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Selective approach to arterial ligation in radical sigmoid colon cancer surgery with D3 lymph node dissection: A multicenter comparative study

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ABSTRACT

Objective: Radical surgery for sigmoid colon cancer is commonly performed with complete mesocolic excision (CME) and apical lymph node dissection, reached by central vascular ligation (CVL) of the inferior mesenteric artery (IMA) and associated extended left colon resection. However, IMA branches can be ligated selectively according to tumor location with D3 lymph node dissection (LND), economic segmental colon resection and tumor-specific mesocolon excision (TSME) if IMA is skeletonized. This study aimed to compare left hemicolectomy with CME and CVL and segmental colon resection with selective vascular ligation (SVL) and D3 LND.

Material and Methods: Patients (n= 217) treated with D3 LND for adenocarcinoma of the sigmoid colon between January 2013 and January 2020 were included in the study. The approach to vessel ligation, colon resection and mesocolon excision was based on tumor location in the study group, while in the comparison group, left hemicolectomy with routine CVL was performed. Survival rates were estimated as the primary endpoints of the study. Long- and short-term surgery-related outcomes were evaluated as the secondary endpoints of the study.

Results: The studied approach to the IMA branch ligation was associated with a statistically significant decrease in intraoperative complication rates (2 vs 4, p= 0.024), operative procedure length (225.56 ± 80.356 vs 330.69 ± 175.488, p< 0.001), and severe postoperative morbidity (6.2% vs 19.1%, p= 0.017). Meanwhile, the number of examined lymph nodes significantly increased (35.67 vs 26.69 per specimen, p< 0.001). There were no statistically significant differences in survival rates.

Conclusion: Selective IMA branch ligation and TSME resulted in better intraoperative and postoperative outcomes with no difference in survival rates.

Keywords: Colon cancer, complete mesocolon excision, D3 lymph node dissection, central vascular ligation, inferior mesenteric artery, sigmoid colon

INTRODUCTION

According to the principles of complete mesocolon excision (CME), described by Hohenberger et al., sigmoid colon cancer should be treated with central vascular ligation (CVL) of the inferior mesenteric artery (IMA) to reach apical lymph node dissection (1). According to Japanese guidelines, segmental resections for sigmoid colon cancer are performed within longitudinally spread borders: 5 cm (N1 zone) and 10 cm (N2 zone). This zonation is based on the pattern of lymph node metastasis distribution (2). This approach to resection margin identification is described as a 'cm-rule' (3). If the 'cm-rule' is followed and D3 lymph node dissection is performed in respect to the Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019, vessel preservation can be considered for segmental resections if IMA is unsealed from the mesocolon (4,5). The left colic artery (LCA) is commonly saved in distal sigmoid colon cancer surgical treatment and has been shown to be superior to D3 lymph node dissection with high vascular ligation (6). Preservation of the superior rectal artery (SRA) is also possible for proximal sigmoid colon resection (4). In this technique, tumor-specific mesocolon excision (TSME) is performed.

This study aimed to compare a segmental colonic resection with TSME, selective approach to the ligation of the inferior mesenteric artery with D3 LND and left hemicolectomy with complete mesocolon excision, central vascular ligation and apical lymph node dissection in terms of early and late postoperative complications, outcomes and survival rates.

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MATERIAL and METHODS

Study Design

This was a two-center retrospective comparative study of consecutive patients treated for sigmoid colon cancer between January 2013 and January 2020.

Patients at one center (Moscow, Russia) underwent segmental colon resection with 10 cm resection margins in proximal and distal directions from the tumor according to the Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019 (7). Selective IMA branches ligation with D3 lymph node dissection [(selective vascular ligation (SVL)] was reached by skeletonization of IMA. Patients at the other center (Malatya, Türkiye) were treated with left hemicolectomy, central vascular ligation and apical lymph node dissection according to the principles of complete mesocolon excision [central vascular ligation (CVL)] and included in the comparison group.

Inclusion criteria were as follows: 1) tumor of the sigmoid colon, confirmed intraoperatively; 2) radical elective surgery; 3) adenocarcinoma of the sigmoid colon, confirmed by pathomorphology; and 4) D3 lymph node dissection.

Exclusion criteria were as follows: 1) multiple primary tumors, 2) urgent surgical treatment without radical intent, 3) obstructive sigmoid colon resection, and 4) colorectal cancer caused by germline mutations or inflammatory bowel disease.

The last follow-up assessment was conducted in January 2022. The primary endpoints of the study were overall, progression-free, and cancer-specific survival rates.

