

Surgical Results of Total Extraperitoneal Hernia Repair in 115 Inguinal Hernia Patients

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ABSTRACT

Objective: Inguinal hernia is one of the most commonly encountered pathologies in general surgery. There are 2 main types of repair procedure: open and laparoscopic inguinal hernia repair. This study is an analysis of the results of perioperative and postoperative surgical results of patients who underwent a laparoscopic total extraperitoneal hernia (TEP) hernia procedure. All of the procedures were performed by a single surgeon.

Methods: The data of 115 patients with an inguinal hernia who underwent a laparoscopic TEP repair at a single general surgery outpatient clinic between March 2012 and June 2018 were evaluated retrospectively.

Results: Of 115 patients, 30 had bilateral inguinal hernias and 85 had unilateral inguinal hernias. All of these patients were operated on laparoscopically by the same surgeon. A low rate of recurrence and surgical complications was found, which is consistent with the literature.

Conclusion: Repair of an inguinal hernia with the laparoscopic TEP technique is a safe and practical method with appropriate patient selection and adequate surgical experience. The advantages include decreased postoperative pain, earlier return to daily activities, and better cosmetic results.

INTRODUCTION

Inguinal hernia is one of the most commonly encountered pathologies in general surgery and the only treatment option is surgery.^[1] Inguinal hernia surgery has developed over time since Bassini first introduced anatomical repair about 100 years ago.^[2] Previously, surgeons used tissue for repair. Subsequently, Lichtenstein et al.^[3] and Stoppa et al.^[4] demonstrated that tension-free repair of the abdominal wall solved the problem of intrinsic and acquired weakness of the muscle, which is one of the main causes of relapse. Until recently, inguinal hernia repair was performed using traditional methods (open surgery), but the benefits of minimally invasive surgery have increased the use of laparoscopic methods. Laparoscopic inguinal hernia repair has advantages such as better cosmetic results, less postoperative pain, shorter hospital stay, and an earlier return to work, relative to an open technique.^[5] There are 2 main laparoscopic techniques for this procedure: the transabdominal preperitoneal and the total extraperitoneal (TEP) methods.^[6] The reported results of laparoscopic surgery vary, and numerous complications, such as early recurrence, have been reported. The success of the minimally invasive method has been shown to be associated with the surgeon's laparoscopic experience and the surgeon's application of the appropriate technique to the appropriate patient.^[7] The objective of this study is to

share the surgical results of 115 patients operated on by a single surgeon using the TEP technique.

MATERIAL AND METHODS

The data of patients who underwent a TEP technique procedure for inguinal hernia between March 2012 and June 2018 were evaluated retrospectively using information retrieved from the hospital automation system and patient files. Patients whose hernias were classified as Nyhus Type III-B, or with a hernia extending from the inguinal canal to the scrotum were excluded from the study. In addition, patients who did not want to undergo laparoscopic inguinal hernia surgery and those who were not candidates for general anesthesia were not included the study.

All of the patients were operated on under general anesthesia. Immediately before the operation, the patients were given a single dose of 1 g first-generation cephalosporin. A urethral Foley catheter was inserted in patients with a bilateral hernia to decompress the bladder. All of the patients were placed in the supine position and a 10-F trocar was used for the camera and two 5-F trocars were inserted into the preperitoneal region to ease the manipulation of manual instruments. After the hernia sac was released, polypropylene mesh, approximately 10x14 cm in size, was positioned in the preperitoneal region. In

some cases the mesh was fixed with a tackler (ProTack; Medtronic, Inc., Minneapolis, MN, USA).

After surgery, all of the patients were given a non-steroidal anti-inflammatory analgesic (diclofenac sodium). Oral feeding was initiated 6 hours postoperatively and patients were discharged on the postoperative first day. Routine follow-ups were performed on the postoperative 10th day, and at the 3rd month, 6th month, and 12th month. Age, gender, American Society of Anesthesiologists (ASA) score, body mass index, concomitant diseases, hernia type, laterality, recurrence (if any), operative time, perioperative and postoperative complications, mesh fixation details, follow-up period, and postoperative relapses were evaluated.

Statistical analysis

Continuous variables were presented as mean±SD for normally distributed data or as median for data with non-normal distribution. Categorical variables were presented as frequencies (%). Continuous variables with normal distribution were analyzed using a paired t-test and a chi-square test was performed for data with non-normal distribution. P<0.05 was considered statistically significant.

