Original Article

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Measuring the Quality of Life of Patients Undergoing Total or Subtotal Gastrectomy Due to Gastric Cancer

Mide Kanseri Nedeniyle Total veya Subtotal Gastrektomi Yapılan Hastaların Yaşam Kalitesini Ölçme

Mehmet GÜZEL, Adem AKÇAKAYA

Bezmialem Vakıf University Faculty of Medicine, Department of General Surgery, İstanbul, Türkiye

ABSTRACT

Objective: Gastric cancer is prevalent both globally and in Türkiye. The primary treatment for this condition is surgical resection. However, because the stomach plays a vital role in the digestive system, its removal can lead to significant morbidity and mortality, as well as considerable alterations in post-operative quality of life. To address these changes, questionnaires such as the EORTC QLQ-C30 and EORTC STO22 have been developed to assess physical, social, and psychological well-being.

Methods: The quality of life of patients who underwent surgery for gastric cancer at Bezmialem University Faculty of Medicine was assessed using the EORTC QLQ-C30 and EORTC STO22 questionnaires, which are commonly utilized for measuring quality of life in Europe. Following the approval of the non-interventional ethics committee on July 10, 2018 (approval no. 15/183), a retrospective review was conducted of patients diagnosed with gastric cancer who had undergone either total or subtotal gastrectomy between October 2010 and April 2018. Demographic, pathological, and surgical data were collected. Eighty-five surviving patients, who were at least three months post-adjuvant therapy and free of recurrence, were contacted to participate. The Turkish versions of the EORTC QLQ-C30 and EORTC STO22 questionnaires were administered prospectively. Subsequently, statistical methods were employed to compare the total gastrectomy and subtotal gastrectomy groups.

Results: A comparison was conducted between the pathologies and quality of life of 43 patients who underwent total gastrectomy and 42 patients who had

ÖZ

Amaç: Mide kanseri hem dünyada hem de Türkiye'de yüksek sıklıkta görülmektedir. En önemli tedavisi cerrahi rezeksiyondur. Ancak midenin sindirim sisteminde çok önemli bir role sahip olması; rezeksiyon sonrası morbidite ve mortalitenin yanında yaşam kalitesinde de anlamlı değişiklikler meydana getirmesine neden olmaktadır. Bu amaçla, hastalara yönelik fiziksel, sosyal ve psikolojik iyilik halini ölçen anketler hazırlanmıştır. EORTC QLQ-C30, EORTC STO22 bu anketlerden bazılarıdır.

Yöntem: Bezmialem Vakıf Üniversitesi Tıp Fakültesi'nde mide kanseri nedeniyle ameliyat edilen hastaların yaşam kaliteleri ölçüldü. Ölçüm için Avrupa'da yaşam kalitesi için tercih edilen anket EORTC QLQ-C30, EORTC STO22 formları kullanıldı. Çalışma için 10 Temmuz 2018 tarihinde 15/183 numaralı girişimsel olmayan etik kurul onayı alındıktan sonra 2010 Ekim ile 2018 Nisan ayları arasında mide kanseri tanısı ile total veya subtotal gastrektomi ameliyatı yapılmış olan hastalar retrospektif olarak tarandı. Demografi, patoloji ve ameliyat bilgileri not edildi. Bu hastalardan hayatta olanlar ve adjuvan tedavisinin üzerinden en az 3 ay geçmiş olup nüksü olmayan 85 hasta ile irtibata geçildi. Prospektif olarak EORTC QLQ-C30, EORTC STO22 Türkçe formları dolduruldu. Daha sonra total gastrektomi ve subtotal gastrektomi grupları istatistiksel yöntemlerle karşılaştırıldı.

Bulgular: Total gastrektomi yapılmış 43 hasta ile subtotal gastrektomi yapılmış 42 hastanın patolojileri ve yaşam kaliteleri karşılaştırıldı. EORTC QLQ-C30 anketine göre diyare, EORTC STO22 anketine göre ise disfaji total gastrektomi uygulanan hastalarda daha sık görüldü.

