ORIGINAL ARTICLE

Medical Journal of Western Black Sea
Batı Karadeniz Tıp Dergisi

Med J West Black Sea 2024;8(3): 283-290
DOI: 10.29058/mjwbs.1441047

Five Year Follow Up Results of Surgically Treated Rectal Cancer Case, Who Had Neoadjuvan Chemotheraph

Neoadjuvan Kemoterapi Uygulanan Cerrahi Tedavi Görmüş Rektal Kanser Olgularında Beş Yıllık Takip Sonuçları

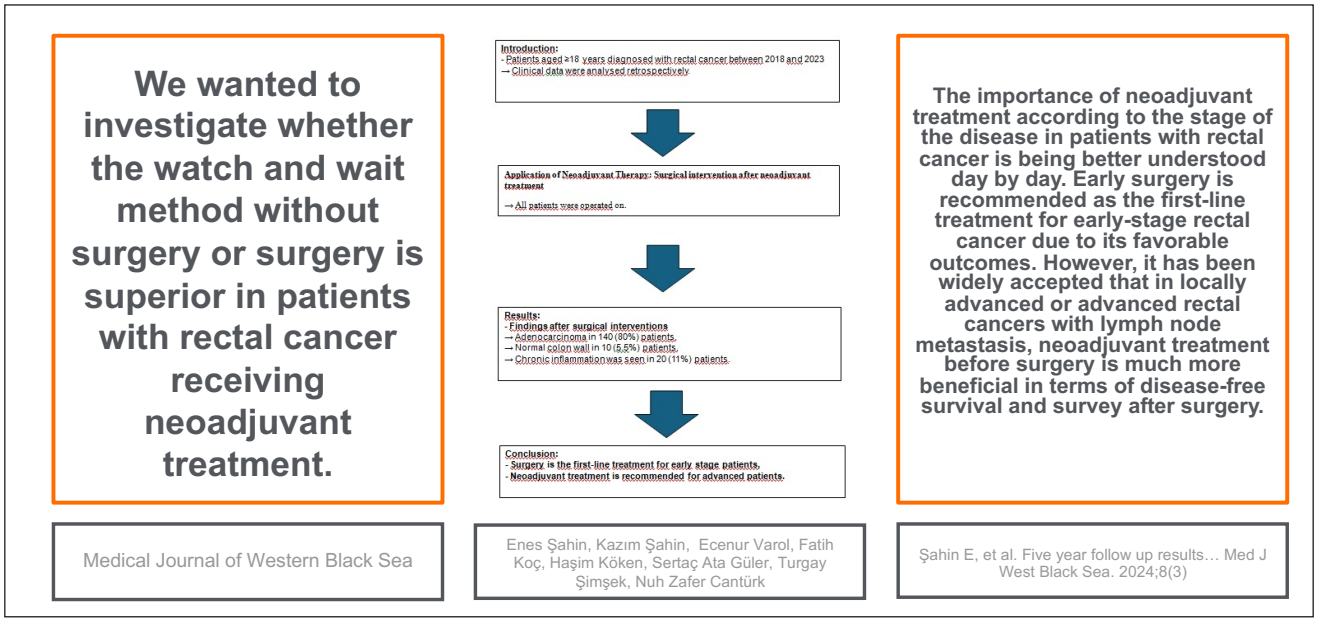
Enes ŞAHİN[1], Kazım ŞAHİN[2], Ecenur VAROL[1], Fatih KOÇ[1], Haşim KÖKEN[1], Sertaç Ata GÜLER[1], Turgay ŞİMŞEK[1], Nihat Zafer UTKAN[1], Nuh Zafer CANTÜRK[1]

[1]Kocaeli University Faculty of Medicine, Department of General Surgery, Kocaeli, Türkiye
[2]Kandira State Hospital, Department of General Surgery, Kocaeli, Türkiye

ORCID ID: *Enes Şahin 0000-0003-3777-8468, Kazım Şahin 0000-0002-5485-2351, Ecenur Varol 0000-0003-1276-7274, Fatih Koç 0000-0002-6445-3207, Haşim Köken 0000-0002-1185-2677, Sertaç Ata Güler 0000-0003-1616-9436, Turgay Şimşek 0000-0002-5733-6301, Nihat Zafer Utkan 0000-0002-2133-3336, Nuh Zafer Cantürk 0000-0002-0042-9742*

Cite this article as: *Şahin E et al. Five year follow up results of surgically treated rectal cancer case, who had neoadjuvan chemotheraphy. Med J West Black Sea. 2024;8(3):283-290.*

GRAPHICAL ABSTRACT



Corresponding Author: Enes Şahin ✉ dr.enessahin@hotmail.com
Received: 21.02.2024 **Revision:** 20.04.2024 **Accepted:** 24.04.2024

ABSTRACT

Aim: We wanted to investigate whether the watch and wait method without surgery or surgery is superior in patients with rectal cancer receiving neoadjuvant treatment.