RESULTS

The study population consisted of 109 male (94.8%) and 6 (5.2%) female patients. The median age was 53.7 years (18–88 years), and 72.2% had an ASA II/III score (Table 1). A total of 145 inguinal hernia repairs were performed using the TEP technique. A unilateral repair was performed for 85 patients (73.9%) and for 30 patients (26.1%), a bilateral hernia repair was necessary. There were 10 (8.7%) cases of recurrent hernia. In all, 124 patients (85.5%) had a direct hernia and 21 (14.5%) had direct+indirect hernias (Table 2).

Table 1. Demographic data

	n	%	Mean±SD
Age, years			53.7±14.8
Sex			
Female	6	5.2	
Male	109	94.8	
Body mass index (kg/m ²)			25.3±3.6
ASA classification			
1	32	27.8	
2	51	44.3	
3	32	27.8	
Comorbid diseases			
None	102	88.7	
BPH	5	4.3	
Pulmonary disease+BPH	3	2.6	
Pulmonary disease	5	4.3	

ASA: American Society of Anesthesiologists; BPH: Benign prostatic hyperplasia; SD: Standard deviation.

Table 2. Clinical characteristics

	Total	
	n	%
Type		
Direct	71	61.7
Direct+direct	23	20.0
Direct+indirect	7	6.1
Indirect	14	12.2
Laterality		
Unilateral	85	73.9
Bilateral	30	26.1
Previous hernia operation		
Present	10	8.7
Absent	105	91.3

Table 3. Operative findings and surgical results

	Total		
	n	%	Mean±SD
Operative time (min)			44.1±13.6
One-sided			37.9±8.2
Bilateral			61.4±10.3
Perioperative complication			
None	103	89.6	
Peritoneal split	8	7.0	
Hemorrhage	4	3.5	
Mesh fixation			
Yes	62	53.9	
No	53	46.1	
Postoperative complication			
None	108	93.9	
Urinary retention	4	3.5	
Seroma	3	2.6	
Follow-up period			27.9±13.8
Postoperative recurrence			
No	113	98.3	
Yes	2	1.7	

SD: Standard deviation.

Table 4. Comparison of operative time

Hernia type	Operative time (min)	p
	Mean±SD	
One-sided		0.001
Direct	36.2±7.7	
Indirect	46.9±4.3	
Bilateral		0.001
Direct+direct	58.3±8.7	
Direct+indirect	71.7±8.6	

SD: Standard deviation.

The median operation time was 44.1 minutes (20–80 minutes). Perioperative complications were 8 (7%) instances where the peritoneum split, and 4 (3.5%) patients developed minor bleeding that was resolved with laparoscopic intervention. Sixty-two (53.9%) patients underwent mesh fixation, while mesh fixation was not used in 53 (46.1%) patients. Postoperatively, 3 (2.6%) patients were observed to have seroma and 4 (3.5%) patients experienced urinary retention.

The median follow-up period was 27.86 months (3–60 months) and only 2 (1.3%) of 115 patients who underwent a total of 145 hernia repairs experienced recurrence (Table 3).

DISCUSSION

Inguinal hernia represents a large proportion of surgical outpatient clinic surgeries. Before laparoscopic techniques were introduced, tension-free hernia repair (Lichtenstein) was considered the best treatment method.^[3] However, advances in laparoscopic surgery have initiated a broader discussion about safe and effective repair of inguinal hernia.

Randomized clinical studies have shown that hernia repair using a laparoscopic TEP technique is relatively less painful with a lower requirement for postoperative analgesia, better cosmetic results, and an earlier return to daily activity and work compared with the open technique.^[8] Other advantages include a lack of intra-abdominal organ injury and postoperative adhesion risk, as the dissection is limited to the extraperitoneal area in the TEP technique.^[9] However, advanced surgical skills are required to perform a TEP hernioplasty due to a different view of pelvic anatomy and a narrow dissection plan.^[10,11]

According to a comprehensive study, the mean operative time for a TEP procedure varied between 55 and 95 minutes, depending on surgical experience.^[12] In a prospective study of 30 cases, Krishna et al.^[13] reported that the mean operative time was 62.13 minutes. In our 115 cases; the mean age of 85 patients with a unilateral hernia and 30 bilateral hernia patients was 37.9 minutes (± 8.2 minutes), and 61.4 minutes (± 10.3 minutes), respectively. The mean operative time was 36.2 minutes (± 7.7 minutes) for the patients who underwent direct hernia repair and 46.9 minutes (± 4.3 minutes) for patients with both direct and indirect hernias; there was a statistically significant difference between the groups. Among patients requiring a bilateral hernia repair, the mean operative time for a direct+direct hernia repair was 58.3 minutes (± 8.7 minutes), and it was 71.7 minutes (± 8.6 minutes) for patients operated on for direct+indirect hernias, with a statistically significant difference between groups (Table 4).