Address for Correspondence: Mehmet Güzel MD, Bezmialem Vakıf University Faculty of Medicine, Department of General Surgery, İstanbul, Türkiye
E-mail: mehmetguzel209@gmail.com
ORCID IDs of the authors: M.G.: 0000-0001-6959-8539, A.A.: 0000-0003-3116-7033

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ABSTRACT

subtotal gastrectomy. The results from the EORTC QLQ-C30 questionnaire indicated that diarrhea occurred more frequently in the total gastrectomy group. Additionally, the EORTC STO22 questionnaire revealed a higher incidence of dysphagia in this same group.

Conclusion: Based on this information, it was concluded that patients who underwent subtotal gastrectomy experienced a higher quality of life. It is recommended that distal subtotal gastrectomy be considered preferable, as long as surgical procedures adhere to oncological standards, since it does not significantly diminish quality of life.

Keywords: Gastric cancer, quality of life, EORTC QLQ-C30, EORTC STO22

ÖZ

Sonuç: Bu bilgiler ışığında subtotal gastrektomi yapılan hastaların yaşam kalitelerinin daha yüksek olduğu tespit edildi. Cerrahi prosedürler onkolojik standartlara uygun olduğu sürece, yaşam kalitesini önemli ölçüde düşürmediği için distal subtotal gastrektominin tercih edilmesi önerilmektedir.

Anahtar Kelimeler: Mide kanseri, yaşam kalitesi, EORTC QLQ-C30, EORTC STO22

Introduction

Cancer is a leading cause of death worldwide, responsible for nearly 10 million deaths in 2024, which accounts for almost one in six fatalities. The most common types of cancer include lung, breast, colon and rectum, prostate, and stomach cancers. Gastric cancer is the fifth leading cause of cancer-related deaths for both men and women (1). According to Turkish Cancer Statistics, the gastric cancer mortality rate in Türkiye was 5.9% among men and 3.9% among women in 2020 (2). Various treatment methods exist for gastric cancer depending on its stage after diagnosis. The most important of these treatments is surgical resection. However, the stomach plays a very important role in the digestive system, which leads to significant changes in quality of life (QoL) in addition to morbidity and mortality after resection.

Depending on the location of the tumor, total gastrectomy (TG) may be preferred. However, subtotal gastrectomy (SG) is also an option for proximally and distally located tumors. The effects of TG or SG, which are decided based on anatomical localization, on morbidity and QoL have been a constant subject of debate.

To understand which type of surgery is better, it is necessary to consult scales that measure postoperative QoL, besides recurrence and survival. According to the WHO definition, QoL is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.

Health-related QoL is defined as a person's perceived wellbeing in physical, mental, and social domains of health (3). Numerous question systems are available in oncology to evaluate and reveal subjective parameters related to QoL. Among these, the Turkish question forms of The European Organization for Research and Treatment of Cancer Quality of Life Core (EORTC QLQ-C30, EORTC STO22) are well-adapted for their comprehensive nature.

For this purpose, the measurement and evaluation of the QoL of patients who underwent total or SG due to gastric cancer at the General Surgery Department of Bezmialem University Faculty of Medicine was planned.

Methods

Thesis Origin and Presentation History

This manuscript is derived from the Thesis of Mehmet GÜZEL, successfully completed at the Department of General Surgery, Bezmialem University Hospital, İstanbul/Türkiye, in 2019.

Preliminary findings based on this patient cohort were previously presented as an oral and written abstract at the 6th International Congress on Quality of Life in Health (SAYKAD), held in İzmir on November 22-23, 2019.

Study Design

This was a single-center, retrospective cohort study conducted at the Department of General Surgery, Bezmialem University Hospital, İstanbul/Türkiye between October 2010 and April 2018.