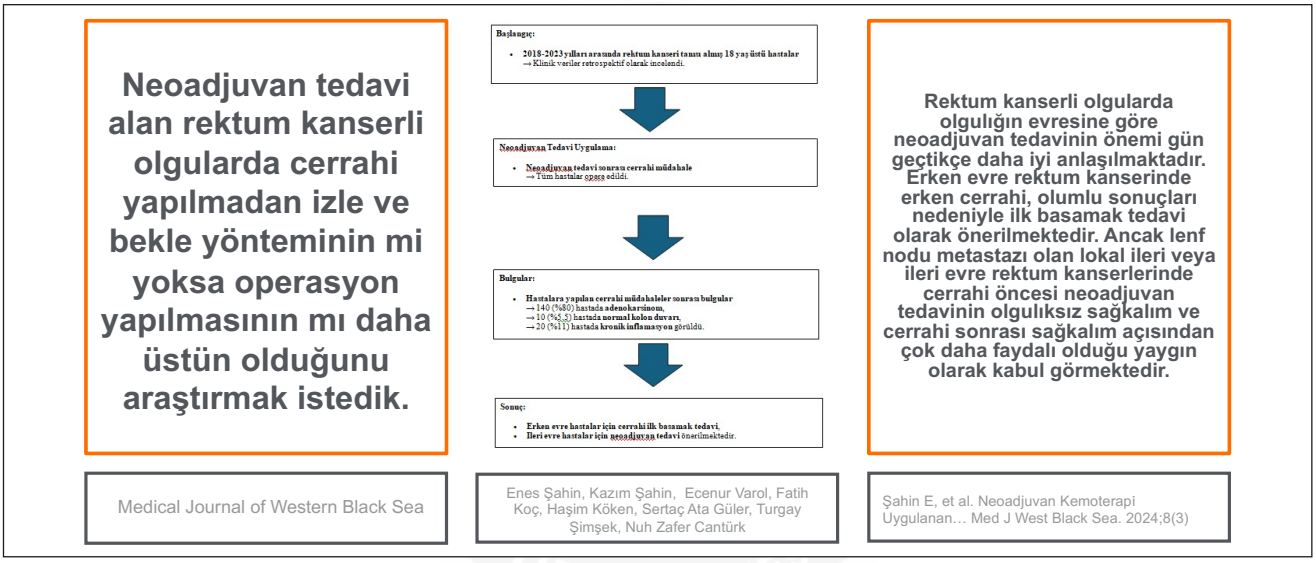
Material and Methods: The clinical data of case above the age of 18 who were diagnosed with rectal tumors between 2018 and 2023 were retrospectively analyzed.

Results: After neoadjuvant treatment, the mass disappeared completely in some case. All case were operated after neoadjuvant treatment. Adenocarcinoma was seen in 140 (80%) case operated after neoadjuvant treatment, normal colon wall was seen in 10 (5.5%) case and chronic inflammation was seen in 20 (11%) case.

Conclusion: The importance of neoadjuvant treatment according to the stage of the disease in case with rectal cancer is being better understood day by day. Early surgery is recommended as the first-line treatment for early-stage rectal cancer due to its favorable outcomes. However, it has been widely accepted that in locally advanced or advanced rectal cancers with lymph node metastasis, neoadjuvant treatment before surgery is much more beneficial in terms of disease-free survival and survey after surgery.

Keywords: Rectal cancer, neoadjuvant therapy, watch and wait

GRAFİKSEL ÖZET



ÖZ

Amaç: Neoadjuvan tedavi alan rektum kanserli olgularda cerrahi yapılmadan izle ve bekle yönteminin mi yoksa operasyon yapılmasının mı daha üstün olduğunu araştırmak istedik.

Gereç ve Yöntemler: 2018-2023 yılları arasında rektum tümörü tanısı alan 18 yaş üstü olguların klinik verileri retrospektif olarak analiz edildi.

Bulgular: Neoadjuvan tedavi sonrasında bazı olgularda kitle tamamen kayboldu. Tüm olgular neoadjuvan tedavi sonrası opere edildi. Neoadjuvan tedavi sonrası opere edilen 140 (80%) olguda adenokarsinom, 10 (5.5%) olguda normal kolon duvarı ve 20 (11%) olguda kronik inflamasyon görüldü.

Sonuç: Rektum kanserli olgularda hastalığın evresine göre neoadjuvan tedavinin önemi gün geçtikçe daha iyi anlaşılmaktadır. Erken evre rektum kanserinde erken cerrahi, olumlu sonuçları nedeniyle ilk basamak tedavi olarak önerilmektedir. Ancak lenf nodu metastazı olan lokal ileri veya ileri evre rektum kanserlerinde cerrahi öncesi neoadjuvan tedavinin olgularda sağkalım ve cerrahi sonrası sağkalım açısından çok daha faydalı olduğu yaygın olarak kabul görmektedir.

Anahtar Sözcükler: Rektal kanser, neoadjuvan tedavi, izle ve bekle

INTRODUCTION

Colorectal cancers are the third most common cancer in the world and the second most common cause of cancer-related deaths. Rectal cancer accounts for one-third of these cases (1). Although the incidence of colorectal cancer tends to decrease in all age groups, it increases exponentially in individuals under the age of 50 (1). According to the "Turkey Cancer Statistics Report" published in 2018, 6607 cases of rectal cancer were seen in every 100 thousand people. Of these cases, 2534 were seen in women and 4073 in men. It has been reported that rectal cancers constitute 2.7% of all cancers. The most common histological type of coloerectal cancers is adenocarcinoma (90%). When the first diagnosis of coloerectal cancers was made, 39.1% of the cases were reported as early stage, 39.6% as locally advanced stage and 21.3% as late stage (2).

