

Initial experience with laparoscopic repair of incisional hernia

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ABSTRACT

Introduction: The development of the laparoscopic approach has changed the approach to incisional hernia, which is one of the most common surgical operations. In this study, we aimed to analyze the results of laparoscopic incisional hernia cases performed in our clinic.

Materials and Methods: Between April 2015 and March 2019, 234 patients underwent surgery for incisional hernia (abdominal wall) in our clinic, and those who underwent laparoscopic incisional hernia repair were included in this study. All procedures were performed using the same surgical technique. Demographic data, operation history, length of hospital stay, postoperative complications and recurrence were recorded. The minimum follow-up period for recurrence was 6 months.

Results: Forty-seven (20%) patients underwent laparoscopic incisional hernia repair during four-year period. Thirteen male and 34 female patients with a mean age of 53 ± 9 years were identified. Primary operations were classified as umbilical hernia operation (n=12), gynecologic operations (n=9), colorectal surgery (n=9), port site hernia (n=6), and others (n=11). The mean defect diameter was 5.8 ± 1.7 cm. Seven patients underwent primary repair with prolene, while a composite mesh for repair was used with or without prolene suture support in the other patients (n=40). The postoperative complication rate was 12% [seroma (3), hematoma (1), infection (1), parietal wall defect (1)]. Recurrence was detected in 4 (8.5%) patients with a mean follow-up of 31 ± 14 months.

Conclusion: In our series investigating laparoscopic incisional hernia repairs, acceptable results including short hospital stay and complication rates were achieved. On the other hand, the slightly higher recurrence rate has been expected due to the small population of patients and large group of surgeons. For this reason, better results can be achieved with the implementation of restrictions on patient selection (small defect diameter, weak patient, etc.) and increased experience.

Keywords: Composite graft, incisional hernia, laparoscopic repair.

Introduction

The development of laparoscopic application has affected the approach to the incisional hernia, which is one of the most common complications with an incidence of 2–18%, mostly related to wound infection.^[1,2] It provides benefits to the patients in many aspects, especially earlier return to normal daily activities of patients.

All hernias may not be suitable for laparoscopic approach, 27–54% of ventral hernia repairs are performed laparoscopically, likely because of the relatively advanced nature of this procedure.^[3,4] However, it is expected that considering its advantages, laparoscopic repair of incisional hernias will likely increase with the rising popularity. In this study, we aimed to analyze the results of laparoscopic incisional hernia cases performed in our clinic over the last 3 years.



Received: 18.03.2020 Accepted: 02.07.2020

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Materials and Methods

Between April 2014 and March 2019, 234 patients underwent surgery for incisional hernia (abdominal wall) in our clinic and those with laparoscopic approach were included into this study. The patients who were converted to open surgery were excluded. This study was approved by our local ethical committee with a registration number of 2629. During the study period, 47 (20%) patients underwent laparoscopic incisional hernia repair. In three patients, laparoscopic procedure was converted to open due to patient health status-cardiopulmonary disorders induced by laparoscopy (n=1), intestinal injury (n=1), and inadequate exposure due to extensive adhesions (n=1). All procedures were performed using the same procedure as it was defined in detail below. Demographic data, operation history, length of hospital stay, postoperative complications and recurrence were recorded. The minimum follow-up period for recurrence was 6 months. Descriptive statistics were used to summarize data. Values for normally distributed numerical data was expressed as mean±SD and for non-normally distributed numerical data as median and range, and for categorical data as counts and percentages.

Surgical Technique^[5]

- 1. Trocar placement:** The procedure started with entry into the peritoneal cavity with an open Hasson method. In most cases, 3 trocars were used, one 10-mm and two 5-mm trocars, which were placed as laterally as possible on the abdominal wall, so they are at an adequate distance from the hernia orifice. The position of the first trocar should be several centimeters from scars from previous surgeries and as far from the hernia as possible due to the complete mesh coverage of all probable hernia sites involved in previous surgery (Fig. 1a, b).
- 2. Adhesiolysis:** (Fig. 1c, d) The adhesions in the abdomen were lysed with electrocautery or an ultrasonic scalpel. The abdominal contents of the hernia sac are reduced into the peritoneal cavity. No cauterization should be done that may injure the bowel wall, which is the most serious injury associated with laparoscopic incisional hernia repair.
- 3. Mesh placement:** (Fig. 1e, f) In appropriate patients, hernia sac was reduced tacking on the nearby peritoneum or primary repaired using prolene suture, based on surgeons' preference and experience, as well. Mesh was introduced into the peritoneal cavity using optic

port site. Trocar was firstly taken out and roll-shaped composite mesh was sent through the inside. The four sides were supported by a mesh tacker fixed by prolene straps.

Results

Demographic data of 47 patients who underwent laparoscopic incisional hernia repair were shown in Table 1. The most common index operations were umbilical hernia operations (n=12) and followed by gynecologic operations (n=9). The mean defect diameter was 5.8±1.7 cm. Seven patients underwent only primary repair of the defect with prolene suture, while composite mesh for repair was used with or without prolene suture in the remaining patients (n=40). Intraoperative complications occurred in five patients (full-thickness injury (n=1) and serosal injury (n=4) of the small bowel during adhesiolysis). In two patients who underwent additional procedures (cholecystectomy and repair of full thickness small bowel), intraabdominal drainage catheter was placed. The mean hospital stay was

