ORIGINAL ARTICLE
Turk J Surg 2022; 38 (4): 353-361

Current status of laparoscopic surgery usage in Türkiye: A middle-income country

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ABSTRACT

Objective: This study aimed to determine the usage status of laparoscopic procedures in general surgical practice in Türkiye, which is a sample of middle-income countries.

Material and Methods: The questionnaire was sent to general surgeons, gastrointestinal surgeons, and surgical oncologists who have completed their residency training and are actively working in university, public or private hospitals. Demographic data, laparoscopy training and the period of education, the rate of laparoscopy use, the type and volume of laparoscopic surgical procedures, their views on the advantages and disadvantages of laparoscopic surgery, and the reasons for preferring laparoscopy were determined with a 30-item questionnaire.

Results: Two hundred and forty-four questionnaires from 55 different cities of Türkiye were evaluated. The responders were mainly males, younger surgeons (F/M= 11.1/88.9 % and 30-39 y/o), and graduated from the university hospital residence program (56.6%). Laparoscopic training was frequently taken during residency (77.5%) in the younger age group, while the elderly participants mostly received additional training after specialization (91.7%). Laparoscopic surgery was mostly not available in public hospitals for advanced procedures ($p< 0.0001$) but was available for cholecystectomy and appendectomy operations (p= NS). However, participants working in university hospitals mostly stated that the laparoscopic approach was the first choice for advanced procedures.

Conclusion: The results of this study showed that the surgeons working in MICs spent strong effort to use laparoscopy in daily practice, especially in university and high-volume hospitals. However, inappropriate education, cost of laparoscopic equipment, healthcare policies, and some cultural and social barriers might have negatively impacted the widespread use of laparoscopic surgery and its usage in daily practice in MICs such as Türkiye.

Keywords: Laparoscopy, laparoscopy training, questionnaire, residency

INTRODUCTION

The use of laparoscopy in general surgery operations has been a revolutionary innovation. The first laparoscopic surgeries have been applied in cholecystectomy, appendectomy, and reflux surgery. After demonstrating the safety and efficacy of laparoscopic approaches with randomized controlled studies, the use of laparoscopy for other surgical procedures has become more widespread (1-3).

The advantages of laparoscopic surgery have led to an increase in their popularity. Nevertheless, despite all the advantages, laparoscopic surgery has not yet found its place in standard surgical training system, especially in middle-income countries (MICs) such as Türkiye. The World Bank defines countries whose gross national income per capita is between 1045 and 12.746 dollars as middle-income countries (4). As of year 2021, with gross national income per capita income of 9586 dollars, Türkiye has been classified as a middle-income country according to the World Bank (https://data.worldbank.org/country/tr). Adoption of laparoscopic surgery in MICs remains sporadic and marginal due to various reasons. Some of the reasons are directly related to the healthcare system while others might be financially driven, such as inadequately trained personnel, lack of equipment, and reimbursement policies of health insurance or social security. Moreover, the cost of initial setup, maintenance of laparoscopic surgery equipment, and the cost of disposable laparoscopic instruments have been noted as critical inhibitory factors for the maintenance of laparoscopic surgery in MICs (5-6). Furthermore, the scarcity of laparoscopic masters and heterogeneity in the use of laparoscopic surgical methods among centers are the biggest obstacles for emerging surgeons to receive standard laparoscopic surgery training.

Cite this article as: Esmer AC, Çolak T, Edizsoy A, Tazeoğlu D, Karaca AS. Current status of laparoscopic surgery usage in Türkiye: A middle-income country. Turk J Surg 2022; 38 (4): 353-361.

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Received: 13.03.2022
Accepted: 31.08.2022
Available Online Date: 20.12.2022

DOI: 10.47717/turkjsurg.2022.5713

In contrast, increasing patient demands, industrial pressure, the popularity of surgeons using the laparoscopic technique as the first choice, and secondary benefits gained from this cause make surgeons feel under pressure to perform laparoscopy. Furthermore, this situation led to be more often sharing the advantages of laparoscopy than the disadvantages in MICs. Because of all of these reasons, surgeons working in MICs are making great efforts to use new technologies such as laparoscopic surgery, including laparoscopic cholecystectomies, appendicectomies, and diagnostic laparoscopies. These procedures are well established and performed routinely in university or high-volume public or private hospitals in MICs (6-9).

To date, there is no study on the tendency of surgeons' usage of laparoscopy in their clinical practice in Türkiye, which leads to creating laparoscopic strategies and policies under the low-evidence data. Today, there is no evidence-based data on surgeons tending to prefer laparoscopic surgery as the first choice and in which operations laparoscopy is preferred more frequently in Türkiye.