Surgical treatment of rectal cancers is technically specific due to its location and neighbourhood with pelvic organs and it is difficult to obtain clean surgical margins. Therefore, local recurrence is more common in rectal cancers. Neoadjuvant treatment applications are gaining importance to reduce local recurrences and to obtain clean surgical margins(3).

In rectal cancers, radical resection or transanal local excision are preferred in appropriate cases as surgical treatment. Removal of the tumor together with lymphatic and vascular structures and a 2 cm tumor-free surgical margin distal to the tumor are the basic rules for resection. It has been reported that local recurrence rates decrease when these rules are followed (3). Local recurrence is among the poor prognostic factors in rectal cancers (3). When there is widespread local recurrence, a pelvic exenteration procedure is performed if possible (3).

MATERIAL and METHODS

The clinical records of case over 18 years of age diagnosed with rectal tumours between 2018 and 2023 were retrospectively analysed. The demographic characteristics of the case, their stage at the time of diagnosis, whether they received neoadjuvant treatment, operations performed, preoperative pathology, postoperative pathology results, local recurrence and survival status were analysed. Of the 174 case, 111 were male and 63 were female. The mean age was 61.92 years. The youngest age was 33 and the oldest age was 91.

166 case received neoadjuvant treatment. 8 case did not receive neoadjuvant treatment because they were operated urgently. After neoadjuvant treatment, 109 case were evaluated with Magnetıc Resonance Imagıng (MRI), 17 case with Computer tomografi (CT) and 40 case with Positron Emission Tomography (PET-CT). Of the 166 case who received neoadjuvant treatment, 138 case had shrinkage of the mass and 28 case had no shrinkage of the mass.

The mean time to surgery after neoadjuvant treatment was 2.6 months. The minimum duration of operation was 2 weeks and the maximum duration was 5 months.

CT, MR, ultrasonagraphy (USG), capsule endoscopy, upper gastrointenstinal endoscopy were used as diagnostic methods. Neoadjuvant treatment and then surgical operation were applied. Upper gastrointenstinal endoscopy is the visualisation of the oesophagus, stomach and duodenum with a system with a camera at the end. Capsule endoscopy is a method of visualising the entire digestive tract by swallowing a capsule. Surgical methods include low anterior resection and abdominoperineal resection. Medical oncology and general surgery departments performed the follow-up of the case together.

Since it was a retrospective study, informed consent was not obtained from the case.

Statistical Analysis

Analyses were performed using the IBM SPSS 29.0 (IBM Corp., Armonk, NY, USA) package program. The normal distribution of the parameters was evaluated using the Kolmogorov-Smirnov test. Numerical variables were presented as median (25^{th}-75^{th} percentile) and frequency (percentage). McNemar chi-square analysis was used to compare the number of postoperative positive lymph nodes with the number of positive lymph nodes. Kaplan Meier Survival Analysis was used to compare survival times. $p<0.05$ was considered significant.

RESULTS

A total of 174 case, 111 (63.7%) males and 63 (36.2%) females, were included in the study. The mean age was 61.92 years (33-91 years).

166(95.4%) case received neoadjuvant treatment. 8 (4.5%) case did not receive neoadjuvant treatment because they were operated urgently. After neoadjuvant treatment, 109 (65.6%) case were evaluated with MRI, 17 (10.2%) case with CT and 40 (24.0%) case with PET-CT. Of the 166 case who received neoadjuvant treatment, 138 (83.1%) case had shrinkage of the mass and 28 (16.8%) case had no shrinkage of the mass.

The mean time to surgery after neoadjuvant treatment was 2.6 months (0.5-5 months).

Out of 174 case, 8 (4.5%) were operated urgently and 166 (95.4%) were operated electively. Low anterior resection was performed in 156 (89.6%) case and abdominoperineal resection in 17 (9.7%) case. Only sigmoid loop colostomy was performed in a case who underwent emergency operation because it was considered unresectable.

Preoperative hystopathology diagnosis was adenocarcinoma in 160 (96.3%) case, villous adenoma with severe dysplasia in 1 (0.6%) case, tubular adenoma with focal severe dysplasia in 1 (0.6%) case, hyperkeratotic papillomatous squamous tumour in 1(0.6%) case, villous adenoma with carcinoma in situ areas in 1 (0.6%) case, villous adenoma in 1 (0.6%) case, tubulovillous adenoma in 1 (0.6%) case. 8 case did not have preoperative pathological diagnoses because they were operated urgently (Table 1).

Postoperative pathological diagnosis; Adenocarcinoma in 140 (80.4%) case, severely dysplastic villous adenoma in 1 (0.5%) case, poorly differentiated malignant tumour in 1 (0.55%) case, dysplastic epithelium in 1 (0.5%) case, in-situ squamous epithelial cell carcinoma in 1 (0.5%) case, normal colon wall in 10 (5.5%) case, chronic inflammation in 20 (11%) case were seen after neoadjuvant treatment (Table 1).

Only a case could not undergo lymph dissection because he was considered inoperable. It was performed in all other case. The mean number of lymph nodes removed was 13 (6-24 nodes). In 35 case, metastatic lymph nodes were detected. The mean number of metastatic lymph nodes was 3 (1-13 nodes). Recurrence was seen in 12 case during follow-up. The mean number of lymph nodes removed in these case was 16 (12-24 nodes) and the mean number of metastatic lymph nodes was 4 (2-6 nodes).

