

Inguinal hernia repair via laparoscopic transabdominal preperitoneal (TAPP) method: Our 2 years clinical results

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Abstract

Aim: Inguinal hernia repair is one of the most common surgeries in General Surgery practice. Although different surgical procedures have been used for the treatment of hernias, minimally invasive approaches are increasingly preferred to manage hernia repair. The aim of this study is to evaluate our 2-year laparoscopic transabdominal preperitoneal (TAPP) hernia repair outcomes.

Materials and Methods: The data of patients who were diagnosed with inguinal hernia and who underwent the TAPP procedure between the dates of December 2017 and December 2019 were evaluated retrospectively.

Results: Ninety-six patients were included in this study. Of these patients, 89 were male and 7 were female. The mean age was 46 (range between 22 and 76). Fifty six (58.3%) cases had right inguinal hernia, 22 (22.9%) cases had left inguinal hernia and 18 (18.7%) cases had bilateral inguinal hernia. The mean hospital stay was 1.06 (1-3) days. In the early postoperative period we observed for minor complications such as seroma, hydrocele, epididymitis, and hematoma. Three patients experienced chronic pain. Recurrence was observed in 3 patients during follow-up. No major complications were seen.

Conclusion: Laparoscopic hernia repair is an efficient and attractive method because it offers better cosmetic results, earlier recovery, less pain, shortened hospital stay and early return to daily activities. However, the learning process for performing this procedure is more difficult than for the open method. Therefore, the learning curve of laparoscopic hernia surgery is longer. It has been reported that there is a difference in the rate of recurrence in surgeons trained in the laparoscopic method after specialization. We believe that this method can be applied safely by people who have received laparoscopic hernia surgery training.

Keywords: Inguinal Hernia; laparoscopy; transabdominal preperitoneal repair

INTRODUCTION

Inguinal hernia repair is one of the most common operations in general surgery. Inguinal hernias are seen in 3-8% of the world population (1). Bassini described the first modern inguinal hernia surgery in 1884. After that many techniques were described about this subject (2,3). In the 1980s, Lichtenstein described a tension-free anterior approach using artificial mesh and the proliferation of this repair surpassed other methods (4). The first experience with the laparoscopic inguinal hernia repair belongs to Ger in 1982 (5). It has become a method widely accepted all over the world and successfully applied in many centers. The preferred laparoscopic hernia repair methods are, transabdominal preperitoneal (TAPP) and total extraperitoneal (TEP) hernia repair (6). Since there is no space restriction in the TAPP method, it requires less experience than the TEP. However, since TAPP is performed by entering into the abdominal cavity, the risks such as organ injury, postoperative adhesions

and infections are higher when compared to TEP (7). TAPP inguinal hernia repair offers several advantages such as low postoperative pain, short recovery time and good cosmetic results (8). The aim of this study is to evaluate our 2-year laparoscopic transabdominal preperitoneal (TAPP) hernia repair outcomes.

MATERIALS and METHODS

The data of 96 inguinal hernia patients who underwent the TAPP procedure in Kocaeli Derince Training and Research Hospital and Şanlıurfa Mehmet Akif Inan Training and Research Hospital between the dates of December 2017 and December 2019 were reviewed retrospectively. The cases were performed by a physician who had a good level of laparoscopic hernia experience and another who had gained new experience in this regard. None of the cases were given preoperative antibiotic prophylaxis. Laparoscopic inguinal hernia surgery was included in the clean surgical wound group, prophylactic antibiotics were

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not used in accordance with the current surgical procedure guidelines. No procedures such as urinary catheter or preoperative urination were performed. As our case series and experience have grown over the years, we believe that this method can be safely applied without emptying the bladder, and we have not found any complications related to the bladder.

Surgical Technique

All of the operations were performed under general anesthesia. Trendelenburg and supine positions were preferred. While the surgeon was standing on the opposite side of the hernia area, the monitor was held on the patient's foot at the side of the hernia. A pneumoperitoneum was created by CO₂ insufflation with a 10 mm trocar placed supra-umbilical. Intraabdominal pressure was adjusted to 12-14 mmHg. In all cases, a 30 degree camera was used and routine abdominal exploration was performed before the procedure. In patients having unilateral hernia surgery, two 5 mm trocars were placed on the opposite side of the hernia, one at the level of the umbilicus midclavicular line and the other 8 cm inferior (Figure 1a). In patients with bilateral hernias, two 5mm trocars were placed from the right and left midclavicular line at the level of the umbilicus (Figure 1b). The bogros area and prevesical area were revealed by applying blunt and sharp dissection to the peritoneum in the inguinal region.