In their clinical study, Lau et al.^[14] observed seromas in elderly patients with large hernia defects and hernia sacs extending to the scrotum. The authors reported seromas in 7.8% of 40 patients who had undergone TEP hernia repair. In their retrospective study of 44 cases who had undergone TEP hernia repair, Värçuş et al.^[15] reported a

seroma rate of 2.2%. Fitzgibbons et al.^[16] reported seroma in 3.4% and hematoma in 1.2% of their patients. In our study, seroma was seen in 3 (2.6%) patients and hematoma was not seen in any patient.

Shinde et al.^[17] and Ceccarelli et al.^[18] reported an average hospital stay of 1 day, while Chandra et al.^[19] reported an average hospital stay of 2.26 days. All of the patients in our study were discharged on the postoperative first day.

Recurrence is an important problem in inguinal hernia operations in the long term, whether performed by open or laparoscopic method. Fitzgibbons et al.^[16] did not report any recurrence in 87 patients during a median follow-up period of 23 months (15–34 months). In their study, Belyansky et al.^[20] reported a recurrence rate of 0.42% in their case series of patients who had undergone TEP hernia repair. Fine,^[21] reported only 1 (2.63%) case of recurrence in a series of 38 patients. In our study, during a median follow-up of 27.9 months (3–60 months) recurrence developed in 2 patients (1.37%), a rate that was consistent with the literature.

CONCLUSION

The choice of open or laparoscopic surgery is determined by the surgeon's experience, preference, and patient's expectations. TEP is a good alternative to traditional methods for the treatment of inguinal hernia; it provides the same morbidity rates with better cosmetic results, less postoperative pain, and an earlier return to daily activity.

Ethics Committee Approval

Approval has been obtained from Kartal Dr. Lütfi Kırdar Training and Research Hospital Ethics Committee.

Informed Consent

Retrospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: O.A.; Design: O.A., S.K.; Data Collection: O.A., S.K.; Analysis and/or interpretation: O.A., S.K.; Literature search: O.A., S.K.; Writing: O.A.; Critical review: O.A., S.K.

Conflict of Interest

None declared.

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İnguinal Hernisi olan 115 Hastanın Total Ekstraperitoneal (TEP) Fıtık Tamirinin Cerrahi Sonuçları

Amaç: Kasık fıtığı genel cerrahide karşılaşılan en sık cerrahi patolojilerin başında gelmektedir. Kasık fıtığının açık ya da laparoskopik olmak üzere başlıca iki tip tamir yöntemi bulunmaktadır. Biz bu çalışmamızda aynı cerrah tarafından laparoskopik total ekstraperitoneal (TEP) tekniğiyle yapılan hastaların ameliyatta ve ameliyat sonrası cerrahi sonuçlarını paylaşmayı amaçladık.

Gereç ve Yöntem: Bu çalışmada genel cerrahi polikliniğinde Mart 2012 ile Haziran 2018 tarihleri arasında kasık fıtığı tanısı almış ve laparoskopik TEP tekniği ile fıtık tamiri endikasyonuna uygun olan 115 hastanın verileri geriye dönük olarak değerlendirildi.

Bulgular: Yüz on beş hastanın 30'unda iki taraflı, 85'inde tek taraflı kasık fıtığı mevcut olup hastaların hepsine aynı cerrah tarafından TEP tekniğiyle laparoskopik kasık fıtığı onarımı yapılmıştır. Literatür ile uyumlu olarak nüks oranı ve cerrahi komplikasyon düşük olarak bulunmuştur.

Sonuç: Laparoskopik TEP tekniğiyle kasık fıtığı tamiri uygun hasta seçimi ve yeterli cerrahi tecrübe ile güvenli bir şekilde uygulanabilir bir yöntemdir. Avantajları ise daha az ameliyat sonrası ağrı, günlük aktivitelere daha erken dönüş ve daha iyi kozmetik sonuçlardır.

Anahtar Sözcükler: Kasık fıtığı; laparoskopi; total ekstraperitoneal.