The secondary endpoints included: 1) operative outcomes, such as blood loss volume, duration of surgery, intraoperative complication rates, and number of examined and metastatic lymph nodes, 2) long-term surgical outcomes, including anastomotic leakage and anastomotic stricture rates.

Approach to Tumor Location Identification

Tumor location was confirmed by intraoperative revision. The tumor was considered in the descending colon if it was located in the part of the colon, fixed to the left wall of the abdomen by Toldt's fascia. If the tumor was in the mobile part of the colon, not fixed by Toldt's fascia-it was considered in sigmoid colon.

The tumor was supposed to be in the middle third of the sigmoid colon if both resection margins were within the sigmoid colon. If the proximal resection margin was within the descending colon, while the distal resection margin was within the sigmoid colon, the tumor was considered in the proximal third. If the distal resection margin was within the upper rectum, the tumor was considered in the distal part of sigmoid colon.

Surgical Approach

In the SVL group, left segmental resection, sigmoid colon resection, or anterior rectal resection with D3 lymph node dissection was performed. The IMA was unsealed from the surrounding mesocolic tissue to preserve the vessels outside the resection margins (Figure 1). If the tumor was in the upper third of the sigmoid colon, the distal resection margin was above the promontorium-the SRA was preserved in those cases, while the IMA was skeletonized and sigmoid branches were ligated in the same way described by Kobayashi et al. (4,5) (Figure 2a). The LCA was ligated if it supplied the descending colon at the level of the proximal resection line. Otherwise, both LCA and SRA were preserved.

The SRA was ligated if the distal resection line was below the promontorium, i.e., sigmoid colon resection with anterior rectal resection was performed. In those cases, the LCA was preserved (Figure 2b).

If resection of the sigmoid colon for middle third tumors was managed, both the LCA and SRA were spared (Figure 2c). The root of IMA was exposed to guarantee the excision of lymph nodes from the group № 253-the D3 LND was performed.

In the CVL group, left hemicolectomy with CME was performed (1). The IMA was ligated at the root based on the principles suggested by Hohenberger. In these procedures, the proximal resection margin was at the splenic flexure, while the distal resection margin in the upper third of the rectum. The apical lymph node dissection was guaranteed by high IMA ligation at the level of its outflow from the aorta. The aorta sidewall was exposed while the length of IMA stump was no longer than 1 cm in length.

In both groups, anastomosis was performed by double-stapling technique in end-to-end or side-to-end fashion.

Specimen Processing

The photograph of unfixed, unopened specimen was made along the metric scale prior to formaline fixation. Lymph node dissection from the mesocolon tissue was performed by the assisting surgeon. The mesocolon tissue along the inferior mesenteric artery branches was dissected for lymph node excision and grouped according to lymph node classification described in the JSCCR guidelines 2019 for the treatment of colorectal cancer (7). The specimen was characterized using a standardized pathology report for colorectal cancer (8).

Statistical Analysis

Categorical variables were presented as absolute counts and percentages for the whole sample and were compared using Pearson's chi-square or Fisher's exact test, as appropriate.

Continuous data were presented as mean ± standard error and interquartile range. Non-normally distributed data were compared using the Mann-Whitney U test. Five-year survival rates were estimated with the Kaplan-Meier method.