Ethics and Consent

The study protocol was reviewed and approved by the Bezmialem University Non-Interventional Ethics Committee on 10.07.2018, with the decision number 15/183.

All procedures adhered strictly to the ethical principles outlined in the Declaration of Helsinki. Informed consent was obtained from all participants prior to their inclusion in the study.

Procedures

Patients who underwent surgery for gastric cancer at the General Surgery Department of Bezmialem University Faculty of Medicine between 2010 and 2018 were selected. These patients, who had undergone TG or SG, were screened from the hospital's online registration system. Survivors were called by phone and invited to the hospital.

The study was explained to the patient in the general surgery outpatient clinic room. After obtaining their consent, they were given the Turkish translated versions of the EORTC-QLQ30 and EORTC- STOCH 22 questionnaire forms. The questionnaire forms were filled out. The results obtained were compared with both the type of surgery and the pathology results of the patients.

During the period between October 2010 and April 2018, gastrectomy for gastric cancer was performed on 265 patients in our clinic. Of these, 161 (60%) patients underwent TG, and 104 (40%) patients underwent SG.

Out of these 265 patients, 153 died, and 27 patients could not be reached. The remaining 85 patients were called to the outpatient clinic. In the clinic, after explaining the study to the patient and obtaining consent, the questionnaires were applied. The completed questionnaires were processed.

Inclusion Criteria

All patients who were diagnosed with gastric cancer, underwent surgery between 2010 and 2018, and were at least 3 months post-operation.

Patients who were at least 3 months post-adjuvant treatment.

Exclusion Criteria

Patients who were operated on for gastric cancer and died.

Patients who were psychiatrically dependent on external support.

Patients who were hospitalized for another disease during the examination period.

Receiving chemotherapy or radiotherapy.

Statistical Analysis

Mean standard deviation and percentage were used for descriptive statistics of the groups. In intergroup comparisons:

The Student's t-test was used when comparing means.

The chi-square test or Fisher's exact test was used when comparing categorical data.

The Spearman correlation coefficient was used when examining intragroup relationships.

The significance level was accepted as 0.05 for all tests.

Results

The mean age of patients was 56.6 in the SG group and 60.09 in the TG group. The cohort consisted of 59 men (69.4%) and 26 women (30.6%). No significant difference was detected in age or gender.

The postoperative length of hospital stay was measured as an average of 7 days for SG group and 6.95 days for TG group, with no significant difference found. The mean operation time was 223.21 minutes in the SG group and 239.40 minutes in the TG group; this difference was found to be statistically significant (p=0.035, Table 1), showing that SG procedures were associated with significantly shorter operative durations.

The tumor diameter was measured as an average of 3.85 cm in SG group and 6.38 cm in TG group. A significant difference was found (p<0.001). Accordingly, the tumor size was significantly larger in TG group.

The number of lymph nodes was measured as an average of 32.1 in SG group and 35.42 in TG group, with no significant difference found. The number of positive lymph nodes was measured as an average of 5.4 in SG group and 5.79 in TG group, with no significant difference found.

Demographic and pathological data for the two groups are presented (Tables 1 and 2) .

When pathological examinations were reviewed, diffuse and intestinal type adenocarcinomas were found to be significantly higher compared to mixed-type adenocarcinomas.

In SG group, tumors in the antropyloric region were found to be higher than those in the cardia and corpus. However, in TG group, no significant difference was observed between the locations. The lack of a significant difference between regions in TG group may be attributed to the fact that TG was also performed for tumors in the cardia region in the clinic.

No significant difference was observed based on the type of surgery regarding the positivity of lymphovascular and perineural invasion.