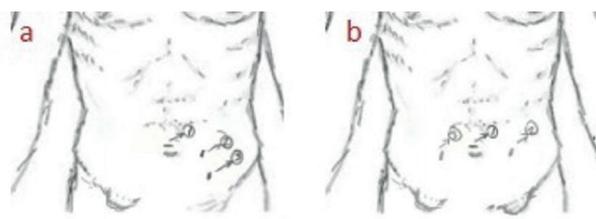


Figure 1. View of the trocars placement in hernia repair (a- unilateral, b- bilateral)

The spermatic structures in men and round ligaments in women were safely dissected and all three hernia (direct, indirect, femoral) areas were revealed. The hernia sacs of patients with large hernia defects were cut by binding or sealing with the help of LigaSure (CovidienTM, USA). A 10x15 cm polypropylene mesh was fixed to the pubis, cooper ligament and anterior abdominal wall with absorbable mesh fixators. The procedure was terminated by suturing the peritoneum in some of the cases and by closing with absorbable mesh fixators in others (Figure 2a,b).

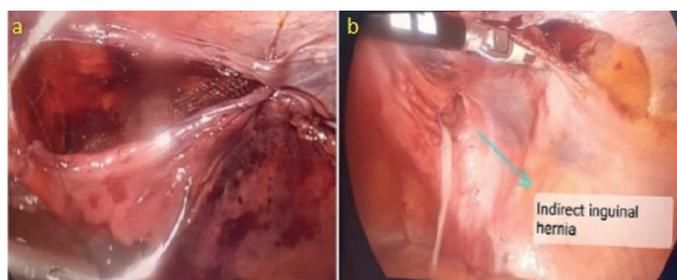


Figure 2. Intraoperative view of the patient (a,b)

Statistical Analyses

IBM SPSS 21.0 (Statistical Package for the Social Sciences version 21, SPSS Inc., Chicago, IL, USA) for windows statistical package program was used for the statistical evaluation of our research data. Measuring variables will be presented with mean \pm standard deviation (SD), categorical variables will be presented by number and percentage (%). Pearson correlation analysis will be used for the relationship between normally distributed variables, and Spearman correlation analysis will be used for the relationship between variables that do not show normal distribution. Chi-square (χ^2) test analysis will be used to compare qualitative variables. Positive and negative predictive values will be calculated to determine whether the variables are affected by the prevalence of the disease in the population studied. Hypotheses will be taken bi-directional, $p \leq 0.05$ will be accepted as a statistically significant result.

RESULTS

Of the 96 patients included in the study, 89 (92.7%) were male and 7 (7.3%) were female, with a median age of 46 (ranging between 22 and 76). Fifty six (58.3%) cases had right inguinal hernia, 22 (22.9%) cases had left inguinal hernia and 18 (18.7%) cases had bilateral inguinal hernia. The total number of repairs was 116. Three patients underwent umbilical hernia surgery in the same session, and one patient underwent left ovarian cyst excision. Three (3.1%) of the cases included in the study were recurrent hernias and 93 (96.9%) were primary hernias. Sixteen (16.6%) of the repairs were direct hernias, 74 (77%) were indirect hernias, 4 (4.1%) were femoral hernias and 2 (2.1%) were trousers hernias (Table 1). Sixty-two (64.6%) patients with hernia were diagnosed with the help of ultrasound. A preoperative ultrasound was not performed in 31 patients (32.3%). None of the patients returned to the open surgery. The average length of hospital stay was 1.06 days. Postoperatively, 7 (7.3%) patients developed seroma (pseudo-recurrence), 2 (2.1%) patients had hematoma and 1 (1.04%) patient had epididymitis.

Table 1. Demographic characteristics of the patients

		(n)	(%)
Gender	Male	89	92.7
	Female	7	7.3
Hernia location	Right	56	58.3
	Left	22	22.9
Hernia type	Bilateral	18	18.7
	Direct	16	16.7
	Indirect	74	77
	Direct+indirect	2	2.1
	Femoral	4	4.2

There was no need to perform further procedures on these patients, all of them were discharged with medical treatment. The follow-up period was between 3 and 24 months and the mean follow-up time was 16.76 (\pm 6.82) months. Recurrence was detected in three patients during

the follow-up period (Table 2). One of our three recurrent cases was admitted to the outpatient clinic with a complaint of swelling in the surgical area a month after the surgery. Physical examination showed that the hernia had recurred and an ultrasound showed that there was mesh migration to the large transverse fascia defect area. The second recurrence was a patient who was admitted to the outpatient clinic with severe pain in the inguinal area as a result of weight lifting at the end of the first year, working in heavy work. The evaluation revealed a recurrence and was reopened. In the third case, recurrence was detected 1.5 years after the procedure.