The average follow-up duration was 47.37 months (ranging from 9 to 74 months). Mortality occurred in 6 case (3.4%). Follow-up periods varied between 30 and 74 months. Among those who died, 1 was female and 5 were male. The follow-up period for women averaged 43 months, with a survival rate of 98%. For men, the shortest follow-up duration was 30 months with a survival rate of 98%, while the longest was 72 months, with a survival rate of 68% (Figure 1).

In the group of case with recurrence, mortality was observed in 2 individuals. The minimum follow-up duration was 43 months, with a survival rate of 90%. The maximum follow-up lasted 72 months, at which point the survival rate was 0% (Figure 2).

Of the 166 case who underwent neoadjuvant treatment, tumor size regressed in 138 case, while there was no change in 28 case.

The average age of the deceased case was 68.83 years (ranging from 47 to 78 years). The postoperative follow-up period averaged 56.33 months, with an average of 12 re-

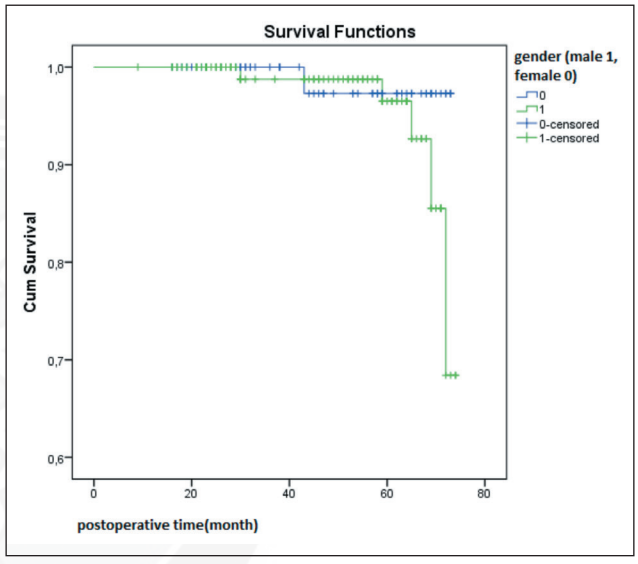


Figure 1: Survival Rates of Case.
Green: Male, Blue: Female. Horizontal row duration (months), vertical row survival. 1=100%, 0.9=90%, 0.8=80%, 0.7=70%, 0.6=60%.

Table 1: Preoperative Histopathological Diagnoses and Postoperative Pathological Diagnoses

Preoperative Histopathological Diagnoses *	**Findings (n=166)**	**Postperative Pathology Diagnosis***	**Findings (n=174)**
Adenocarcinoma	**160(96)**	Adenocarcinoma	**140 (80)**
Villous Adenoma with Severe Dysplasia	1 (0.6)	Chronic Inflammation	**20 (11)**
Tubular with Focal Severe Dysplasia	1 (0.6)	Normal Colonic Wall	**10 (5,5)**
Villous Adenoma Containing Areas of Carcinoma In Situ	1 (0.6)	Severe Dysplasia Villous Adenoma	1 (0.55)
Tubulovillous Adenoma	1 (0.6)	Poorly Differentiated Malignant Tumour	1 (0.55)
Villous Adenoma	1 (0.6)	Dysplastic Epithelium	1 (0.55)
Hyperkeratotic Papillomatous Squamous Tumour	1 (0.6)	In-Situ Squamous Epithelial Cell Carcinoma	1 (0.55)

Adenocarcinoma, adenoma-carcinoma sequence, refers to the malignant change of an adenoma with a precursor lesion, a focal dysplastic polypoid lesion (4).

Colon adenomas are polyps formed by glandular tissue in the colonic mucosa. They may be villous, tubular or tubulovillous (5). Villous adenoma, severe degrees of dysplasia are associated. Although it can occur anywhere in the colon, it is more common in the rectum and rectosigmoid. They are sessile structures that usually appear as velvety or cauliflower-like projections(6).

*Data are shown as n(%).

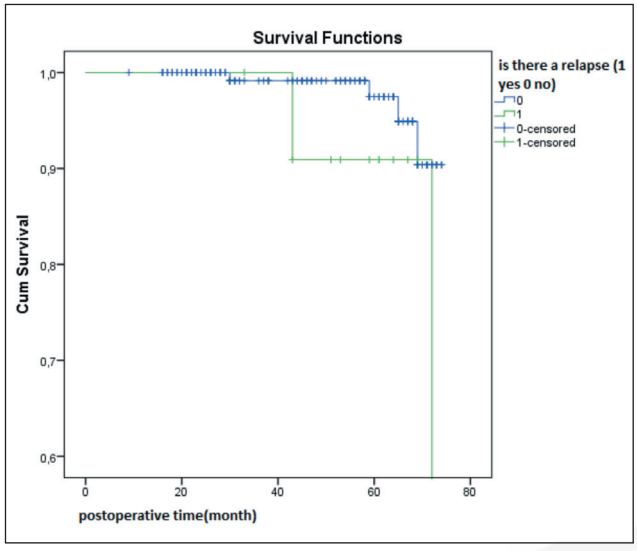


Figure 2: Survival Rates in Case with Recurrence.
Green: Recurrence, Blue: No Recurrence. Horizontal row duration (months), vertical row survival. 1=100%, 0.9=90%, 0.8=80%, 0.7=70%, 0.6=60%.

moved lymph nodes (7-21 nodes) and an average of 3.2 metastatic lymph nodes (1-9 nodes). The mean interval from neoadjuvant treatment to surgery was 3.75 months.

