bir hastalığıdır. Kliniğimizde 2009-2018 tarihleri arasında, Fournier gangreni tanısı konulan 14 hasta retrospektif olarak değerlendirildi. Hastaların tamamı ilk başvuruda hastanemiz acil servisine ya da polikliniğe başvuran hastalardı. Ortalama yaşı 58,6 (37-81) yıl olan olgularımızın ikisi kadın, diğerleri erkekti. Fournier gangreni olgularımızda en sık yandaş hastalıklar diabetes melitus (6 hasta %42) ve hipertansiyon (6 hasta %42) idi. Nekrotik dokuların cerrahi debridmanı, geniş spektrumlu antibiyotik tedavisi ve nütrisyonel destek bütün hastalara uygulanırken; yara defektini onarmak için ikinci seansta rekonstrüktif cerrahi girişim 3 hastaya, hiperbarik oksijen tedavisi 8 hastaya, negatif basınçlı pansuman 5 hastaya, diversiyon kolostomisi 3 hastaya uygulandı. Mortalite oranı %7 (1 hasta) olarak bulundu. Sonuç olarak Fournier gangreni, genel cerrahi ve üroloji kliniklerinin acillerinde nadir görülen, ancak sinsi kliniği nedeniyle yüksek mortaliteye sahip, acil cerrahi girişim gerektiren ciddi bir hastalıktır.

Anahtar Kelimeler: Debridman, Fournier gangreni, nekrotizan fasiit

Introduction

Fournier's gangrene, first described in 1883 by Jean Alfred Fournier, is an acute and potentially lethal necrotizing fasciitis involving the skin and soft tissues of the scrotum, perineum and even the abdominal wall.[1] Risk factors for this disease include senility, diabetes, alcoholism, malignancy and immune system suppression.[2] The most common causes of the disease are anorectal infections, genitourinary infections or local injuries to the perineal and genital skin.[3] The pathology of Fournier's gangrene can be briefly summarized as synergistic necrotizing fasciitis resulting in the thrombosis of small subcutaneous vessels of suppurative bacterial infection of the anorectal, perineal, or genitourinary regions, leading to the development of gangrene in the skin.[1,4] With the developing inflammatory reaction, local infection is rapidly spreading to deep fascial layers. This rapidly spreading infection characteristically causes obliterative endarteritis, leading to cutaneous and subcutaneous vascular thrombosis and tissue necrosis.[4] Because facial necrosis can progress 2-3 cm per hour, it is very important to make the

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Received/Geliş Tarihi: 08.10.2019 **Accepted/Kabul Tarihi:** 22.10.2019

diagnosis early.[5] In this study, we evaluated 14 patients with Fournier's gangrene in terms of etiology, treatment efficacy, morbidity and mortality factors by considering the literature data.

Case Report

The records of 14 patients who underwent emergency surgical debridement and broad-spectrum combined antibiotic treatment for Fournier's gangrene in our clinic between 2009 and 2018 were retrospectively reviewed. The duration of the disease until the admission, anamnesis and physical examination findings, routine laboratory tests, surgical debridement technique, antibiotic treatment, co-morbid diseases, microorganisms growing in infection site swabs, length of hospitalization and location of the lesion were evaluated. Patients undergoing hyperbaric oxygen therapy (HBO) and negative pressure dressing were noted. Fournier Gangrene Severity Index (FSGI), laboratory risk indicator (LRINC) for necrotizing fasciitis and Uludağ FSGI (UFSGI) scores were also calculated. Surgical debridement was applied to all patients under operating room conditions. Surgical debridement was performed by including some intact tissue in the demarcation line detected by inspection and palpation between erythematous-edematous or necrotic tissue and intact tissue.