This study aimed to investigate the current status of laparoscopic surgery and underline reasons such as educational, hospital, general healthcare system by sharing the survey results on laparoscopic surgery usage experiences and usage purposes of general surgeons working in Türkiye.

MATERIAL and METHODS

For the study, a questionnaire was prepared by the Mersin University Faculty of Medicine, Department of General Surgery and Surgical Oncology. The questionnaire was sent to general surgeons, gastrointestinal surgeons, and surgical oncologist who have completed their general surgery residency training and are actively working in university, public or private hospitals. Mersin University Clinical Research Ethics Committee approved this study with the number 2019/528.

A pilot study was conducted to optimize the questionnaire before sending it to surgeons. The questionnaire was applied to 10 surgeons working at Mersin University Medical Faculty Hospital, and the questions were modified to reach the final version, and then an online survey was created via Google Documents with the question patterns optimized as a result of the pilot study.

We reached to the members of the Turkish Society of Surgery, or Turkish Society of Colon and Rectum Surgery, or the Turkish Society for Surgical Oncology by mail between June 1, 2019, and October 31, 2019. In addition, closed groups formed by Surgeons were also utilized using social media to reach general surgeons. In addition, survey participation link was sent to general surgeons who are members of the Turkish Society of Surgery 35th weekly bulletin published on August 26, 2019. Finally, after the link in the 44th-weekly bulletin, data collection was terminated on October 31, 2019. The data of the surveys were collected anonymously to ensure confidentiality.

The questionnaire was sent to 2647 surgeons, and 312 of these people filled out the questionnaire. Questionnaires filled by residents who were continuing their general surgery residency training and general surgery specialists who were not actively working were excluded from the study. As a result, 244 questionnaires were evaluated after the participants were excluded from the study.

We applied a 30-item questionnaire to the participants on demographic data, the laparoscopy training they received and the period of education, the number of monthly operations and the rate of laparoscopy use in their operations, the type and volume of laparoscopic surgical procedures, their views on the advantages and disadvantages of laparoscopic surgery, and the reasons for preferring laparoscopy.

Statistical Analysis

In data analysis, mean, median, and standard deviation, minimum and maximum values of the features, frequency, and percentage values were used when defining categorical variables. Chi-square test statistics were used to evaluate the relation between categorical variables. Statistical significance level of the data was taken as $p< 0.05$. The www.e-picos.com New York software and the MedCalc statistical package program were used to evaluate the data.

RESULTS

A total of 244 questionnaires from 55 of 81 different cities of Türkiye were evaluated. Most of the participants were from İstanbul with 56 surgeons, 2nd was from Ankara with 22, and the 3rd was from İzmir with 15 surgeons, which is correlated with a living population in these cities. There were 27 (11.1%) females and 217 (88.9%) males. Age was divided into five categories as 20-29 years, 30-39 years, 40-49 years, 50-59 years, and over 60 years. One hundred and eleven surgeons were in the 30-39 age group, 76 surgeons were in 40-49, 45 surgeons were in 50-59,

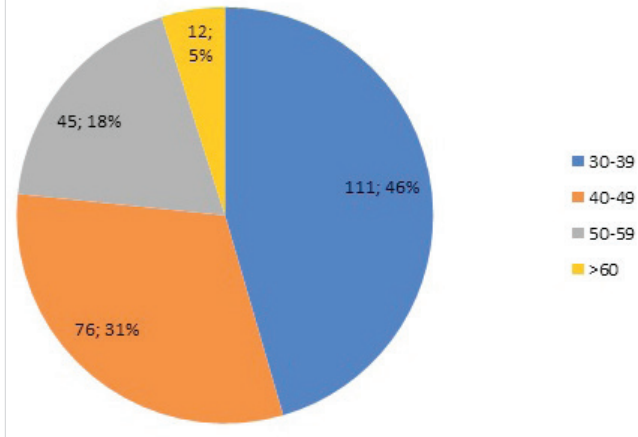

Figure 1. Age distribution of participants.