In contrast, the average age of the surviving case was 61.67 years (33-91 years). Their postoperative follow-up period was 47.05 months, with an average of 14 removed lymph nodes (6-24 nodes) and an average of 2.5 metastatic lymph nodes (1-13 nodes). The mean time from neoadjuvant treatment to surgery for these case was 2.6 months.

DISCUSSION

Since the implementation of total mesorectal excision (TME) in colorectal cancer surgery, there has been a notable improvement in survival rates. However, this enhancement has primarily been observed in case under 75 years of age. In contrast, survival outcomes for case over 75 years have remained unchanged, largely due to comorbidities and non-cancer-related mortality factors (7). In the study by Al-Abed et al., mortality was 8.7% in case over 50 years and younger in the first year, whereas this rate increased to 24.5% in case aged 80 years. Five years later, mortality rate was 42.9% in case over 80 years, while mortality rate was 13% in case under 50 years (8). In our study, the survival rate was 99% at 30 months and 81% at 72 months periods. It has been shown that the rate of survival is higher in women. Removal of lymph nodes in rectal cancer operations increases the survival rate. Therefore, in our clinic, lymph nodes were completely removed in accordance with the principles of TME.

Magnetic resonance imaging (MRI) plays a crucial role in detecting, staging, and planning treatment for rectal cancer. It not only evaluates the primary tumor and regional lymph nodes but also assesses treatment outcomes in case undergoing neoadjuvant therapy. MRI is essential for re-staging after such treatment and for managing case with complete clinical responses using a “watch and wait” approach (9). In our clinic, 109 case were evaluated with MRI, 17 with computed tomography (CT), and 40 with positron emission tomography (PET-CT) following neoadjuvant therapy. Out of 166 case who received neoadjuvant treatment, 138 experienced a reduction in tumor size, while 28 showed no changes.

Local surgical excision is the preferred treatment for early-stage rectal cancers (stage 0) and villous adenomas, including carcinoma in situ (high-grade dysplasia). For these cases, achieving a clear surgical margin of at least 1 cm is essential (6).

In local rectal cancers (stage 1), local recurrence rates have been reported up to 20% and 40% for small, sessile T1N0 and T2N0 rectal cancers, respectively, despite the use of local excision (6,10,11). Local excision is more recommended for small, less risky lesions. However, regional lymph nodes cannot be evaluated with this method. Therefore, radical resections should be considered in high-risk case. In case with T2 stage rectal cancers who underwent transanal excision following neoadjuvant treatment, the ACOZOG Z601 study reported a pathological complete response rate of 44%, with 3-year disease-free survival rates at 88%. However, population-based data indicate that survival outcomes after local excision for rectal cancer are suboptimal and should not be regarded as a standard approach (6,10,11).

The long-term outcomes of local excision for T1 or T2 tumors in high-risk case remain inconclusive (12). A meta-analysis published in 2020 highlighted a significant risk of local recurrence in these case who did not receive adjuvant chemoradiotherapy following local excision (13). For high-risk case, subsequent total mesorectal excision or adjuvant chemoradiotherapy (for pT1 tumors) has been reported to mitigate this risk. The results of the ACOSOG Z6041 trial suggest that a combination of local excision followed by neoadjuvant chemoradiotherapy may be a safe alternative to transabdominal resection for case with T2N0 distal rectal cancer (14). Additionally, another meta-analysis indicated that neoadjuvant chemoradiotherapy followed by local resection could be a safe and effective option for case at all T and N stages who decline transabdominal resection (15). In a study involving 282 case with T1 rectal cancer, local recurrence rates were reported as 13.2% for those who underwent transanal local excision, compared to 2.7% for those who had radical resection (P = .001) (16). Another

study that compared standard resection and local excision in 124 case found local recurrence rates of 12.5% and 6.9%, respectively (P = .003) (12).

In an analysis of more than 164,000 case with rectal cancer diagnosed from 1998 to 2010 from the National Cancer Database (NCDB), positive margins were found to be greater after local excision when transabdominal resection and local excision were compared (12). As can be seen, local excision alone is not sufficient in early stage rectal cancers. Neoadjuvant treatment should be added or total mesorectal excision should be chosen as the treatment method. Further studies are needed in this field. In our clinic, transanal local excision was not preferred in early stage rectal malignancies. Total mesorectal excision procedures were preferred surgically.

Local recurrences were found to be more common in case with locally advanced stages (stage 2-3) and large masses located in the distal rectum (11,17,18). There are two different opinions on the control of local recurrences. Proponents of total mesorectal excision contend that adjuvant chemoradiation is unnecessary for stage I, II, and III rectal cancers. However, others argue that case with stage II and III rectal cancers can benefit significantly from chemoradiation. This ongoing debate highlights the need for individualized treatment approaches based on specific case and tumor characteristics (11,17,18). The advantages of neoadjuvant treatment include decreased tumor size, complete resection, and increased likelihood of sphincter-sparing procedures. Disadvantages of the treatment include the potential for overtreatment of early-stage tumors, impaired wound healing, and the development of pelvic fibrosis. Large tumours, tumours invading neighbouring organs and distal rectal tumours are difficult to resect without neoadjuvant treatment and cause extensive resection (11,17,18). In our clinic, we recommend neoadjuvant treatment in appropriate case unless urgent surgical intervention is required.