Table 1. Characteristics of the groups

Characteristic	Group	Mean ± SD	p-value
Age (years)	Subtotal	56.90±11.78	0.162
	Total	60.09±8.91	
Length of hospital stay (days)	Subtotal	7.00±2.57	0.925
	Total	6.95±1.94	
Operation time (min)	Subtotal	223.21±29.15	**0.035**
	Total	239.40±39.51	
Tumor diameter (cm)	Subtotal	3.85±1.93	**<0.001**
	Total	6.38±3.83	
Lymph node count	Subtotal	32.10±12.63	0.372
	Total	35.42±20.52	
Positive lymph node count	Subtotal	5.14±7.53	0.691
	Total	5.79±7.47	

SD: Standard deviation

Table 2. Characteristics of the groups

Variable	Subtotal (n=42)	Total (n=43)	Overall (n=85)	p-value
Gender, n (%)				0.311
Male	27 (64.3%)	32 (74.4%)	59 (69.4%)	
Female	15 (35.7%)	11 (25.6%)	26 (30.6%)	
Prior abdominal surgery, n (%)				0.635
Yes	8 (19.0%)	10 (23.3%)	18 (21.2%)	
No	34 (81.0%)	33 (76.7%)	67 (78.8%)	
Presence of GI complaints, n (%)				0.892
Yes	26 (61.9%)	26 (60.5%)	52 (61.2%)	
No	16 (38.1%)	17 (39.5%)	33 (38.8%)	
Comorbidity, n (%)				0.64
Yes	20 (47.6%)	29 (67.4%)	49 (57.6%)	
No	22 (52.4%)	14 (32.6%)	36 (42.4%)	
Tumor location, n (%)				<0.001
Antro-pyloric	34 (81.0%)	2 (4.7%)	36 (42.4%)	
Cardia	0 (0.0%)	15 (34.9%)	15 (17.6%)	
Corpus	8 (19.0%)	26 (60.5%)	34 (40.0%)	
Lymph node dissection, n (%)				0.273
D1	5 (11.9%)	2 (4.7%)	7 (8.2%)	
D2	36 (85.7%)	41 (95.3%)	77 (90.6%)	
D3	1 (2.4%)	0 (0.0%)	1 (1.2%)	
Pathological tumor stage, n (%)				0.340
Stage 1	11 (26.2%)	6 (14.0%)	17 (20.0%)	
Stage 2	13 (31.0%)	12 (27.9%)	25 (29.4%)	
Stage 3	18 (42.9%)	24 (55.8%)	42 (49.4%)	
Stage 4	0 (0.0%)	1 (2.3%)	1 (1.2%)	
Lauren classification, n (%)				0.34
Diffuse	20 (47.6%)	31 (72.1%)	51 (60.0%)	
Intestinal	20 (47.6%)	9 (20.9%)	29 (34.1%)	
Mixed	2 (4.8%)	3 (7.0%)	5 (5.9%)	
Lymphovascular invasion, n (%)				0.929
Yes	25 (59.5%)	26 (60.5%)	51 (60.0%)	
No	17 (40.5%)	17 (39.5%)	34 (40.0%)	
Perineural invasion, n (%)				0.561
Yes	27 (64.3%)	25 (58.1%)	52 (61.2%)	
No	15 (35.7%)	18 (41.9%)	33 (38.8%)	
Tumor histological type, n (%)				0.540
Adenocarcinoma	31 (73.8%)	32 (74.4%)	63 (74.1%)	
Mixed	1 (2.4%)	3 (7.0%)	4 (4.7%)	
Signet ring cell carcinoma	10 (23.8%)	8 (18.6%)	18 (21.2%)	
Postoperative complication, n (%)				0.494
Yes	1 (2.4%)	0 (0.0%)	1 (1.2%)	
No	41 (97.6%)	43 (100.0%)	84 (98.8%)	
Adjuvant therapy, n (%)				<0.001
Yes	26 (61.9%)	43 (100.0%)	69 (81.2%)	
No	16 (38.1%)	0 (0.0%)	16 (18.8%)	

Percentages are calculated vertically based on individual surgical subgroup total sizes (n=42 for subtotal, n=43 for total, and n=85 for overall). Statistical significance was determined using the chi-square test or Fisher's exact test where applicable
GI: Gastrointestinal

When pathological staging was examined, the proportion of Stage 1, Stage 2, and Stage 3 patients was found to be significantly higher than Stage 4 patients. The reason for this can be attributed to the early death of Stage 4 patients, which prevented their inclusion in the study.