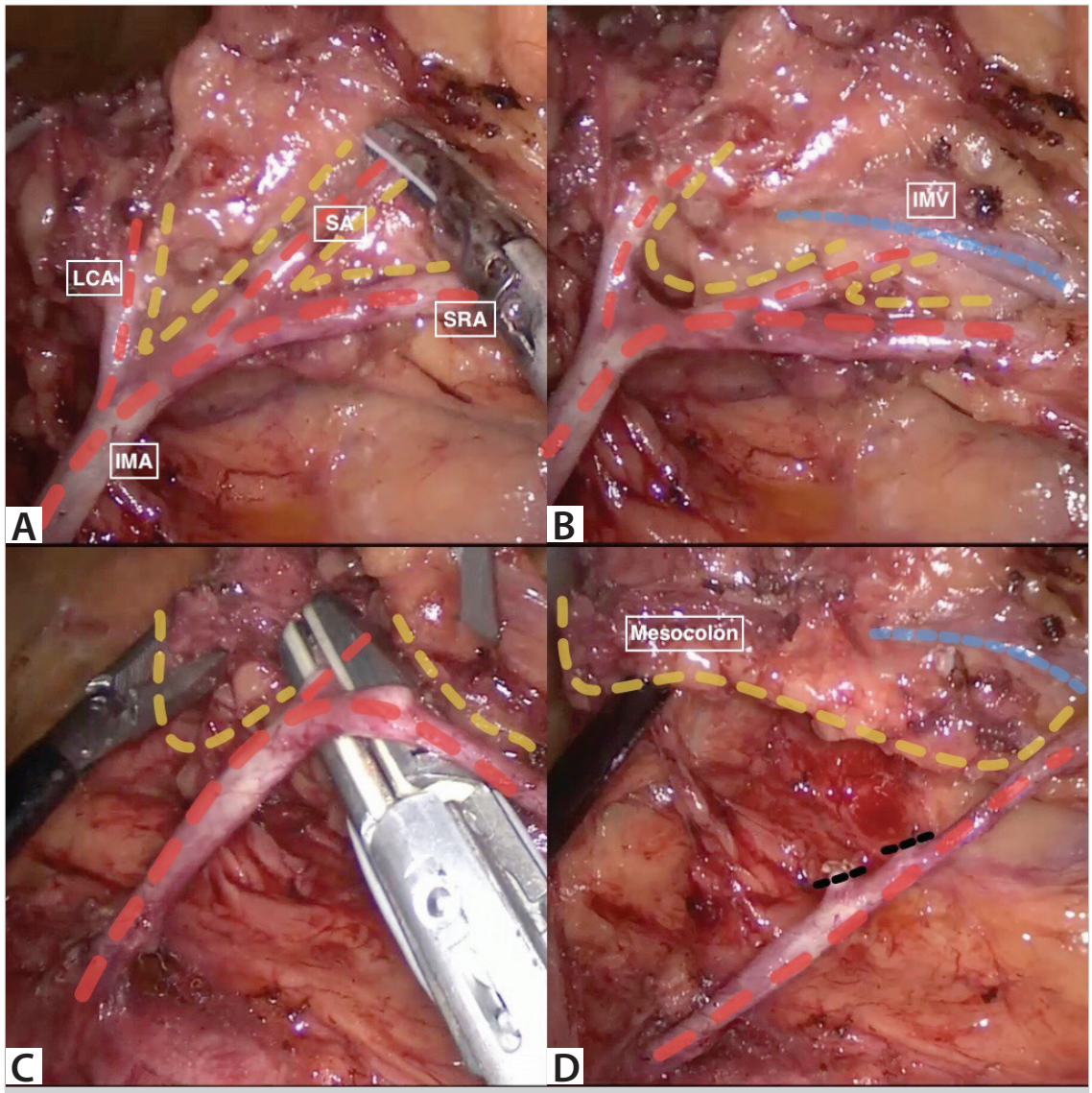

Figure 1. Skeletonization of inferior mesenteric artery (IMA): **A.** Skeletonization of sigmoid artery (SA), **B.** Final view of skeletonization, **C.** Ligation of left colic artery (LCA) with ultrasound device harmonic ACE, **D.** LCA and SA are coagulated red dotted line.

RESULTS

This retrospective study included 217 consecutive patients treated for sigmoid colon cancer at the Clinic for Coloproctology and Minimally Invasive Surgery (Moscow, Russia): Nineteen patients were excluded because of D2 lymph node dissection, six patients were excluded because of multiple primary cancer, and 28 patients did not match the criteria of inclusion because of obstructive sigmoid colon resection, extended left colectomy, or anterior rectal resection. As a result, 164 patients were included in the study. Finally, three patients were lost to follow-up. Overall, 161 patients were included in this study.

The CVL database included 50 patients treated for sigmoid colon cancer, two patients had primary multiple cancers. One patient was excluded because of obstructive sigmoid colon resection. Finally, 47 patients met the inclusion criteria.

There were no inter-group differences in clinicopathological characteristics, such as age, body mass index (BMI), tumor stage, and differentiation ($p > 0.05$; Table 1).

In the CVL group, left hemicolectomy with splenic flexure mobilization was performed in all cases because of high ligation of IMA. In the SVL group, segmental left colon resection for proximal sigmoid cancer was performed in 10 cases (6.1%), sigmoid colon resection-in 83 cases (51.5%), sigmoid colon and anterior rectal resection-in 68 cases (32.9%). In 22 cases (13.7 %), anastomosis formation demanded splenic flexure mobilization.