and 12 surgeons were in the over than 60 years age group. These are summarized in Figure 1. While 138 (56.6%) of the participants had their general surgery residency from a university hospital, the remaining 106 (43.4%) had their residency from a training and research hospital (Figure 2). In addition, 64 participants were in university hospitals, 51 participants in Training and Research or City Hospital, which is a high bed volume hospital, 87 participants were in public hospitals, and 42 participants were in private hospitals (Figure 3). Seventy-two (30%) participants had academic carrier (32 of them were professors, 21 were associate professors, and 19 were assistant professors) (Figure 4). Most of the participants were general surgeons without sub-specialty, but 26 (11%) participants were surgical oncologists, 15 (6%) were gastrointestinal surgeons, and 7 (%3) were in other general surgery sub-specialties (Figure 5). However, 168 (68.8%) surgeons declared that they had special interest in colorectal surgery, 94 (38.5%) in hepatobiliary surgery, 80 (32.7%) in breast-endocrine surgery, 54 (22.1%) in emergency and trauma surgery, and 65 (26.6%) in bariatric surgery. While 11 of the participants stated that they did not prefer laparoscopy in their daily practice, four of them stated that they could not use laparoscopy due to technical possibilities of the institution where they worked. It was determined that the remaining participants actively applied laparoscopic surgery. The reason for preferring laparoscopy in their operations was the advantage of the laparoscopy technique over laparotomy in 129 (53%), the preference of the surgeon in 90 (37%), the patient's demand in 16 (6%), and psychological and co-worker pressure in nine (4%) of the participants (Figure 6). It was determined that there was no statistically significant difference according to the age groups of the participants in the case of preferring laparoscopy and the reason for preference (p= 0.35, p= 0.16, respectively) (Table 1).

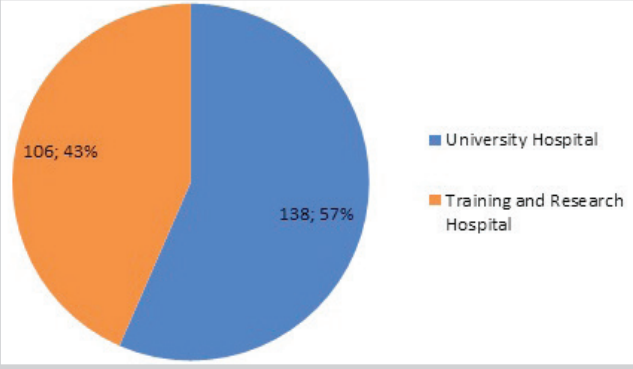

Figure 2. Participants residency institution.

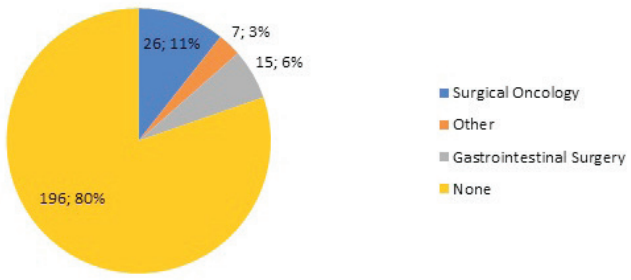

Figure 3. Sub-branch status of participants.

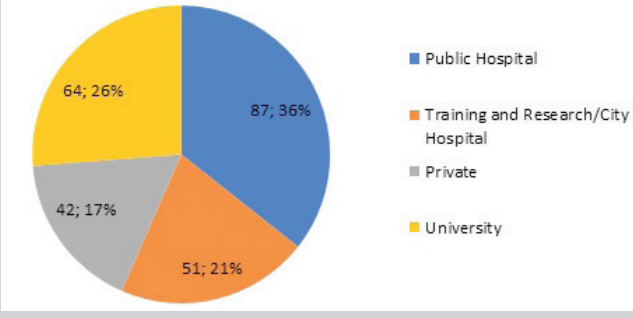

Figure 4. Institution of participants.

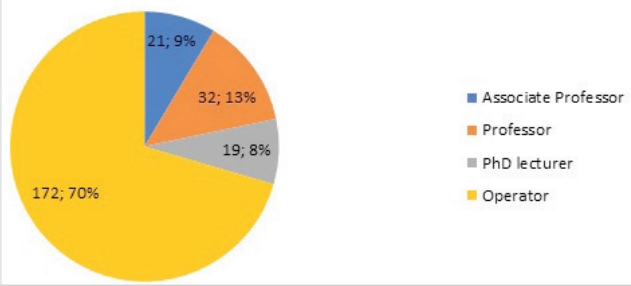

Figure 5. Academic titles of participants.

One hundred and forty-four surgeons revealed that their laparoscopic training had been in their general surgery residency (86 of them 30-39, 43 of them 40-49, and 15 of them 50-59 years old), whereas 61 surgeons needed additional training after their residency (24 surgeons 30-39, 22 surgeons 40-49, 14 surgeons 50-59, and 1surgeon over 60 years old), and in 37 surgeons, laparoscopic training or experiences were totally in post-residency (one surgeon 30-39, 10 surgeons 40-49, 15 surgeons 50-59, and 11 surgeons were over 60 years old). Laparoscopy training was determined to have been taken more frequently in the younger age group during general surgery training (77.5), and the elderly participants mostly received additional training

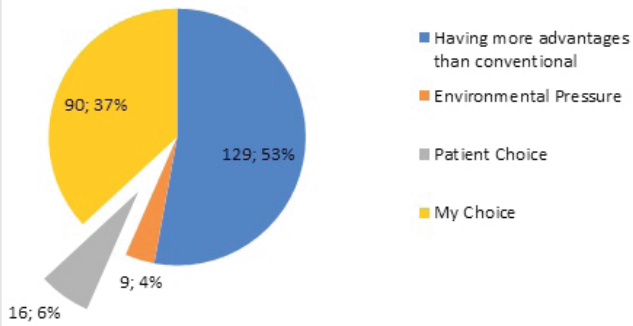

Figure 6. Reason of choosing laparoscopy.