In stage 3 rectal carcinomas with lymph node metastasis, neoadjuvant or adjuvant treatment is recommended in almost all treatment protocols. In the NIH consensus, chemoradiation is recommended for stage 3 lymph node-positive rectal carcinoma because it prolongs survival and improves local mass control (6,19).

In the United States, chemoradiation is recommended for all case with stage III rectal cancer and for most case with stage II. However, in selected cases of T3 tumors with favorable histology and negative radial margins, chemoradiation may be omitted. More extensive prospective studies are necessary to establish clear guidelines for this practice (17,18,20).

There is currently no clear consensus on the optimal timing of chemoradiotherapy for locally advanced rectal cancer. Traditionally, preoperative chemoradiotherapy has been recommended to achieve stage downstaging, which enhances the chances of complete resectability and increases the likelihood of performing a sphincter-sparing procedure. However, this preoperative radiation therapy impairs wound healing and may increase the likelihood of complications. While preoperative endorectal ultrasonography and MRI are safe methods for staging rectal cancer, there is a risk of "overstaging" in some cases. This can result in overtreatment for case with pT1-2 and N0 tumors who undergo neoadjuvant therapy. Supporters of postoperative radiation therapy advocate for more accurate pathological grading and a reduction in surgical complications. However, large, extensive tumors may be unresectable, or case may need more extensive surgeries, such as abdominoperineal resection (APR) or pelvic exenteration, if they do not receive preoperative chemoradiation. In light of the current literature, we perform APR or pelvic exenteration in appropriate case in our clinic. Moreover, pelvic radiation administered after surgery may compromise the function of the neorectum. The German CAO/ARO/AIO-94 study compared perioperative toxicity and oncologic outcomes between pre- and postoperative chemoradiation. The results indicated that both approaches yielded similar rates of acute toxicity and surgical complications. However, postoperative chemoradiation was reported to double the risk of stenosis formation.

Additionally, preoperative chemoradiation reduced the risk of local recurrence by half (6% vs. 12%). Given these findings, many centers have adopted preoperative chemoradiation as the optimal approach for treating locally advanced rectal cancer (20). In the United States, 5-FU-based chemotherapy and 5 to 6 weeks of external beam radiation ("long course") followed by surgery 6 to 8 weeks later is usually recommendable. However, it is worth noting that many European centres use a "short-course" preoperative radiation regimen consisting of 5 days of radiation followed by surgery in 1 to 2 weeks. There are no randomised, prospective studies comparing these treatment modalities (17,18). With advances in chemoradiation, many case with locally advanced rectal cancer will have complete tumor shrinkage (clinical complete response; cCR). It has been suggested that some selected cases with complete response to neoadjuvant therapy can be followed without surgical treatment. However, data from existing studies are conflicting and concerns remain about the ability to predict which case with clinical complete response are truly pathological complete responders (21). Additional adjuvant chemotherapy administered after the decision of a non-surgical approach is another form of treatment (21,22). The necessity of surgery in case who achieve a complete pathological response after neoadjuvant treatment has long been a subject of debate (23). In selected case with complete clinical responses, a stringent follow-up program referred to as "watch and wait" has been implemented. Studies have shown that case with complete clinical response (cCR) after neoadjuvant thera-

py have similar oncologic outcomes to those with complete pathological response who undergo radical surgery (23,24). Neoadjuvant chemoradiotherapy combined with escalated radiotherapy doses (up to 54 Gy) and consolidation chemotherapy enhances long-term surgery-free survival in case with cT2N0 rectal cancers (25). In our study, postoperative rectal adenocarcinoma was not found in 30 case who received neoadjuvant chemotherapy; instead, chronic inflammation and normal colon wall were observed. Based on these findings, we concluded that non-operative follow-up would be appropriate for case who achieved complete remission with neoadjuvant treatment.

In a study involving 3,633 case with T3-4 rectal cancer that compared abdominoperineal resection (APR) and low anterior resection (LAR), it was reported that local control and survival rates were worse in case who underwent APR (26,27). In our study, morbidity and mortality rates were found to be lower in those who had LAR. Additionally, a prospective study of 4,405 case with rectal cancer demonstrated that laparoscopic approaches were more advantageous than open surgery; however, no significant differences were observed regarding recurrence and survival rates (28).

The College of American Pathologists (CAP) suggests the following system for the evaluation of the postoperative specimen: Grade 0, no tumor remnant. Grade 1, intermediate responses, minimal residual disease. Grade 2, minimal response. Grade 3, absence of response (29). The Royal College of Pathologists also uses a similar grading system: Grade 0, no viable cancer cells (complete response); grade 1, individual cancer cells or groups of smaller cancer cells (almost complete response); grade 2, remnant cancer with significant tumor regression but more than individual cells or small groups of cancer cells (partial response); grade 3, diffuse remnant cancer without substantial tumor regression (weak or no response) (30). In our study, adenocarcinoma (grade 1-2) in 140 case, chronic inflammation (grade 0) in 20 case, and normal colon wall in 10 case were observed in the postoperative specimen.