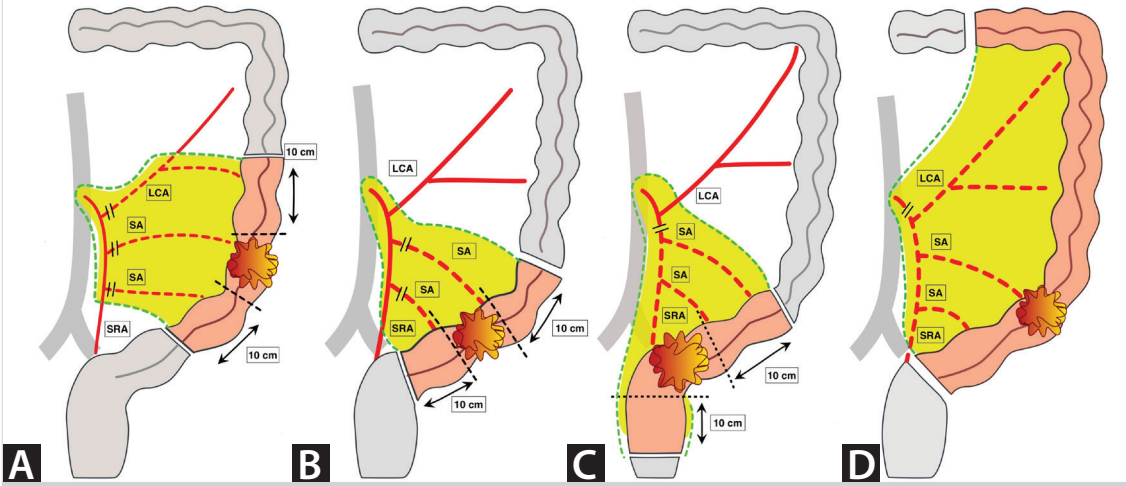

Figure 2. A. Left segmental resection for proximal sigmoid colon cancer, **B.** Sigmoid colon resection for medially located sigmoid colon cancer, **C.** Sigmoid colon and anterior rectal resection for distal sigmoid colon cancer, **D.** Left hemicolectomy for sigmoid colon cancer.

LCA: Left colic artery, SA: Sigmoid artery, SRA: Superior rectal artery.

Table 1. Clinico-morphological characteristics of the patients

Characteristic	Selective IMA branch ligation, n= 161	High IMA ligation, n= 47	p
Age (years), mean ± SD (IQR)	64.5 ± 10.821 (38-87)	58.9 ± 9.675 (36-79)	0.269
Sex, n (%)			
Male	74 (46.0)	21 (44.7)	
Female	87 (54.0)	26 (55.3)	0.872
BMI, mean ± SD (IQR)	26.33 ± 4.287 (17-38)	28.07 ± 3.746 (20-49)	0.075
AJCC stage, n (%)			0.692
Stage 1	16 (9.8)	2 (4.3)	
Stage 2	52 (31.9)	14 (29.8)	
Stage 3	70 (42.9)	21 (44.7)	
Stage 4	25 (15.3)	10 (21.3)	
pT stage, n (%)			0.231
Tis	2 (1.2)	0 (0.0)	
T1	8 (5.0)	0 (0.0)	
T2	16 (9.9)	3 (6.4)	
T3	113 (70.2)	33 (70.2)	
T4	22 (13.7)	11 (23.4)	
pN stage, n (%)			0.475
N0	71 (44.1)	18 (38.3)	
N1	41 (25.5)	16 (34.0)	
N2	49 (30.4)	13 (27.7)	
cM stage, n (%)			0.375
M0	138 (84.7)	37 (78.7)	
M1	25 (15.3)	10 (21.3)	
Tumor differentiation, n (%)			0.202
G1	34 (21.8)	9 (19.1)	
G2	82 (52.6)	32 (68.1)	
G3	3 (1.9)	0 (0.0)	
Mucinous	37 (23.7)	6 (12.8)	

SD: Standard deviation, IQR: Interquartile range , n: Number, AJCC: American Joint Committee on Cancer, BMI: Body mass index, G: Grade, Tis: T in situ.