Table 1. Participants' laparoscopy preference status, reason and time of training by age groups

n= 244	30-39 n= 111	40-49 n= 76	50-59 n= 45	≥60 age n= 12	p
Do You Prefer Laparoscopy?					
Yes	107 (96.4)	74 (97.4)	41 (91.1)	11 (91.7)	0.35
No	4 (3.6)	2 (2.6)	4 (8.9)	1 (8.3)	
Reason					
Patients' Choice	7 (6.3)	6 (7.9)	3 (6.8)	-	0.16
My choice	44 (39.6)	27 (35.5)	11 (25)	6 (50)	
Having more advantages than conventional	57 (51.4)	42 (55.3)	25 (56.8)	5 (41.7)	
Environmental Pressure	3 (2.7)	1 (1.3)	5 (11.4)	-	
Laparoscopy Training Time					
During residency and afterwards	24 (21.6)	22 (29.3)	14 (31.8)	1 (8.3)	**<0.0001**
After Residency	1 (0.09)	10 (13.3)	15 (34.1)	11 (91.7)	
During Residency	86 (77.5)	43 (57.3)	15 (34.1)	-	

after specialization (91.7%). There was a statistically significant difference between age groups according to the time of receiving laparoscopy training (p< 0.0001) (Table 1).

Procedures preferred laparoscopically as a first choice, or institutional facilities for laparoscopy are summarized in Table 2.

Twenty-eight (11.4%) of the participants stated that they had the technical possibility of robot-assisted surgery in the health institution they work. A total of 15 participants (6.1%) stated that they could perform robot-assisted surgery, while 11 of these people had robot-assisted surgery in the hospital where they worked.

The most common answer for conversion to open approaches was "inadequate exploration" with 202 (82.79%) participants. Other reasons for conversion were perioperative complications, bleeding, prolonged operation time, insufficient experience, technical inadequacy, and team incompatibility.

Laparoscopic operations were mostly unavailable in state hospitals for inguinal hernia, bariatric surgery, colorectal malignancy, benign colorectal procedures, upper gastrointestinal benign procedures, hiatal hernia, upper gastrointestinal malignancy, splenectomy, adrenalectomy, and diagnostic laparoscopy, but were available in other institutions (p< 0.0001). On the other hand, no statistical difference was found in terms of the technical possibilities of the institutions for performing cholecystectomy and appendectomy operations (p= 0.29, p= 0.21, respectively) (Table 3).

A statistically significant difference was found between the candidate of the first choice for laparoscopy and the institutions for advanced procedures such as inguinal hernia, colorectal malignancy, benign colorectal procedures, upper gastrointestinal benign procedures, and upper gastrointestinal malig-

Table 2. The procedures that the participants prefer to perform laparoscopy, the adequacy of technical possibilities and the procedures for which they think laparoscopy should be the first choice

n= 244	Laparoscopy Preferred Procedure	(%)	Technical Adequacy	(%)	Laparoscopy First Choice	(%)
Cholecystectomy	240	98.3	242	99.1	244	100.0
Appendectomy	217	88.9	234	95.9	207	84.8
Inguinal Hernia	117	47.9	175	71.7	112	45.9
Bariatric Surgery	91	37.3	153	62.7	195	79.9
Colorectal Malignancy	101	41.3	159	65.1	120	49.1
Benign Colorectal Procedures	85	34.8	140	57.3	122	50.0
Upper GIS* Benign Procedures	86	35.2	139	56.9	123	50.4
Hiatal Hernia	131	53.6	169	69.2	196	80.3
Upper GIS* Malignancy	52	21.3	123	50.4	72	29.5
Splenektomy/Surrenalectomy	109	44.6	158	64.7	165	67.6
Diagnostic	183	75.0	193	79.1	173	70.9

*GIS: Gastrointestinal system.