The mean age of the patients was 58.6 (37-81) years. There were two women and the remaining patients were men. The co-morbidities were diabetes mellitus in six patients, hypertension in six patients, chronic renal failure in one patient, schizophrenia in one patient, Chronic Obstructive Pulmonary disease in one patient and gout in one patient (Table 1). Seven patients were smoking and two patients were drinking alcohol. Redness, swelling and pain were common complaints in the lesion area (Figure 1). The mean duration between the onset of complaints and admission was 4.4 days (range=2-15 days). Physical examination revealed necrosis in perianal region in nine patients, in right inguinal region in one patient, in right gluteal region in one patient, extending from perianal region to scrotum in one patient, extending from perianal region to right gluteal region in one patient and extending from perianal region to right gluteal region and right medial thigh in one patient. Laboratory findings revealed a leukocyte number of 36880 in one patient, 28000 in one patient, 22000 in one patient and 20150 in one patient, while leukocyte count was below 15000 in other patients. Alanine aminotransferase level was eight times higher than normal, aspartate aminotransferase level was three times higher than normal and bilirubin level was two times higher than normal in the patient with 28000 leukocytosis. Fasting blood glucose level was 558 mg/dL in one of the two patients with diabetes mellitus and 427 mg/dL in the other. The patient who had fasting blood glucose of 181 mg/dL and did not know that he/she had diabetes mellitus was diagnosed during the diagnosis of Fournier's gangrene. Microbiological examination of tissue swab samples obtained during surgical debridement revealed *Escherichia coli* in two patients, *Proteus mirabilis* in one patient and *Morganella morgagnii* in one patient. There was no growth in the cultures taken from five patients and no culture was obtained from the remaining five patients. After emergency large surgical debridement (Figure 2), the vital functions of the patients returned to normal with the use of broad-spectrum antibiotics; however, one patient died due to sepsis and our mortality rate was 7%. An 81-year-old

Table 1. Co-morbid diseases

Comorbidities	Number of patients with comorbidities
Diabetes mellitus	6
Hypertension	6
Chronic renal failure	1
Chronic obstructive pulmonary disease	1
Gout	1
Schizophrenia	1

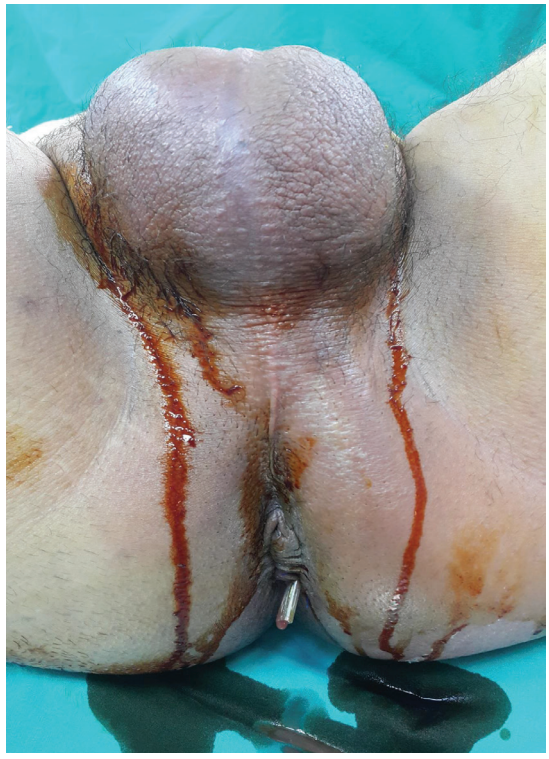

Figure 1. Fournier's gangrene due to swelling and redness after perianal abscess drainage

female patient with mortality was admitted to our clinic 3 days after the onset of her complaints. She had comorbidities such as diabetes mellitus, hypertension and chronic renal failure. The patient underwent debridement and sigmoid loop colostomy. Despite broad-spectrum antibiotherapy and intensive care follow-up, sepsis-related mortality was observed on postoperative seventh day. At the time of admission, the patient's FSGI score was 14, the UFSGI score was 16, and the LRINC score for necrotizing fasciitis was 9. In the second session, reconstructive surgery was performed to repair the wound defect in three patients. HBO was added to eight patients, negative pressure dressing to five patients, and diversion colostomy to three patients. Transverse loop colostomy was performed in one patient and sigmoid loop colostomy was performed in two patients with diversion colostomy. The mean duration of negative pressure dressing was 18 days (range=9-26). Treatments and blood glucose regulation of diabetic patients were provided by endocrine clinic. FSGI, LRINC and UFSGI scoring systems that evaluate mortality in patients with Fournier's gangrene were calculated individually for our patients. The mean FSGI score was 5.2 (range=1-14), the LRINC score was 5.3 (range=2-9), and the UFSGI score was 7.8 (range=1-16). The mean hospitalization was 17 (range=3-37) days.