When the two groups were compared, a significant difference was observed in diarrhea (DI) in the EORTC QLQ 30 test, with p<0.01. Accordingly, patients who underwent TG had significantly higher complaints of DI compared to patients who underwent SG. No significant difference was observed in the other scales (Table 3).

When the two groups were compared according to the EORTC STO22 test, a significant difference was observed in dysphagia with p<0.05. Accordingly, patients who underwent TG had significantly higher complaints of dysphagia compared to patients who underwent SG. No significant difference was observed in the other scales (Table 4).

Table 3. EORTC QLQ-C30 questionnaire statistics

Scale	Group	Mean	SD	T-test for equality of means		
				t	p-value	
QL (Global QoL)	SG	72.62	21.49	0.032	0.975	>0.05
	TG	72.48	18.59			
PF (Physical functioning)	SG	85.24	17.95	1.950	0.055	>0.05
	TG	77.67	17.81			
RF (Role functioning)	SG	82.94	29.10	-0.529	0.598	>0.05
	TG	85.66	16.90			
EF (Emotional functioning)	SG	72.42	20.54	-0.282	0.779	>0.05
	TG	73.84	25.43			
CF (Cognitive functioning)	SG	77.38	15.54	-0.030	0.976	>0.05
	TG	77.52	25.43			
SF (Social functioning)	SG	86.90	29.57	0.015	0.988	>0.05
	TG	86.82	19.44			
FA (Fatigue)	SG	30.42	20.39	-0.452	0.653	>0.05
	TG	32.56	23.05			
NV (Nausea/vomiting)	SG	20.63	21.72	0.708	0.481	>0.05
	TG	17.05	24.80			
PA (Pain)	SG	23.81	21.51	-0.045	0.964	>0.05
	TG	24.03	23.37			
DY (Dyspnea)	SG	11.11	19.01	-0.130	0.897	>0.05
	TG	11.63	17.64			
SL (Sleep disturbance)	SG	18.25	23.52	-0.740	0.462	>0.05
	TG	22.48	28.84			
AP (Appetite loss)	SG	17.46	30.57	-0.908	0.367	>0.05
	TG	24.03	35.88			
CO (Constipation)	SG	14.29	21.01	0.529	0.598	>0.05
	TG	11.63	25.08			
DI (Diarrhea)	SG	5.56	14.57	**-3.685**	**0.000**	**<0.01**
	TG	24.03	29.39			
FI (Financial difficulties)	SG	24.60	29.50	-0.278	0.782	>0.05
	TG	26.36	28.69			

Key finding: Diarrhea (DI) showed a statistically significant difference between the groups (p=0.000, p<0.01), being higher in the total gastrectomy (TG) group 2
SG: Subtotal gastrectomy, SD: Standard deviation, EORTC STO22 (EORTC QLQ-STO22): European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire Gastric Cancer-Specific Module, QoL: Quality of life