Table 3. Rates of laparoscopic operations that can be performed according to the technical possibilities of the institutions and rates of operations for which laparoscopy is considered to be the first choice according to the institutions worked

	Groups by Institution				
n= 244	Public Hospital n= 83 n (%)	Training and Research/ City Hospital n= 51 n (%)	Private Hospital n= 43 n (%)	University Hospital n= 64 n (%)	p
Procedures that can be performed in institutions					
Cholecystectomy	83 (100)	50 (98)	43 (100)	64 (100)	0.29
Appendectomy	77 (92.8)	48 (94.1)	41 (95.3)	64 (100)	0.21
Inguinal Hernia	33 (39.8)	43 (84.7)	34 (79.1)	58 (90.6)	**<0.0001**
Bariatric Surgery	14 (16.9)	41 (80.4)	36 (83.7)	57 (89.1)	**<0.0001**
Colorectal Malignancy	24 (28.9)	45 (88.2)	29 (67.4)	56 (87.5)	**<0.0001**
Benign Colorectal Procedures	15 (18.1)	40 (78.4)	26 (60.5)	54 (84.4)	**<0.0001**
Upper GIS Benign Procedures	19 (22.9)	37 (72.5)	26 (60.5)	55 (85.9)	**<0.0001**
Hiatal Hernia	26 (31.3)	42 (82.4)	33 (76.7)	62 (96.9)	**<0.0001**
Upper GIS Malignancy	14 (16.9)	34 (66.7)	22 (51.2)	51 (79.7)	**<0.0001**
Splenectomy/Surrenalectomy	24 (28.9)	41 (80.4)	29 (67.4)	60 (93.8)	**<0.0001**
Diagnostic	52 (62.7)	45 (88.2)	30 (69.8)	59 (92.2)	**<0.0001**
Procedures where Laparoscopy should be first choice					
Cholecystectomy	86 (100)	50 (98)	42 (97.7)	64 (100)	0.35
Appendectomy	65 (75.6)	42 (82.4)	36 (83.7)	57 (89.1)	0.20
Inguinal Hernia	27 (31.4)	23 (45.1)	24 (55.8)	35 (54.7)	**0.01**
Bariatric Surgery	61 (70.9)	40 (78.4)	33 (76.7)	57 (89.1)	0.07
Colorectal Malignancy	31 (36)	25 (49)	18 (41.9)	42 (65.6)	**0.004**
Benign Colorectal Procedures	28 (32.6)	27 (52.9)	19 (44.2)	43 (67.2)	**<0.0001**
Upper GIS Benign Procedures	33 (38.4)	24 (47.1)	20 (46.5)	43 (67.2)	**0.006**
Hiatal Hernia	63 (73.3)	43 (84.3)	34 (79.1)	52 (81.3)	0.43
Upper GIS Malignancy	19 (22.1)	8 (15.7)	9 (20.9)	29 (45.3)	**0.001**
Splenektomy/Surrenalectomy	47 (54.7)	35 (68.7)	23 (53.5)	52 (81.3)	**0.003**
Diagnostic	56 (65.1)	36 (70.6)	25 (58.1)	47 (73.4)	0.37

nancy, splenectomy, and adrenalectomy operations ($p< 0.05$). Participants working in university hospitals mostly stated that the laparoscopic approach was the first choice in these types of surgeries compared to other groups (Table 3).

Laparoscopic Appendectomy and diagnostic laparoscopy were preferred more frequently in the younger group than the older groups ($p< 0.05$), but there was no statistically significant difference for other procedures (p= NS). In addition, younger surgeons preferred laparoscopy as a first choice for cholecystectomy, appendectomy, bariatric surgery, upper GI benign interventions, hiatal hernia, diagnostic laparoscopy, splenectomy, and adrenalectomy ($p< 0.05$) (Table 4).

DISCUSSION

Laparoscopy has been used in general surgical practice for more than 20 years and is becoming more commonly used. Especially for some surgical procedures, laparoscopy has become the gold standard (10-12). Laparoscopic procedures are preferred for reducing postoperative pain, hospital stay, and rapid return to work (13-15).

Laparoscopic approach is preferred for numerous surgical procedures in high-income countries (HICs), while it is still not available in many middle income countries (MICs) due to the high cost of purchasing and maintaining the equipment and the lack of trained surgeons (16). Equipment costs are not the only limit for implementing laparoscopy in MICs. Indeed, healthcare policy, difficulties, inappropriate training, lack of dry and wet lab facilities, and unaffordable trained specialists play a role in limiting the laparoscopic approach (17). Moreover, in many MICs, it is difficult to promote new ideas in surgery, not only among patients but also among local surgeons, due to cultural and social barriers (6).

