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EVALUATION OF THE SURGICAL RESULTS OF THE LAPAROSCOPIC TOTAL EXTRAPERITONEAL (TEP) TECHNIQUE IN INGUINAL HERNIA REPAIR

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ABSTRACT

Aim: In this study, the long-term postoperative results of inguinal hernia patients operated on using the Total Extraperitoneal (TEP) technique, one of the most used laparoscopic methods for inguinal hernia repair, were analyzed. The study aimed to investigate the long-term postoperative results and effectiveness of the laparoscopic TEP technique.
Materials and Methods: The presented retrospective study included the surgical outcomes of 315 inguinal hernia patients operated on with the TEP technique in our hospital over a 7-year period between January 2016 and March 2023. The results were evaluated in terms of recurrence rate, suture dehiscence, swelling in the incisions, scrotal edema and swelling in the postoperative follow-up, and the return-to-work day of the patients. p values less than 0.05 were considered statistically significant.
Results: Postoperative recurrence was seen in 19 of the patients (6%). The average time for patients to return to work was 5.6 days. Bilateral direction ratio was significantly higher in the group with postoperative recurrence ($p<0.05$). Bilateral direction ratio and preoperative recurrence rate were significantly higher in the group with swelling in the incisions ($p<0.05$). The return to work day was significantly longer in patients with swelling in the incisions than in patients without incisions swelling ($p<0.05$). Bilateral inguinal hernia was significantly higher in patients with scrotal swelling and edema ($p<0.05$).
Conclusion: Long-term postoperative experience of inguinal hernia repair with the laparoscopic TEP technique showed that the TEP approach is an effective and safe technique with the advantages of low postoperative recurrence and rapid return of patients to their daily activities and work.
Keywords: Inguinal hernia, Hernia repair, Laparoscopic surgery, Total extraperitoneal, TEP

İNGUİNAL HERNİ ONARIMINDA LAPAROSKOPİK TOTAL EKSTRAPERİTONEAL (TEP) TEKNİĞİNİN CERRAHİ SONUÇLARININ DEĞERLENDİRİLMESİ

ÖZET

Amaç: Bu çalışmada inguinal herni onarımında en çok kullanılan laparoskopik yöntemlerden biri olan Total Ekstraperitoneal (TEP) tekniği ile ameliyat edilen inguinal herni hastalarının uzun dönem postoperatif sonuçları analiz edilmiştir. Çalışma, laparoskopik TEP tekniğinin uzun dönem postoperatif sonuçlarını ve etkinliğini araştırmayı amaçlamıştır.
Gereç ve Yöntem: Sunulan retrospektif çalışma, Ocak 2016 - Mart 2023 tarihleri arasında 7 yıllık süre içinde hastanemizde TEP tekniği ile ameliyat edilen 315 inguinal herni hastasının cerrahi sonuçlarını içermektedir. Sonuçlar, postoperatif takipte nüks oranı, dikiş açılması, insizyonlarda şişlik, skrotal ödem ve şişlik ve hastaların işe dönüş günü açısından değerlendirildi. 0.05'in altındaki p değerleri istatistiksel olarak anlamlı kabul edildi.
Bulgular: Hastaların 19'unda (%6) postoperatif nüks görüldü. Hastaların ortalama işe dönüş süresi 5.6 gündü. Postoperatif nüks olan grupta bilateral yön oranı anlamlı olarak daha yüksekti ($p<0.05$). İnsizyonlarda şişlik olan grupta bilateral yön oranı ve preoperatif nüks oranı anlamlı derecede yüksekti ($p<0.05$). İnsizyonlarda şişlik olan hastalarda işe dönüş günü, insizyonlarda şişlik olmayan hastalara göre anlamlı olarak daha uzundu ($p<0.05$). Skrotal şişlik ve ödemi olan hastalarda bilateral inguinal herni anlamlı olarak daha yüksekti ($p<0.05$).
Sonuç: Laparoskopik TEP tekniği ile inguinal herni onarımının uzun süreli postoperatif deneyimleri, TEP yaklaşımının postoperatif nüksün düşük olması ve hastaların günlük aktivitelerine ve çalışmalarına hızlı bir şekilde geri dönmelerini sağlaması avantajları ile etkili ve güvenli bir teknik olduğunu göstermiştir.
Anahtar kelimeler: Inguinal herni, Herni onarımı, Laparoskopik cerrahi, Total ekstraperitoneal, TEP