Table 2. Surgery-related characteristics

Characteristic	Selective IMA branch ligation, n= 161	High IMA ligation, n= 47	p
Approach, n (%)			
Open	58 (36.2)	3 (6.4)	<0.001
Laparoscopic	81 (49.7)	44 (93.6)	
Robotic	22 (14.1)	0 (0.0)	
Operative time (min), mean ± SD (IQR)	225.56 ± 80.356 (130-490)	330.69 ± 175.488 (120-720)	<0.001
Blood loss (mL), mean ± SD (IQR)	98.25 ± 97.57 (10-300)	183.45 ± 248.471 (10-1000)	0.300
Surgically important intraoperative complications, n (%)	2 (1.2)	4 (8.5)	0.024
Ureter injury	0	1	
Anastomotic air leakage	1	1	
Proximal resection margin extension due to ischemia	0	1	
Bowel deserosation	0	1	
Superior rectal artery trauma	1	0	
Overall number of examined LN, mean ± SD (IQR)	35.67 ± 18.509 (1-135)	26.69 ± 14.455 (4-57)	<0.001
Overall mts of LN among N+, mean ± SD (IQR)	7.13 ± 8.482 (1-46)	5.34 ± 7.745 (1-42)	0.205

SD: Standard deviation, IQR: Interquartile range, n: Number, LN: Lymph nodes.

The operative time was significantly lower in SVL even though the robot-assisted approach was used in the study group (225.56 vs 330.69, p< 0.001).

Intraoperative complications were observed less often in the SVL group than in the CVL group (p= 0.024) (Table 2). However, only two complications were associated with surgical technique.

There was one case of SRA trauma during IMA skeletonization in the SVL group. The SRA was ligated below LCA debranching-only LCA was preserved in this case. There was no significant blood loss associated with the SRA trauma. Blood loss in the SVL group was lower than in the CVL group but not statistically significant. There was one case of proximal resection margin extension due to ischemia in the CVL group. That complication may have been caused by high ligation of IMA (Table 2).

Postoperative complication rate, such as ileus, lymphorrhea, and wound site complications were lower in the SVL group than in the CVL group (p= 0.095; Table 3).

Severe complications (grade III and IV by the Clavien-Dindo classification) were more common in CVL than in SVL patients (6.2% vs 19.1%, p= 0.023). All patients survived beyond the first 30 days (Table 3).

Anastomotic leakage occurred less frequently in the SVL group than in the CVL group [five cases (3.1%) vs three cases (6.4%), p= 0.382; Table 3]. Colorectal anastomosis stricture was observed in one case in the SVL group, while it happened in five cases in CVL (0.6% vs 10.6%, p= 0.002) (Table 4).

The number of examined lymph nodes was significantly higher in the SVL group than in the CVL group (35.67 vs 26.69 lymph nodes per specimen, p< 0.001), while the number of metastatic lymph nodes was comparable in both groups (Table 2).

Survival Rates

The follow-up period did not differ between the groups (p= 0.698). The overall, cancer-specific and progression-free survival rates were comparable in both groups (Table 4). In this

Table 3. Short-term postoperative results

Characteristic	Selective IMA branches ligation, n= 161	High ligation of the IMA, n= 47	p
Postoperative hospital stay (days), mean ± SD (IQR)	10.667 (4-37)	9.207 (4-37)	0.062
Postoperative morbidity, n (%)			
Clavien-Dindo I-II	17 (10.6)	4 (8.5)	0.790
Clavien-Dindo III-IV	10 (6.2)	9 (19.1)	0.017
Anastomotic leakage, n (%)	5 (3.1)	3 (6.4)	0.382
Short-term postoperative complications, n (%)	27 (16.6)	13 (27.7)	0.095

SD: Standard deviation, IQR: Interquartile range, n: Number.

Table 4. Long-term postoperative data

Characteristic	Selective IMA branches ligation, n= 161	High ligation of the IMA, n= 47	p
Neoadjuvant chemotherapy, n (%)	2 (1.2)	2 (4.3)	0.217
Postoperative chemotherapy	64 (39.8)	32 (68.1)	0.001
Anastomotic stricture, n (%)	1 (0.6)	5 (10.6)	0.002
5-year overall survival	93.3	93.6	0.802
5-year progression free survival	81.6	85.1	0.237
5-year cancer-specific survival	93.3	91.5	0.976
Follow-up	38.55 ± 16.27 (5-87)	37.22 ± 12.36 (3-85)	0.698

IMA: Inferior mesenteric artery, n: Number.

study, vessel preservation based on tumor location did not affect overall (Figure 3), progression-free (Figure 4), or cancer-specific survival rates (Figure 5).

DISCUSSION

There are two accepted approaches to radical sigmoid colon cancer treatment. Complete mesocolic excision with IMA ligation at the root (within 1 cm below its debranching point) allows the excision of the colon with the tumor within its fascial envelope and removal of lymph nodes at the root of IMA (1,8). Central ligation of the IMA demands extended colon resection, reached by the proximal resection line in the descending or transverse colon, and the distal resection line-in the upper rectum.