		(n)	(%)
Postoperative complication	Seroma	7	7.3
	Hematoma	2	2.1
	Epididymitis	1	1.04
Additional surgery	Umbilical hernia repair	1	1.04
	Over cyst excision	1	1.04
Hernia formation	Primary	93	96.9
	Nüx	3	3.1

DISCUSSION

The laparoscopic approach for inguinal hernia repair was first described by Ger. Laparoscopic surgery has attracted a lot of attention since its first application and has been used in many procedures of general surgery. Laparoscopic surgery has started to be widely used for hernia repairs, which is one of the most common procedures performed in general surgery (9). In the early 1990s, TAPP applied with an intraperitoneal approach and intraperitoneal Onlay mesh (IPOM) was described. IPOM was abandoned in a short time due to its high recurrence rate and the development of intra-abdominal adhesions (10). Laparoscopic surgery is recommended for cases of recurrence and bilateral inguinal hernia due to the fact that tissue changes secondary to surgery after conservative surgery are not expected in the posterior area and repair can be made to both inguinal areas from the same trocar entries (11). Although many laparoscopic methods have been described, the two most commonly used are TAPP and TEP methods. In our series, patients who underwent the TAPP method were examined. TAPP repair is preferred because for the TEP method additional materials such as balloon trocar were needed thereby increasing the cost of the procedure. While 5 of our 96 cases were operated due to recurrence hernia, 18 of them were bilateral. The success of groin hernia repairs is generally evaluated according to the recurrence of the disease and the presence of chronic pain (12). It is known that laparoscopic inguinal hernia surgery has advantages such as better cosmetic results, early mobilization, less postoperative pain and early return to daily activity. In our study, the mean length of hospitalization was found to be 1.06 days and it was

found similar to the literature (13). During laparoscopic hernia repair, conversion to the open technique has been reported at 2-3% of the cases (14). In our study, there was no reversal in any case. During inguinal hernia repair procedures, complications such as seroma, hematoma, hydrocele, epididymitis, orchitis, ischemia and testicular pain can be seen (15). In our series, it was determined that seroma (pseudorecurrence) developed in 7 patients during the early postoperative period. These patients were called for outpatient control and repeated aspirations were performed with the help of an injector. Reddy et al. stated that inverting the loose transverse fascia in direct hernias will decrease the seroma rate (16). Two patients with hematomas were followed nonoperatively. They were called for outpatient clinic controls. The hematoma reabsorbed in an average of 15 days. Epididymitis was seen in one patient. There was no need for reoperation for any of these patients and they were medically treated as outpatients. In studies comparing the laparoscopic approach versus the conservative approach for inguinal hernia repair, it was also emphasized that relapse rates were the same (17). In the meta-analysis of Wu et al., the recurrence rate was reported as 3.8%, and it was found that there was no significant difference in terms of recurrence when TAPP cases were compared with the open technique (6). In our study, recurrence was observed in 3 patients and this was consistent with the literature.

The surgical manipulation ability may decrease in laparoscopic hernia surgery due to decreased depth sensation, decreased sense of touch, limited range of motion and limited domination of anatomical structures. Therefore, a thorough learning process must be completed for laparoscopic hernia surgery (18,19). The fact that the patients who will be operated during the education period continues will be a young, weak, non-recurrent male patient, which may contribute to easier selection of anatomical structures and low recurrence rates (6,20).

CONCLUSION

We believe that surgeons with sufficient laparoscopic hernia repair experience can safely perform hernia repair with the TAPP method. There are not enough studies to draw conclusions about the relative effectiveness of TAPP repair compared to other laparoscopic methods. Sufficiently powerful randomized controlled trials comparing different laparoscopic repair methods are required.

Conflict of interest : The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports.

Ethical approval: The study was approved by the local ethical committee of Dicle University, Diyarbakir, Turkey (Protocol number: 101-26.03.2021).

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