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INTRODUCTION

Inguinal hernia repair is among the most commonly performed daily general surgery practices worldwide (1). Inguinal hernia repair surgery is performed on more than 20 million patients annually in the world. The treatment of inguinal hernia is surgical, and open or laparoscopic methods are applied. Inguinal hernia repair by laparoscopic method was performed for the first time by Ger in 1982 (2). The laparoscopic technique for inguinal hernia has several advantages over open approach, such as less infection at the wound site, less postoperative pain, and a faster healing process (3). Laparoscopic inguinal hernia repair has become one of the most frequently performed surgical operations worldwide. Total extraperitoneal hernia repair (TEP) is among the most popular laparoscopic approaches applied techniques today. The advantages of TEP technique include are not entering the peritoneal cavity, using mesh to close the hernia from outside the peritoneum, and avoiding the risks of intra-abdominal organ injury and adhesion by working in the periperitoneal area (4). The long-term inguinal hernia surgery follow-up results performed with the TEP technique was analyzed in this study in terms of postoperative recurrence in patients, swelling in the incisions, scrotal swelling and edema, suture dehiscence, and return-to-work day. In this study, it was aimed to investigate long-term post-operative results and the effectiveness of the laparoscopic TEP technique.

MATERIALS AND METHODS

This retrospective study was conducted by including the data of 315 patients (297 (94.3%) male, 18 (5.7%) female) who underwent laparoscopic total extraperitoneal (TEP) inguinal hernia repair in the General Surgery Department of Sultan 2. Abdulhamid Han Research and Training Hospital between January 2016 and March 2023. Ethical approval was acquired from Kartal Koşuyolu High Specialization Training and Research Hospital, Clinical Research Ethics Committee with approval no. 2024/22/981. Inclusion criteria were the patients who underwent laparoscopic inguinal hernia repair surgery under general anesthesia in our hospital, between the ages of 18-90, in the ASA 1-3 patient group, did not receive antithrombotic treatment, and had normal coagulation parameters. Exclusion criteria were the patients with age of younger than 18 and older than 90, in the ASA 4 group, with body weight below 50 kg, received antithrombotic treatment, and had abnormal coagulation parameters.

The diagnosis of the patients was made by physical examination, but some patients also underwent preoperative USG evaluation. Before the surgery, patients were told that they could switch to the open method if necessary. A single dose of antibiotic prophylaxis (Cezol) was administered parenterally to the patients before the first incision in the operating room. All patients were given general anesthesia. After the patient was put to sleep, a urinary catheter was inserted. These catheters were removed on the operating table while the patient was waking up. In the TEP method, after passing the skin subcutaneous with a 1 cm incision made from the umbilicus inferior. The linea alba was opened and the right or left rectus muscle was lateralized. A balloon trocar was placed over the posterior rectus cuff and the preperitoneal area was detached. After CO2 was administered to the preperitoneal area, two 5 mm working trocars were placed. Symphisis pubis and main vascular structures were revealed. The hernia sac was separated while preserving the cord elements. Subsequently, a 15x10 cm prolene mesh was placed in the preperitoneal area and fixed to the symphysis pubis with the help of a protucker. Following bleeding control and CO2 desufflation, the layers were closed according to their anatomical order.

In the statistical analyses of the study, statistical package program of SPSS 28.0 was used. Mean, median with iqr, standard deviation (SD), frequency and percentage, and lowest and highest values were used as descriptive statistics of the data. Kolmogorov, Simirnov and Shapiro-Wilk tests were used to measure the distribution of variables. Mann-Whitney U test was used to analyze quantitative independent data. Chi-square (X^2) test was used to analyze qualitative independent data. In the analysis, Fischer test was used when Chi-square test conditions were not met. The results were evaluated with a significant level of 0.05, p values less than 0.05 were considered statistically significant.

RESULTS

The average age of the patients was 52.5 (range 20-86). The number of patients with unilateral hernia was 225 (71.4%), and 90 (28.6%) of the patients had bilateral hernia. The number of patients with primary hernia was 298 (94.6%) and recurrent hernia was 17 (5.4%). The characteristics of the patients that underwent laparoscopic TEP repair are shown in Table 1.

Postoperative follow-up results of patients who underwent inguinal hernia repair with the laparoscopic TEP

technique are indicated in Table 2. Recurrence was observed in 19 (6%) patients, 37 (11.7%) patients had swelling in the incisions, scrotal swelling and edema were seen in 24 (7.6%) patients, and suture dehiscence in 11 (3.5%) patients. The average period of the patients to return to work was 5.6 days. The postoperative results of the 315 laparoscopic inguinal hernia repair surgeries performed with TEP technique in our hospital were investigated in terms of swelling in the incisions, scrotal edema and swelling, suture dehiscence, recurrence rate, and the return to work day. These results were analyzed based on the age of the patients, being preoperative recurrent or primary case, gender of the patients, the side on which the inguinal hernia was located (right, left, bilateral), and the return-to-work day of the patients.