Meanwhile, the Japanese guidelines are based on the 10 cm rule that considers dominant arteries, supplying the tumor and horizontal spread of metastasis in the lymphatic system. D3 lymph node dissection (i.e., excision of the lymph nodes from group № 253) should be performed for T3 tumors and may be

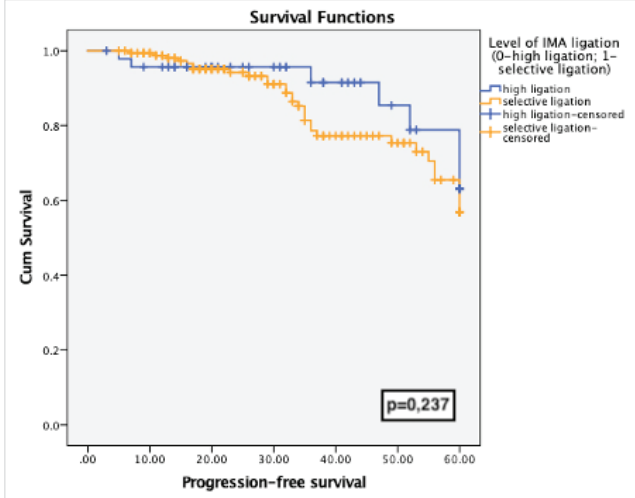

Figure 4. Progression-free survival in high-ligation and selective ligation groups.

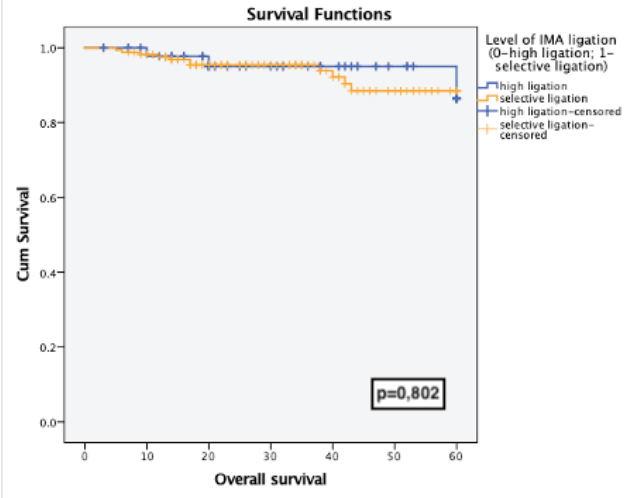

Figure 3. Overall survival rates in selective ligation and high ligation groups.

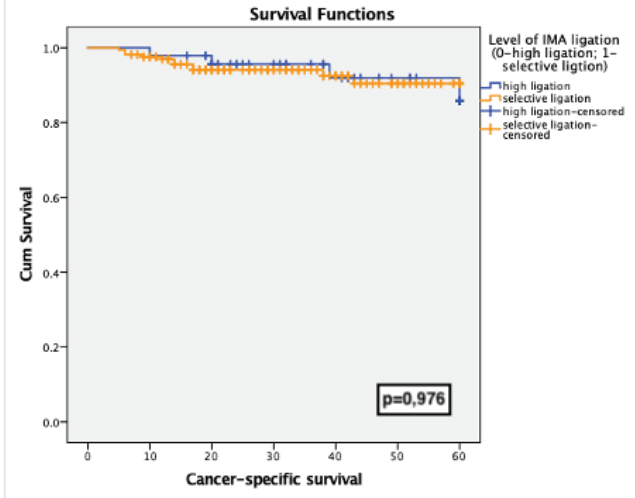

Figure 5. Cancer-specific survival rates in selective ligation and high-ligation groups.

considered for T2 tumors (3,7). A meta-analysis by Nerad et al. has reported the diagnostic odds ratio of computer tomography (CT) scanning as 20.6% [95% confidence interval (CI), 10.2-41.5] for tumor invasion and 4.8% (95% CI, 2.5-9.4) for nodal involvement (9). Thus, CT is not relevant enough in colon cancer staging. Therefore, in our study, all patients with any risk of nodal involvement or tumor invasion into the muscular layer underwent D3 lymph node dissection.

The Japanese guidelines provide no recommendation on the IMA ligation level. They state that for tumors located above the promontorium, the colon should be cut 10 cm proximally and distally away from the tumor (2). From this perspective, the LCA and SRA may be spared if their basins are outside the resection margins.

Kobayashi et al. have demonstrated a technique for laparoscopic IMA skeletonization, which involves dissection of the IMA and its branches from the mesocolon, exposing the arterial wall up to the adventitial layer. D3 lymph node dissection and tumor-specific mesocolon excision within resection margins can be performed in such contexts (4,5).