The importance of neoadjuvant treatment according to the stage of the disease in case with rectal cancer is better understood day by day. In early stage rectal cancers, early surgery is recommended as the first treatment modality in terms of disease-free survival and survey. However, in locally advanced or advanced rectal cancers with lymph node metastasis, it has been widely accepted that preoperative neoadjuvant treatment is much more beneficial in terms of facilitating the surgical procedure to be performed, preservation of sphincter and muscle tone in the surgery to be performed, postoperative disease-free survival and survey. Depending on the location of the tumour, total mesorectal excision technique in APR or low anterior resection operations remains the gold standard in current surgical applications. Prospective randomised studies with large case groups are needed to better understand the importance of determining the stage of the disease with appropriate diagnostic methods and applying the most accurate treatment plan.

Acknowledgment

We would like to thank Prof.Dr. Mustafa Şahin.

Author Contributions

Concept: **Nihat Zafer Utkan, Nuh Zafer Cantürk,** Design: **Kazım Şahin,** Data collection or processing: **Ecenur Varol, Fatih Koç, Haşim Köken,** Analysis or Interpretation: **Enes Şahin,** Literature search: **Sertaç Ata Güler, Turgay Şimşek,** Writing: **Enes Şahin,** Approval: **Nihat Zafer Utkan.**

Conflicts of Interest

The authors declare that they have no conflict of interest.

Financial Support

No financial resources found.

Ethical Approval

Approved by Kocaeli University Ethics Committee (GOKAEK-2024/05.44).

Review Process

Extremely and externally peer-reviewed

REFERENCES

1. Siegel, R. L., Miller, K. D. Jemal, A. Cancer statistics, 2018. CA Cancer J. Clin. 68, 7–30 (2018).
2. Kanser İstatistikleri. Accessed April 23, 2024. https://hsgm.saglik.gov.tr/tr/kanser-istatistikleri.html
3. Mary R. Kwaan, David B. Stewart Sr, and Kelli Bullard Dunn, Schwartz's Principles of Surgery Eleventh Edition, chapter 29; Colon, Rectum, and Anus, pp 1259-1329.
4. Day DW. The adenoma-carcinoma sequence. Scand J Gastroenterol Suppl. 1984;104:99-107.
5. Benjamin Yongcheng Tan MBBS, FRCPath, Puay Hoon Tan MBBS, FRCPA, FRCPath, in Surgical Pathology Clinics, 2018 Tubular Adenoma - an overview | ScienceDirect Topics. Accessed April 23, 2024. https://www.sciencedirect.com/topics/medicine-and-dentistry/tubular-adenoma
6. David J. Myers; Komal Arora. Villous Adenoma - StatPearls - NCBI Bookshelf. Accessed April 23, 2024. https://www.ncbi.nlm.nih.gov/books/NBK470272/
7. Colorectal Cancer Collaborative Group. Surgery for colorectal cancer in elderly case: a systematic review. Lancet. 2000;356:968–974.
8. Al-Abed Y, Parker M, Arulampalam T, Tutton M. Survival following rectal cancer surgery: does the age matter? Acta Chir Belg. 2019 Oct;119(5):282–8.
9. Bates DDB, Homsi ME, Chang KJ, Lalwani N, Horvat N, Sheedy SP. MRI for Rectal Cancer: Staging, mrCRM, EMVI, Lymph Node Staging and Post-Treatment Response. Clin Colorectal Cancer. 2022 Mar;21(1):10–8.