Discussion

Despite the development of various treatment modalities, antibiotic therapy and intensive care follow-up, Fournier's gangrene is still a fatal disease with a mortality rate of 20-50%.[6,7] In our case series, the mortality rate was 7%. Compared to a recent review of 51.8 years (range=47-63), our patients were quite old with a mean age of 58.6 years (range=37-81).[8] Diabetes mellitus is the most commonly reported comorbidity associated with this disease.[9] In our case series, six (42%) of 14 patients had diabetes mellitus. The prevalence of diabetes mellitus in patients with Fournier's gangrene varies between 50% and 70%.[10] Patients with diabetes mellitus are generally known to be more susceptible to infections. Although diabetes mellitus increases the risk of Fournier's gangrene, the effect of glycemic regulation on treatment remains controversial. Laor et al.[11] showed that although diabetes contributes to the formation of Fournier's gangrene, it does not affect treatment outcomes. However, Laor et al.[11] reported that seven of the 30 patients with Fournier's gangrene had chronic renal failure and six of these resulted in death. They also stated that chronic renal failure is a determining factor affecting treatment outcomes. Only one of our patients had chronic renal failure. Alcohol and smoking have also been shown to be associated with Fournier's gangrene.[12] Of our patients, seven (50%) were smoking and two (14%) were drinking alcohol. The common denominator of all concomitant risk factors is deterioration of the immune resistance in the organism due to decreased cellular immunity.[1] Palmer et al.[13] reported that the location of necrosis in Fournier's gangrene affected the outcome of treatment. In our patients, necrosis was observed in perianal region in nine patients, in right inguinal region in one patient, in right gluteal region in one patient, extending from perianal region to scrotum in one patient, extending from perianal region to right gluteal region in one patient and extending from perianal region to right gluteal region and right medial thigh in one patient. The bacteria isolated in Fournier's gangrene are those that form the normal skin and mucosal flora of the urogenital and perianal regions. These colonizations are often polymicrobial and generally include both aerobic and anaerobic microorganisms.[14] *E. coli*, *Klebsiella*, *Staphylococcus*, *Streptococcus*, *Proteus*, *Pseudomonas*, *Bacteroides* and *Clostridium* spp. are the most common microorganisms.[15] In our patients, microbiological examination of tissue swab samples obtained during surgical debridement revealed *E. coli* in two patients, *P. mirabilis* in one patient and *M. morgagnii* in one patient.

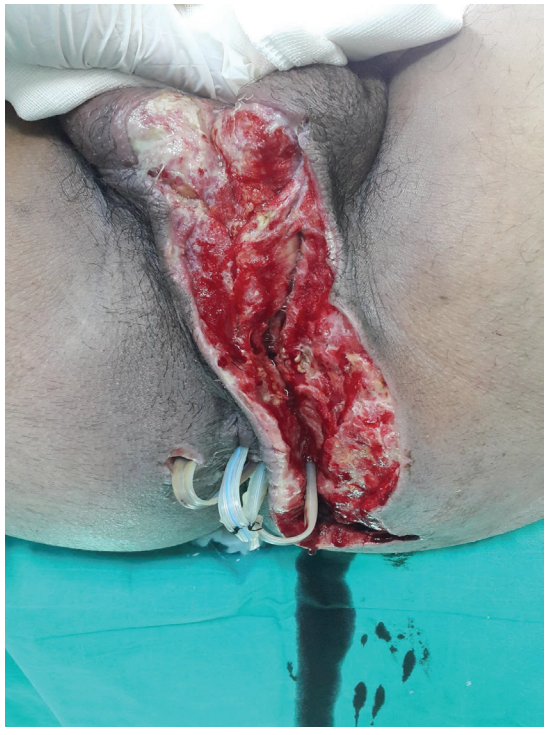

Figure 2. The patient who underwent debridement for Fournier's gangrene

The main principles of treatment are aggressive hemodynamic stabilization, parenteral broad-spectrum antibiotics and emergency surgical debridement. However, early surgical debridement is the mainstay of this combined treatment. Necessary debridements are performed by applying a series of re-explorations every 24-48 hours. They are very useful in controlling the extent of necrosis. It has been reported

that this requires an average of 3.5 debridement procedures per patient.[16] In our case series, a mean of 2.2 debridement was performed per patient. Urinary and fecal diversion may be necessary to protect the wound from contamination. Although there is no general consensus on colostomy, it is recommended to apply if there is extensive sphincter damage or large perineal wounds.[17] Fecal diversion was achieved by colostomy in three patients in our study. One of them was transverse loop colostomy and two were sigmoid loop colostomies. Transverse loop colostomy was performed during the first operation. The other two sigmoid loop colostomies were performed in the first session after debridement. Urinary diversion was achieved by suprapubic catheterization in two of our patients.