Table 4. Rates of performing a procedure laparoscopically according to age. Rates of operations for which laparoscopy is considered to be the first choice according to age

n= 244	Groups by age				p
	30-39 n= 111 n (%)	40-49 n= 76 n (%)	50-59 n= 45 n (%)	≥60 n= 12 n (%)	
Procedures that you perform laparoscopy					
Cholecystectomy	106 (95.5)	74 (97.4)	44 (100)	12 (100)	0.43
Appendectomy	106 (95.5)	63 (82.9)	34 (77.3)	10 (83.3)	**0.006**
Inguinal Hernia	43 (38.7)	36 (47.4)	24 (54.5)	6 (50)	0.29
Bariatric Surgery	39 (35.1)	31 (40.8)	14 (31.8)	7 (58.3)	0.33
Colorectal Malignancy	37 (33.3)	37 (48.7)	17 (38.6)	6 (50)	0.17
Benign Colorectal Procedures	28 (25.2)	29 (38.2)	17 (38.6)	5 (41.7)	0.17
Upper GIS Benign Procedures	31 (27.9)	29 (38.2)	15 (34.1)	4 (33.3)	0.53
Hiatal Hernia	49 (44.1)	42 (55.3)	25 (56.8)	7 (58.3)	0.32
Upper GIS Malignancy	17 (15.3)	23 (30.3)	10 (22.7)	2 (16.7)	0.1
Splenektomy/Surrenalectomy	51 (45.9)	29 (38.2)	21 (47.7)	6 (50)	0.65
Diagnostic	91 (82)	45 (59.2)	29 (65.9)	9 (75)	**0.006**
Procedures where Laparoscopy should be first choice					
Cholecystectomy	111 (100)	76 (100)	45 (100)	10 (83.3)	**<0.0001**
Appendectomy	99 (89.2)	58 (76.3)	36 (80)	7 (58.3)	**0.02**
Inguinal Hernia	54 (48.6)	27 (35.5)	23 (51.1)	5 (41.7)	0.25
Bariatric Surgery	104 (93.7)	44 (57.9)	36 (80)	7 (58.3)	**<0.0001**
Colorectal Malignancy	61 (55)	34 (44.7)	16 (35.6)	5 (41.7)	0.14
Benign Colorectal Procedures	58 (52.3)	39 (51.3)	18 (40)	2 (16.7)	0.07
Upper GIS Benign Procedures	68 (61.3)	32 (42.1)	18 (40)	2 (16.7)	**0.002**
Hiatal Hernia	96 (86.5)	49 (64.5)	40 (88.9)	7 (58.3)	**<0.0001**
Upper GIS Malignancy	36 (32.4)	19 (25)	9 (20)	1 (8.3)	0.17
Splenectomy/Surrenalectomy	86 (77.5)	41 (53.9)	26 (57.8)	4 (33.3)	**<0.0001**
Diagnostic	84 (75.7)	42 (55.3)	32 (71.2)	6 (50)	**0.01**

The results of this study showed that the participating surgeons preferred laparoscopic methods in their practice more than the rest of the country. According to the general health insurance official figures, only 8.9% of all colorectal operations have been performed laparoscopically (The data of Social Security Institution of Türkiye), while approximately 1/3 of the surgeons who answered the questionnaire preferred laparoscopic surgery for colorectal illness. This situation can be interpreted as surgeons who prefer laparoscopic surgery in their daily practices are more enthusiastic to answer the questionnaire due to their self-confidence. The participating surgeons were mostly working in reference hospitals. This situation also led to the calculation that the preference for laparoscopy is much higher than the country's official figures. On the other hand, these results can be interpreted as showing the willingness of surgeons in MICs to use high technology/laparoscopy, which is very promising for the future and encourages surgeons to train and prepare the infrastructure for laparoscopy.

Twenty years ago, laparoscopy training was needed in addition to conventional surgical residency for general surgeons, as the use of laparoscopy was relatively new. Moreover, as part of their continuing professional development, some surgeons from MICs travel to centers in HICs to gain more laparoscopic experience (18). On the other hand, it is also known that laparoscopy is not suitable for old surgical learning technique. Under this traditional model, some local surgeons in MICs have acquired and developed laparoscopic abilities in an unstructured way. This has the potential for unsafe practices being learned by surgeons in training (16). Now, education for laparoscopy technical skills has been initiated in surgical residency programs in some high-volume centers. This might explain why younger surgeons prefer laparoscopic surgery more than older surgeons

because this study revealed that laparoscopy would be used more frequently and as the first choice by young surgeons.

There was a statistically significant difference between the age groups of the participants in the way they received laparoscopy training. The reason for this is that surgeons over the age of 50 did not have laparoscopy applications when they received general surgery residency. Interestingly, 21.6% of the surgeons aged 30-39 and 29.3% of the surgeons aged 40-49 felt the need for additional post-residency training for laparoscopy. Despite the increasing popularity and application areas of laparoscopy, it shows that laparoscopy training still has not taken its place in general surgery residency.