Table 4. EORTC STO22 questionnaire statistics						
Scale	**Group**	**Mean**	**SD**	**T-test for equality of means**		
				t	**p-value**	
BI-F (Body image - function)	SG	82.54	26.79	1.258	0.212	>0.05
	TG	74.42	32.40			
DYS (Dysphagia)	SG	8.47	10.36	**-2.497**	**0.015**	**<0.05**
	TG	16.02	16.85			
PAIN (Pain)	SG	24.60	16.96	0.576	0.566	>0.05
	TG	22.29	19.98			
RFX (Reflux)	SG	22.49	18.28	0.112	0.911	>0.05
	TG	21.96	24.18			
EAT (Eating restriction)	SG	18.45	14.79	-1.509	0.135	>0.05
	TG	24.61	22.04			
ANX (Anxiety)	SG	26.19	23.00	-0.813	0.419	>0.05
	TG	30.49	25.67			
DM (Dry mouth)	SG	25.40	27.36	-0.855	0.395	>0.05
	TG	31.78	32.85			
TA (Taste)	SG	9.52	23.61	-1.882	0.063	>0.05
	TG	20.16	28.30			
BI (Body image - symptom)	SG	17.46	26.79	-1.258	0.212	>0.05
	TG	25.58	32.40			
HL (Hair loss)	SG	18.25	23.52	1.084	0.282	>0.05
	TG	12.79	22.96			

SD: Standard deviation

Discussion

In a series of 53 patients by Goh et al. (4) comparing SG and TG, no significant difference was observed in functional scales and global health status between TG and SG. However, dysphagia and eating restrictions were observed to be significantly worse in the TG group. In the conclusion of their study, they stated that there was no difference in overall QoL between patients with TG or SG, but eating restrictions and dysphagia were worse after TG (4).

According to a study of 103 cases by Rausei et al. (5), QoL showed a negative correlation with tumor stage and TG. They found that a larger resection, especially in advanced-stage cancers, led to a worse QoL. They showed that TG was associated with upper gastrointestinal tract complaints. Furthermore, patients with Billroth II reconstruction were compared with Roux-en-Y, and a lower incidence of dumping syndrome was observed with Roux-en-Y. In the conclusion, they state that QoL after gastric cancer surgery is affected by tumor and treatment-related factors. They suggest that subtotal resection should be preferred to improve patients' QoL, and Roux-en-Y should be the reconstruction of choice (5).

In the study conducted by Brenkman et al. (6), 222 patients answered questionnaires, and the results showed that deterioration occured in the functional and symptom scales of patients after gastrectomy, but they later recovered and lived with a mild level of QoL impairment. They stated that distal gastrectomy, neoadjuvant treatment, and minimally invasive gastrectomy options could be beneficial for QoL (6).

Park et al. (7) investigated the effects of patients' body mass index (BMI) on QoL. For this study, 276 patients were grouped according to their BMI values in pre- and post-operative follow-ups, and both pre- and post-operative EORTC QLQ 30 and EORTC STO22 questionnaires were completed. As a result, significantly different QoL values were found in patients due to BMI loss after TG. To reduce the deterioration in QoL, intensive nutritional support and the restoration of dietary behaviors should be implemented. Appropriate clinical and institutional approaches, as well as active medical interventions, are required to maintain patients' postoperative BMI (7).

Park et al. (8) followed 275 patients for 3 years, and pre- and post-operative QoL was measured. The result showed that the overall QoL of patients who underwent gastrectomy was highly related to their satisfaction levels regarding physical functions. The satisfaction level of patients who underwent TG, despite an early deterioration within the first few months after surgery, later recovered and began to be as good as patients who underwent SG. Adequate preoperative counseling followed by postoperative symptomatic treatment in patients undergoing TG is the most rational and evidence-based approach to reduce QoL impairment (8).

Similarly, contemporary multi-center studies on gastric cancer patients emphasize the critical importance of preserving these physical function scores during the postoperative follow-up period (9). The reliability and cross-cultural validity of these specific QoL modules have been comprehensively re-affirmed in extensive global cohorts under updated treatment guidelines (10).