In our study, we preserved the SRA if the distal resection margin was above the promontorium level. LCA was preserved if the proximal resection line was in the proximal third of the sigmoid colon or descending colon. This approach allowed to avoid unnecessary resection of the colon in the proximal and distal directions; therefore, 1) splenic flexure mobilization was not performed routinely in distal tumor cases, and 2) the anal-side marginal artery could be preserved (10). The mesocolon associated with the feeding vessel was excised.

Splenic flexure mobilization has been shown to 1) add time to surgery with no decrease in anastomotic leakage rate and 2) increase intraoperative risk (11).

Selective ligation with TSME resulted in less need for splenic flexure mobilization. Concurrently, the rate of intraoperative complications was lower in patients with selective ligation than in their counterparts and the operative time and blood loss were significantly shorter, which may be due to reduced demand for splenic flexure mobilization.

Open surgery was more common in the study group, which may have been due to 1) the higher number of surgeons with different learning curves, performing the surgical procedure, 2) the amount of cases was mostly three times bigger in the study group than in the comparison group, 3) more fragile elderly patients in the study group.

According to the American Society of Colon and Rectal Surgeons, high ligation is performed at the root of the IMA, whereas low ligation is performed after LCA debranching. Therefore, the excision of lymph nodes from group № 253 is not performed in the latter approach. Kanemitsu et al. have demonstrated a survival benefit associated with high ligation, which can be due to the completeness of lymph node dissection, rather than the level of IMA ligation (12). Recently, Akagi et al. have demonstrated survival benefit in D3 lymph node dissection with left colic artery preservation (6).

According to a recent meta-analysis, the anastomotic leakage rate is reduced if LCA is preserved in the sigmoid colon and rectal cancer treatment (13). Moreover, it is associated with a better quality of life in terms of continence and sexual and urinary function in the postoperative period (14). However, there is lack of data on survival rates in SRA preservation for proximal sigmoid colon tumors. If a significant length of the distal sigmoid colon can be left with no decrease in radicality, than SRA may be preserved in respect to distal marginal artery supply (10). In the study by Wakahara et al., SRA preservation did not affect three-year relapse-free survival rates, lymph node harvest, blood loss volume, or other relevant outcomes. However, the patients were not grouped according to level of lymph node dissection, and for all of them LCA was preserved (15).

A meta-analysis by Yang et al. has revealed no differences in anastomotic leakage frequencies, lymph node harvest, or survival rates between groups undergoing high and low ligation of the IMA (16). On the contrary, the meta-analysis by Zeng et al. has demonstrated that the risk of anastomotic leakage increases in the group with patients who had undergone high ligation of the inferior mesenteric artery (17). There was no statistically significant difference in the anastomotic leakage rates in our study, although they tended to decrease if the IMA branches were preserved. However, anastomotic strictures were more common in the CLG group.

Low ligation is routinely performed with D2 lymph node dissection, in contrast to high ligation, which includes apical lymph node harvest. Kanemitsu et al. have shown that high ligation coupled with D3 lymph node dissection leads to increased survival rates (12). The mean percentage of apical lymph node involvement in oncological processes has been reported in the range of 3-6% (18,19). Moreover, D3 lymph node dissection allows for better staging, as it leads to skip metastasis determination. Alici et al. have reported apical lymph node metastasis in 5.8% of patients, including 1.9% with skip metastasis (19).

Central ligation at the root of the IMA results in a higher lymph node yield, which corresponds to higher survival rates (20). Herein, we demonstrated that IMA branch preservation and TSME with D3 lymph node dissection resulted in higher lymph node yield, while the approach to pathomorphological specimen extraction and analysis was standardized in both groups.

However, the applicability of selective IMA branch ligation in open and minimally invasive surgery is very limited, as selective ligation of colic arteries is a technically advanced procedure, which demands IMA refinement to perform D3 lymph node

dissection (21). It is advantageous in patients with high BMI and distorted complex anatomy. Thorough understanding of IMA anatomy is needed for this approach (22).

This comparative study showed that the studied approach is feasible in routine surgical practice as it is associated with a shorter operative time with no increase in blood loss, a lower rate of intraoperative complications, and comparable frequency of anastomotic leakage, relative to those associated with the standard approach. The rates of anastomotic strictures in the late postoperative period were significantly lower in the SVL group, which benefit the quality of life. The studied approach is not inferior to the compared approach in terms of survival rates.