The advantages of laparoscopy are scaling up with the increase in the frequency of use, the development of the surgeon's laparoscopic experience, and the developing technological opportunities. As a result of the patient's request and developing surgery, the surgeon is directed to prefer laparoscopy instead of conventional procedures (19). There are many reasons for the preference of laparoscopic operation for the surgeons or the patients. These are less pain in the postoperative period, early mobilization, reduced hospital stay, loss of workforce, and cost. In addition, the surgeon makes a wider exploration in the abdomen with laparoscopy. Additional surgical interventions that may be required can be performed more easily in the same session (20). In our study, the most preferred reason for laparoscopy was its advantage over conventional (53%) and the surgeon's own request (37%). The low preference of non-surgical factors such as the effort to catch up with surgical developments (4%) and patient request (6%) revealed that general surgeons of all age groups had a high interest in laparoscopy, despite all of the impossibilities in Türkiye.

The devices used in laparoscopy are gradually developing (21). Advancing technology makes laparoscopic surgery more advantageous than conventional surgery. As a result of the close relationship between the laparoscopy technique and the developing technology, the rapid progress in technology also provides an opportunity for the development of the laparoscopic technique. However, in order to perform laparoscopy, it is necessary to have laparoscopy devices and an experienced operating room team, especially the surgeon who can use these devices. The cost of the devices and the training of the surgical team are very costly for MICs, especially in public and hospitals located far from the metropolis, limiting the widespread use of laparoscopy.

While the technical adequacy of institutions for basic laparoscopic surgeries such as cholecystectomy and appendectomy is 99.1% and 95.9%, respectively, the technical adequacy for advanced laparoscopic surgeries such as colorectal malignancy and upper GI malignancy interventions is 65.1% and 50.4%, respectively. While surgeries that require basic laparoscopic skills are performed in most hospitals in our country, advanced laparoscopy operations are performed only in comprehensive hospitals.

The rate of surgery preferred to be performed laparoscopically is lower than the adequacy of the available technical adequacy of institutions for the same procedure. In addition, it is seen that these surgeons perform fewer laparoscopic procedures than the procedures that they consider laparoscopy as the first choice. The rate of those who think that laparoscopy should be the first choice in hiatal hernia repair is 80%, while the rate of those who have technical adequacy in laparoscopic hiatal hernia repair is 69.2%, and the rate of those who perform this surgery laparoscopically is 53.6%. In other words, we think that the participants wanted to use the laparoscopy technique, but they had technical inadequacies in practice.

With advancing technology, new instruments such as vessel sealing energy devices and endoscopic staplers have been added to the surgeon's inventory in laparoscopic surgery applications. Thus, the rate of conversion to conventional surgery in laparoscopy has gradually decreased. New laparoscopic instruments allow both the laparoscopic application of more advanced procedures and the laparoscopic repair of existing iatrogenic damages without converting conventional surgery (22). While the rate of conversion was 8.5% in low-volume surgeons at laparoscopic cholecystectomy, the rate of conversion was found to be 4.5% in high-volume surgeons with more than 100 cholecystectomy experience (23).

The most common answer that forces participants to convert to conventional surgery is stated as "inadequate exploration" by 202 participants (82.7%). De Nereetot Babberich et al. (24) have found inadequate exploration as the most common reason for converting conventional surgery to laparoscopic colorectal cancer surgery. Other common reasons for converting to conventional surgery are "complications" (69.2%) and "bleeding" (56.9%). Conversion due to bleeding is most common in organ surgeries with a rich vascular structure, such as the stomach (25). The fact that "technical inadequacy" was preferred by 114 surgeons (46.7%) as the reason for switching to conventional surgery reveals that some institutions in our country still do not have sufficient technical equipment and trained staff to perform laparoscopic surgery. One of the three surgeons participating in the questionnaire stated that they do not have an adequate operating room for advanced surgical practices. Other preferred reasons for converting to conventional surgery were inability of the patient to tolerate laparoscopy (47.9%), team incompatibility (32.7%), prolonged case duration (30.7%), and insufficient experience (28.2%).

The operations that can be performed with basic laparoscopy skills and a simple technical infrastructure have been identified as appendectomy, cholecystectomy, and diagnostic laparosco-

py (15). The technical adequacy for basic laparoscopy procedures such as appendectomy and cholecystectomy were sufficient in institutions where participants were working. Acute appendicitis and cholecystitis are urgent diseases that have a higher incidence than other diseases and require surgery in a shorter time (10-15). Most hospital facilities are adequate to provide basic laparoscopy services. However, adequate technical facilities are available in comprehensive hospitals for advanced surgical procedures that require experienced staff and equipment to ensure efficient use of available resources.