When we examine the demographic data in our study, it was observed that patients who underwent SG were younger (56.9). We see this for two reasons: first, the early detection of patients, and second, the early onset of obstructive symptoms due to the tumor being confined to the antropyloric region. The number of male patients was 59, constituting 69.9%. This rate is similar to those in other studies. In 34 (94.4%) of the SG patients, the tumor was in the antropyloric region, while 8 were in the corpus. SG was applied to tumors in the corpus as they were in the distal region. Fifteen of the total gastrectomies were in the cardia, and 26 were in the corpus. As seen, TG was applied instead of proximal gastrectomy for tumors located in the cardia. The reason for this may be the deterioration in the QoL of patients after proximal gastrectomy. D2 dissection was applied to 77 (90.6%) of the patients. According to the pathology results of the gastrectomy materials, 42 (49.7%) of the patients were at Stage 3. The tumors of 63 (74.1%) of the patients were reported as adenocarcinoma, 18 (21.2%) as signet ring cell carcinoma, and 4 (4.7%) as mixed cell carcinoma.

Looking at the QoL scale results in our study, of the parameters in the functional scale subgroup, QL (global QoL) and physical functioning were found to be higher in SG group. Role functioning, emotional functioning, cognitive functioning, and social functioning scores were higher in TG group. The reason for these differences might be that patients who underwent TG may perceive a lower risk of recurrence since the entire stomach was removed. Similarly, the remaining part of the stomach in SG might cause patients to contemplate the possibility of recurrence, but the lack of physical organ absence may make them feel better physically. Looking at the symptom scales, nausea and vomiting were observed to be more frequent in SG, while all other symptoms were seen more frequently in TG. Also on this scale, DI was found to be significantly higher in TG. When the EORTC STO22 test was examined, dysphagia was observed to be significantly higher in TG. No significant difference was observed in the other parameters.

When evaluating cancer treatment, postoperative QoL is widely accepted as an increasingly important outcome of surgical procedures, reaching the same level as mortality and survival. The limited life expectancy of patients with gastric carcinoma further increases the importance of QoL. QoL information allows patients and clinicians to make more informed preoperative decisions and also to improve patient care and symptom management.

Study Limitations

1. Design and Generalizability

Retrospective and single-center: The study design is retrospective and relies solely on data from a single institution. This introduces potential biases and restricts the generalizability (external validity) of the findings to wider patient populations.

Small sample size: The relatively small sample size limits the statistical power, especially for subgroup analyses concerning specific or rare postgastrectomy syndrome components.

2. QoL Measurement

Subjectivity of QoL data: QoL is an inherently subjective patient-reported outcome. Scores may be influenced by transient psychological factors, which limits their absolute correlation with objective clinical data.

Response burden: Using comprehensive QoL questionnaires (e.g., EORTC) may lead to response fatigue, potentially compromising data quality, particularly in elderly patients.

3. Follow-up Limitation

Limited long-term follow-up: The follow-up period may not be long enough to fully capture the patient's maximal adaptation or the late-stage effects of cancer recurrence on overall QoL.

Conclusion

Similar data were obtained when comparing the results of our study with other studies conducted on QoL. DI and dysphagia (swallowing difficulty) problems were found to be significantly higher in patients who underwent TG. These symptoms can severely affect the patient's QoL, especially in the early stages.

In light of all these results, distal SG may be preferred as it does not cause a significant impairment in the QoL, provided that the surgical procedures comply with oncological requirements.

Ethics

Ethics Committee Approval: The study protocol was reviewed and approved by the Bezmialem University Non-Interventional Ethics Committee on 10.07.2018, with the decision number 15/183.

Informed Consent: Informed consent was obtained from all participants prior to their inclusion in the study.

Acknowledgments

This study was derived from the thesis titled "Measuring the Quality of Life of Patients Undergoing Total or Subtotal Gastrectomy Due to Gastric Cancer". Parts of this work were also presented as an oral and written abstract at the 6th International Congress on Quality of Life in Health (SAYKAD), held in Izmir on November 22-23, 2019.

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Footnotes

One of the authors of this article (A.A.) is a member of the Editorial Board of this journal. He had no involvement in the peer-review process or editorial decision regarding this manuscript. The peer-review process and editorial decision were handled independently by another editor.

Authorship Contributions

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

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