As a result of aggressive surgical debridement, the common result is large tissue defects. Therefore, wound care is an important part of treatment in Fournier's gangrene.[18] The final step in the treatment of Fournier's gangrene is the closure of a large wound defect. Most cases, especially small defect wounds, simply heal secondary. For defects that are slightly larger, primary closure may be sufficient. However, the most commonly used and preferred method for large defect wounds is skin grafts.[16] Four of our patients underwent primary closure (Figure 3) and three patients underwent grafting. The remaining seven patients were left for secondary recovery. Vacuum-assisted closure (VAC), which has gained popularity in recent years, has accelerated wound healing and contributed significantly to this highly troubled period of patients with minimal skin defects.[19] We used VAC treatment in five patients. It has been reported that HBO treatment reduces systemic toxicity, limits necrosis and reduces mortality with surgery and antibiotherapy.[16] HBO was used in eight of our patients. The use of HBO treatment may have played a role in our low mortality rate. The course of the disease is often difficult to predict. Laor et al.[11] found FGSI by adapting the Acute Physiological and Chronic Health Assessment II score in relation to the prognosis of the disease.[12] The authors showed that FGSI score predicts mortality of 75% and survival of 78%. The FGSI score, which arouses great interest in the literature, is a valid and effective score widely used in many studies to determine the clinical outcome of the disease. In our study, the mean FSGI was found to be 5.2 (range=1-14). In the study of Yılmazlar[18], by combining FSGI, age and dissemination, they predicted a mortality rate of 94% and a life expectancy of 81% in a series of 80 cases using a scoring system called the UFSGI score. In our study, UFSGI was found to be 7.8 (range=1-16). LRINC is another scoring system used to evaluate mortality and morbidity in Fournier's gangrene. It is calculated over laboratory values. The mean LRINC value in our patients was 5.3 (range=2-9). Cases with LRNIC values below 6 were considered as low risk. In conclusion, this life-threatening disease requires caution even in very small lesions of the perianal and urogenital regions. Fournier's gangrene should be suspected in patients presenting with complaints about this region. Early intervention is vital in these cases and extensive surgical debridement should be performed immediately. A multidisciplinary approach with general surgery, urology, gynecology and plastic surgery is required in this disease where extensive surgical debridement is the basis of treatment.

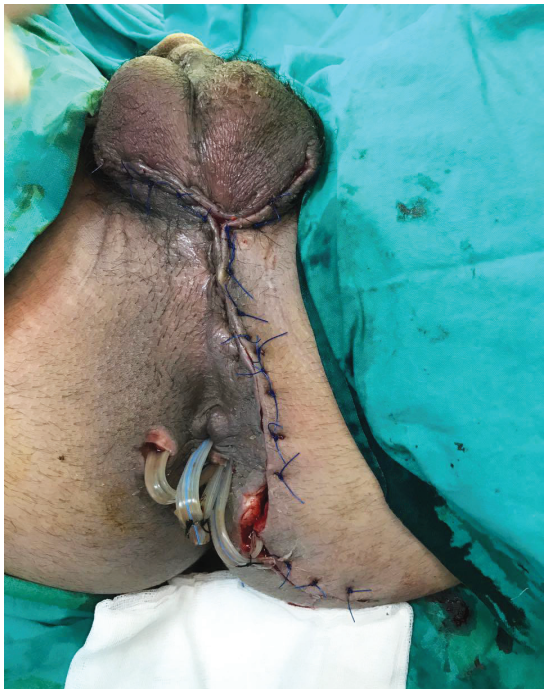

Figure 3. Primary closure after debridements and hyperbaric oxygen therapy for Fournier's gangrene

Ethics

Informed Consent: Retrospective study.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: T.G., İ.S., Concept: T.G., Design: T.G., A.Z.B., Data Collection or Processing: T.G., Analysis or Interpretation: T.G., Literature Search: T.G., Y.K., İ.S., Writing: T.G., M.D.

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

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

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