Evaluation about which procedures participants prefer to perform laparoscopically, according to the age groups of the participants revealed that there are proportionally higher rates of laparoscopy application in younger age groups. However, this difference could not be statistically significant except for appendectomy and diagnostic laparoscopy. The reason for the statistical difference in appendectomy was the high preference rate of 95.5% between the ages of 30-39. The reason for the statistical difference in diagnostic laparoscopy was the low rate of preference of 25% in surgeons aged 60 and over.

There was a statistically significant difference between age groups in cholecystectomy, appendectomy, bariatric surgery, upper gastrointestinal benign interventions, hiatal hernia, splenectomy/adrenalectomy, and diagnostic laparoscopy procedures when asked about in which surgeries laparoscopy should be the first choice. This difference is due to the fact that young surgeons want to benefit from the advantages of laparoscopy, respond to patient requests, and apply advancement in surgery.

CONCLUSION

There is neither standardization in routine practice nor in the education of laparoscopic surgery for general surgeons in Türkiye. Turkish general surgeons have a high desire to perform laparoscopy, but unfortunately, this request may not match with daily practice, such as the numbers in the procedures, especially in advanced laparoscopy. It is necessary to standardize laparoscopy training, encourage and spread mentor/mentee educations, adopt or revise the healthcare system for laparoscopy funding strategies, and provide laparoscopic basement equipment in Türkiye, such as a sample for MICs.

Ethics Committee Approval: This study was approved by Mersin University Rectorate Clinical Research Ethics Committee (Decision no: 528, Date: 04.12.2019).

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – ACE, AE, DT, ASK; Design – ACE, DT, AE; Supervision – ACE, TÇ; Data Collection and/ or Processing – ACE, DT, AE; Analysis and/or Interpretation – ACE, TÇ, ASK; Literature Search – ACE, TÇ, AE; Writing Manuscript – ACE, TÇ; Critical Reviews – TÇ, ASK.

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

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

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ORİJİNAL ÇALIŞMA-ÖZET
Turk J Surg 2022; 38 (4): 353-361

Türkiye'de laparoskopik cerrahinin mevcut durumu: Orta gelirli bir ülke örneği

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ÖZET

Giriş ve Amaç: Bu çalışma, orta gelirli ülkeler (MİK) örneklemi olan Türkiye'de genel cerrahi pratiğinde laparoskopik prosedürlerin kullanım durumunu belirlemeyi amaçlamıştır.

Gereç ve Yöntem: Anket, uzmanlık eğitimini tamamlamış, üniversite, kamu veya özel hastanelerde aktif olarak görev yapan genel cerrahlar, gastrointestinal cerrahlar ve cerrahi onkologlara gönderilmiştir. Demografik veriler, laparoskopi eğitimi ve eğitim süresi, laparoskopi kullanım oranı, laparoskopik cerrahi işlemlerin türü ve hacmi, laparoskopik cerrahinin avantaj ve dezavantajlarına ilişkin görüşleri ve laparoskopiyi tercih etme nedenleri 30 soruluk bir anket ile belirlendi.

Bulgular: Türkiye'nin 55 farklı ilinden gelen 244 anket değerlendirildi. Yanıt verenler çoğunlukla erkek, genç cerrahlardı (K/E= 11,1/88,9 ve 30-39 yaş) ve üniversite hastanesi asistanlık yapmıştı (%56,6). Laparoskopik eğitim genç yaş grubunda sıklıkla asistanlık döneminde (%77,5) alınırken, ileri yaştaki katılımcılar çoğunlukla uzmanlık sonrası (%91,7) ek eğitim almıştı. Laparoskopik cerrahi ileri işlemler için çoğunlukla kamu hastanelerinde mevcut değildi (p< 0,0001), ancak kolesistektomi ve apendektomi ameliyatları için mevcuttu (p= NS). Üniversite hastanelerinde çalışan katılımcılar daha çok ileri işlemler için laparoskopik yaklaşımın ilk tercih olduğunu belirtmişlerdir.

Sonuç: Bu çalışmanın sonuçları, MİK'lerde çalışan cerrahların, özellikle üniversite ve yüksek hacimli hastanelerde laparoskopiyi günlük pratikte kullanmak için yoğun çaba harcadıklarını göstermiştir. Ancak uygun olmayan eğitim, laparoskopik ekipman maliyeti, sağlık politikaları ve bazı kültürel ve sosyal engeller, Türkiye gibi MİK'lerde laparoskopik cerrahinin yaygınlaşmasını ve günlük pratikte kullanımını olumsuz etkilemektedir.

Anahtar Kelimeler: Laparoskopi, laparoskopi eğitimi, anket, uzmanlık

DOİ: 10.47717/turkjsurg.2022.5713