Study Limitations

This study has some limitations. First, it was a retrospective study, and the sample sizes were unequal. The comparison group was three times smaller than the study group. These factors may have affected the obtained results. Prospective studies are required to validate these findings. This study gives a way to randomized clinical trial.

CONCLUSION

Skeletonization allows for D3 lymph node dissection and preservation of the IMA, leading to high lymph node yield and low rates of postoperative morbidity, anastomotic leakage, and anastomotic strictures. Preoperative identification of the tumor location and feeding vessel features can help plan selective ligation and segmental resections.

Survival outcomes were comparable in both groups. Sigmoid colon cancer can be treated surgically in a more tailored manner, based on tumor location and IMA anatomy, including selective ligation of its branches.

Statements and Declarations

Written informed consent was obtained from all patients for study participation and publication of obtained images and data. The study was approved by the ethics committee of the WMA and adhered to the Declaration of Helsinki 1964 (updated in 2013).

Ethics Committee Approval: This study was approved by Sechenov University Institutional Review Board (Registration no: SU300585, Date: 08.08.2022).

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SE, AZ, PT; Design – SE, AZ; Supervision – SE, PT; Fundings – SE, CK; Materials – SE, CK, PT; Data Collection and/ or Processing – AZ, AM, AA, YB; Analysis and/or Interpretation – AZ, SE, AM; Literature Search – AZ; Writing Manuscript – AZ, SE; Critical Reviews – AZ, SE, CK.

Conflict of Interest: The authors have no conflicts of interest to declare.

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ORİJİNAL ÇALIŞMA-ÖZET
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D3-lenf nodu diseksiyonu ile radikal sigmoid kolon kanseri cerrahisinde arteriyel ligasyona selektif yaklaşım: Çok merkezli karşılaştırmalı bir çalışma

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ÖZET

Giriş ve Amaç: Sigmoid kolon kanseri için radikal cerrahi, genellikle, inferior mezenterik arterin (IMA) santral vasküler ligasyonu (CVL) ve buna bağlı genişletilmiş sol kolon rezeksiyonu ile ulaşılan tam mezokolik eksizyon (CME) ve apikal lenf nodu diseksiyonu ile gerçekleştirilir. Ancak İMA iskeletleştirilmiş ise D3 lenf nodu diseksiyonu (LND), ekonomik segmental kolon rezeksiyonu ve tümöre özgü mezokolon eksizyonu (TSME) ile İMA dalları tümör yerleşimine göre seçici olarak bağlanabilir. Bu çalışma, KME ve CVL ile sol hemikolektomi ile selektif vasküler ligasyon (SVL) ve D3 LND ile ekonomik kolon rezeksiyonunu karşılaştırmayı amaçladı.

Gereç ve Yöntem: Ocak 2013 ile Ocak 2020 arasında sigmoid kolon adenokarsinomu nedeniyle D3 LND ile tedavi edilen hastalar (n= 217) çalışmaya dahil edildi. Çalışma grubunda damar ligasyonu, kolon rezeksiyonu ve mezokolon eksizyonuna yaklaşım tümörün yerleşimine göre belirlenirken, karşılaştırma grubunda rutin CVL ile birlikte sol hemikolektomi uygulandı. Hayatta kalma oranları, çalışmanın primer son noktası olarak ele alındı. Ameliyatla ilgili uzun ve kısa vadeli sonuçlar, çalışmanın sekonder son noktaları olarak değerlendirildi.

Bulgular: IMA dal ligasyonuna yönelik çalışılan yaklaşım, intraoperatif komplikasyon oranlarında (2'ye karşı 4, p= 0,024), ameliyat prosedür uzunluğunda (225,56 ± 80,356'ya karşı 330,69 ± 175,488, p< 0,001) ve ciddi postoperatif morbiditede istatistiksel olarak anlamlı bir azalma ile ilişkilendirildi. (%6,2-19,1, p= 0,017). Bu arada, incelenen lenf nodlarının sayısı önemli ölçüde arttı (örnek başına 35,67'ye karşı 26,69, p< 0,001). Sağkalım oranlarında istatistiksel olarak anlamlı bir fark yoktu.

Sonuç: Seçici IMA dal ligasyonu ve TSME, sağkalım oranlarında hiçbir fark olmaksızın daha iyi intraoperatif ve postoperatif sonuçlara yol açtı.

Anahtar Kelimeler: Kolon kanseri, komplet mezokolon eksizyonu, D3 lenf nodu diseksiyonu, santral vasküler ligasyon, inferiyor mezenterik arter, sigmoid kolon

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