Table 1. Demographic characteristics of the TEP inguinal hernia patients

		n	%
Number of patients		315	
Gender	Male	297	94.3%
	Female	18	5.7%
Age (year) avg. (range)	52.5 (20-86)		
	≤ 40	63	20%
	> 40	252	80%
Hernia	Unilateral	225	71.4%
	Bilateral	90	28.6%
	Primary	298	94.6%
	Recurrent	17	5.4%

The bilateral direction ratio was significantly higher in the group with postoperative recurrence than in the group without postoperative recurrence ($p<0.05$). No significant difference was seen in the groups with and without postoperative recurrence in terms of the age of the patients, their distribution according to grouping as under or over 40 years of age, gender, whether it was a preoperative recurrent or primary case, and the return-to-work day ($p>0.05$).

The bilateral direction ratio and preoperative recurrence rate were found to be significantly higher in the group with swelling at the incisions than in the group without swelling at the incisions ($p<0.05$). The number of days the patients returned to work was significantly higher in patients with incision swelling than in those without ($p<0.05$). The age of the patients, age distribution according to grouping under and over 40 years of age and gender did not differ significantly in terms of swelling in the incisions ($p>0.05$).

Bilateral inguinal hernia was significantly higher in patients with scrotal swelling and edema ($p<0.05$). The age of the patients, age distribution according to grouping under and over 40 years of age, gender, being preoperative recurrent or primary case and time to return to work did not differ significantly in terms of scrotal swelling and edema ($p>0.05$).

No significant difference was found between patients with suture dehiscence and those without suture dehiscence regarding age distribution, age grouping as under or over 40 years, gender, side of the inguinal hernia (right, left, bilateral), presence or absence of preoperative recurrence, and day of return to work ($p>0.05$). In the analysis made in terms of the average period of the patients to return to work, there was no significant difference regarding the age distribution of the patients, age grouping as under and over 40 years, gender, the side of the inguinal hernia (right, left, bilateral) and whether it was a recurrent or the primary case ($p>0.05$).

Table 2. Postoperative results of TEP inguinal hernia repair patients

Postoperative results		n	%
Post-operative recurrence	(-)	296	94%
	(+)	19	6%
Swelling in the incisions	(-)	278	88.3%
	(+)	37	11.7%
Scrotal swelling and edema	(-)	291	92.4%
	(+)	24	7.6%
Suture dehiscence	(-)	304	96.5%
	(+)	11	3.5%
Return to work (day) avg. (range)	5.6 (0-30)		
	≤ 4	180	57.1%
	≥ 5	135	42.9%

(-) None, (+) Occurred

DISCUSSION

Inguinal hernia repair surgery is one of the most frequently performed surgeries in the world. The history of modern inguinal hernia repair began with Bassini. Laparoscopic surgery in inguinal hernia repair began in the early 1990s. The best hernia repair procedure should be easy to perform, fast, effective and safe, resulting in a low recurrence rate and less postoperative as well. The results of numerous studies have demonstrated that patients who underwent laparoscopic inguinal hernia repair had lower rates of recurrence, were discharged earlier, were able to return to their daily activities more quickly and had fewer postoperative complications than patients who underwent inguinal hernia repair with open approach (5-6). Hernia repair with laparoscopic method has been shown to be superior to open approach due to shorter recovery time and shorter return to work day and less postoperative pain as well compared to open technique (7). Laparoscopic inguinal hernia repair is a minimally invasive surgery, and laparoscopic TEP has become one of the gold standards in inguinal hernia repair (8-10). Laparoscopic inguinal hernia repair with TEP approach has been emphasized in numerous studies as a safe, effective, and well-established surgical technique (11-12).

CONCLUSION

In this retrospective study, the long-term postoperative experiences of laparoscopic TEP repair in inguinal hernia patients are presented. The results showed that the TEP approach is an effective and safe technique with several advantages such as low postoperative recurrence and rapid return to work and normal activities of patients.

Declarations

Conflict of Interest

No conflict of interest was declared by the author.

Financial Disclosure

The author declared that this study received no financial support.

Ethical Approval

Ethical approval was acquired from Kartal Koşuyolu High Specialization Training and Research Hospital, Clinical Research Ethics Committee with approval no. 2024/22/981.

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