10. Julio Garcia-Aguilar , Qian Shi, Charles R Thomas Jr, Emily Chan, Peter Cataldo, Jorge Marcet, David Medich, Alessio Pigazzi, Samuel Oommen, Mitchell C Posner. A phase II trial of neoadjuvant chemoradiation and local excision for T2N0 rectal cancer: preliminary results of the ACOSOG Z6041 trial. Ann Surg Oncol. 2012;19:384-391.
11. Garcia-Aguilar J, Shi Q, Thomas CR, Chan E, Cataldo P, Marcet J, Medich D, Pigazzi A, Oommen S, Posner MC. A phase II trial of neoadjuvant chemoradiation and local excision for T2N0 rectal cancer: preliminary results of the ACOSOG Z6041 trial. Ann Surg Oncol. 2012 Feb;19(2):384–91.
12. You YN, Baxter NN, Stewart A, Nelson H. Is the Increasing Rate of Local Excision for Stage I Rectal Cancer in the United States Justified?: A Nationwide Cohort Study From the National Cancer Database. Ann Surg. 2007 May;245(5):726.
13. van Oostendorp SE, Smits LJH, Vroom Y, Detering R, Heymans MW, Moons LMG, Tanis PJ, de Graaf EJR, Cunningham C, Denost Q, Kusters M, Tuynman JB. Local recurrence after local excision of early rectal cancer: a meta-analysis of completion TME, adjuvant (chemo)radiation, or no additional treatment. Br J Surg. 2020 Dec 1;107(13):1719–30.
14. Garcia-Aguilar J, Renfro LA, Chow OS, Shi Q, Carrero XW, Lynn PB, Thomas CR, Chan E, Cataldo PA, Marcet JE, Medich DS, Johnson CS, Oommen SC, Wolff BG, Pigazzi A, McNevin SM, Pons RK, Bleday R. Organ preservation for clinical T2N0 distal rectal cancer using neoadjuvant chemoradiotherapy and local excision (ACOSOG Z6041): results of an open-label, single-arm, multi-institutional, phase 2 trial. Lancet Oncol. 2015 Nov 1;16(15):1537–46.
15. Shaikh I, Askari A, Ourû S, Warusavitarne J, Athanasiou T, Faiz O. Oncological outcomes of local excision compared with radical surgery after neoadjuvant chemoradiotherapy for rectal cancer: a systematic review and meta-analysis. Int J Colorectal Dis. 2015 Jan 1;30(1):19–29.
16. Long-Term Survival After Transanal Excision of T1 Rectal Can... : Diseases of the Colon & Rectum [Internet]. [cited 2024 Jan 7]. Available from: https://journals.lww.com/dcrjournal/abstract/2009/04000/long_term_survival_after_transanal_excision_of_t1.4.aspx
17. Zhifei Sun , Mohamed A Adam, Jina Kim, Daniel P Nussbaum, Ehsan Benrashid, Christopher R Mantyh, John Migaly Determining the optimal timing for initiation of adjuvant chemotherapy after resection for Stage II and III colon cancer. Dis Colon Rectum. 2016;59(2):87-93.
18. Cercek A, Garcia-Aguilar J. Rectal cancer: neoadjuvant therapy. In: Steele SR, Hull TL, Read TE, Saclarides TJ, Senagore AJ, Whitlow CB, eds. The ASCRS Textbook of Colon and Rectal Surgery. 3rd ed. New York: Springer; 2016:481-494.
19. USA National İnstuties of Healty Guide for Grants and Contracts - Vol. 19, No. 28 - July 27, 1990.
20. Rolf Sauer, Torsten Liersch, Susanne Merkel, Rainer Fietkau, Werner Hohenberger, Clemens Hess, Heinz Becker, Hans-Rudolf Raab, Marie Therese Villanueva, Helmut Witzigmann, Christian Wittekind, Tim Beissbarth, and Claus Rödel ,Preoperative versus postoperative chemoradiotherapy for rectal cancer. N Engl J Med. 2004;351:1731-1740.
21. Smith FM, Wiland H, Mace A, Pai RK, Kalady MF. Clinical criteria underestimate complete pathological response in rec tal cancer treated with neoadjuvant chemoradiotherapy. Dis Colon Rectum. 2014;57(3):311-315.
22. Sammour T, Price BA, Krause KJ, Chang GJ. Nonoperative management of “watch and wait” for rectal cancer with com plete clinical response after neoadjuvant chemoradiotherapy: a critical appraisal. Ann Surg Oncol. 2017;24:1904-1915. doi: 10.1245/s10434-017-5841-3.
23. Habr-Gama A, Perez RO, Nadalin W, Sabbaga J, Ribeiro U, Silva e Sousa AH, Campos FG, Kiss DR, Gama-Rodrigues J. Operative versus nonoperative treatment for stage 0 distal rectal cancer following chemoradiation therapy: long-term results. Ann Surg. 2004 Oct;240(4):711–7; discussion 717-718.
24. Angelita Habr-Gama , Rodrigo O Perez, Gregory Wynn, John Marks, Hermann Kessler, Joaquim Gama-Rodrigues.Complete clinical response after neoadjuvant chemoradiation therapy for distal rectal cancer: characterization of clinical and endoscopic findings for standardization. Dis. Colon Rectum 53, 1692–1698 (2010).
25. Angelita Habr-Gama , Guilherme Pagin São Julião , Bruna Borba Vailati , Jorge Sabbaga , Patricia Bailão Aguilar , Laura Melina Fernandez , Sergio Eduardo Alonso Araújo , Rodrigo Oliva Perez, Organ preservation in cT2N0 rectal cancer after neoadjuvant chemoradiation therapy: the impact of radiation therapy dose-escalation and consolidation chemotherapy. Ann. Surg. 269, 102–107 (2019).
26. Påhlman L, Bohe M, Cedermark B, Dahlberg M, Lindmark G, Sjödahl R, Öjerskog B, Damber L, Johansson R. The Swedish rectal cancer registry. Br J Surg. 2007 Oct 1;94(10):1285–92.
27. Dulk M den, Putter H, Collette L, Marijnen CAM, Folkesson J, Bosset JF, Rödel C, Bujko K, Påhlman L, Velde CJH van de. The abdominoperineal resection itself is associated with an adverse outcome: The European experience based on a pooled analysis of five European randomised clinical trials on rectal cancer. Eur J Cancer. 2009 May 1;45(7):1175–83.
28. Lujan J, Valero G, Biondo S, Espin E, Parrilla P, Ortiz H. Laparoscopic versus open surgery for rectal cancer: results of a prospective multicentre analysis of 4,970 case. Surg Endosc. 2013 Jan 1;27(1):295–302.
29. College of American Pathologists (CAP). Protocol for the Examination of Specimens from Case with Primary Carcinoma of the Colon and Rectum. Based on AJCC/UICC TNM, 7th edition. ColonRectum 3.1.0.0 cap.org http://webapps.cap.org/apps/ docs/committees/cancer/cancer_protocols/2009/Colon_09protocol.pdf (2011).
30. Royal College of Pathologists. Standards and datasets for reporting cancers. Dataset for histopathological reporting of colorectal cancer. 2017. https://www.rcpath.org/uploads/assets/c8b61ba0- ae3f-43f1-85ffd3ab9f17cfe6/G049-dataset-forhistopathological-reporting-of-colorectal-cancer.pdf.