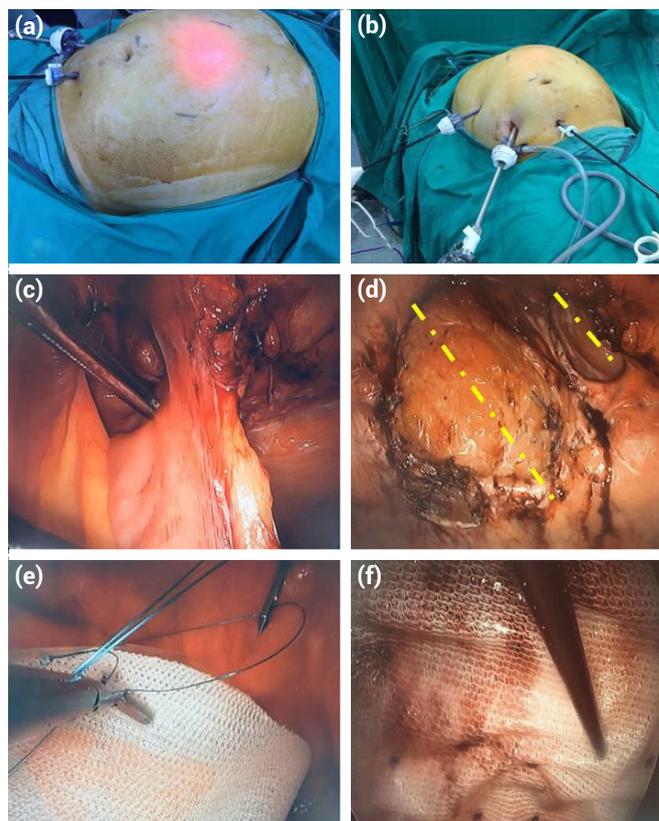


Figure 1 (a-f). (a) Trocar placement and the view of the hernia defect laparoscopically that we can imagine the required graft diameter. (c) Adhesiolysis due to previous incisional hernia repair using prolene graft (d) two hernia defects with 5 cm at its largest diameter. (e) Composite graft was pinned to the abdominal fascia with prolene sutures using a suture passer, (f) Tacker was used to complete fixation of the graft.

2.4±0.8 days. The postoperative complication rate was 12% [seroma (3), hematoma (1), infection (1), parietal wall defect (1)]. In one patient, during postoperative period observation, parietal wall defect was detected and second exploration was performed by conventional methods using larger composite mesh. Recurrence was detected in 4 (8.5%) patients with a mean follow-up of 31±14 months.

Discussion

By the revolution in laparoscopic area, most surgeons have come to prefer laparoscopic approaches in patients with incisional hernia, although some incisional hernia cases can be challenging even in open surgery. The advantages of laparoscopic surgery started to be acknowledged with recent reviews and meta-analysis.^[6,7] Although there have been some limitations, two recent meta-analysis revealed that laparoscopic repair provided shorter hospital stay and less post-operative complications. Considering our mid-term results, satisfying outcome including short hospital stay and acceptable complication rates were achieved. On the other hand, the slightly higher recurrence rate, compared to the similar series, might be expected due to the small number of patients and multiple surgeons.

Laparoscopic incisional hernia repair is associated with lower incidence of wound infection and shorter length of hospital stay.^[8] The feasibility in the suturing concept or augmentation technique has been confirmed by the large series presented by Chelala et al in which they confers additional benefits to the conventional advantages of Laparoscopic incisional and ventral hernia repair in terms of reducing the overall morbidity, with a low rate of recurrences.^[9] In recent series, fascial defect closure with mesh was found superior to standard laparoscopic mesh repair in terms of reducing mesh bulging.^[10] In their series including 49 patients, Intraperitoneal onlay mesh (IPOM) technique was performed only in 16 patients and in both groups, mesh bulging was observed. Likewise, in our clinic, we have mostly performed IPOM technique (sublay or intraperitoneal onlay mesh technique) which has been mostly applied technique in several centers. Additionally, we usually preferred “hernia sac tacking” to reduce the defect size in patients with small defects (<10 cm). Only three patients experienced seroma which require interventional treatment. Zang et al.^[8] noted increased risk of bowel injury compared with the open technique. This issue was also confirmed in guidelines for laparoscopic treatment of ventral and incisional abdominal wall her-

nias released by the International Endohernia Society.^[11] In previous series, in case of iatrogenic intestinal injury, the hernia repair was usually completed with a laparoscopically placed mesh, and only 43% were converted to an open procedure. A recognized enterotomy was associated with a mortality rate of 1.7%, whereas an unrecognized enterotomy had a mortality rate of 7.7%.^[12,13] In our series, we have experienced one conversion to open surgery due to intestinal injury, whereas in remaining five cases with intestinal injury–serosal or full-thickness, procedure was completed laparoscopically.

Most of the laparoscopic approaches results in shorter length of hospital stay and return to baseline function or daily activities more quickly. Furthermore, in a prospective observational study including 27 patients, laparoscopic ventral hernia repair has led to significant improvement in quality of life at 1 month and 6 months after surgery, when compared with pre-operative quality of life. Even within the post-operative period, there was gradual improvement in quality of life at different follow up periods.^[14]

Apart from the some serious complication rates, cost–effectivity is another concern for laparoscopic incisional hernia repair. Most studies only provide short-term follow-up evaluation and cost effectiveness have not been widely evaluated. Several studies provided cost-effectivity of laparoscopic incisional hernia repair as an expectation due to shorter recovery period.^[15-17] Low resources countries as Turkey have another concern while using these expensive materials. The higher price lowers their marginal utility of consumption. In our center, we made a selective patient selection considering which one could have the most benefit.

Limitations of our study included small sample size, single institutional study, non–randomized and heterogeneity in surgeons.

To conclude, in our series including laparoscopic incisional hernia repairs, satisfying results including low hospital stay and complication rates were achieved. On the other hand, the slightly higher recurrence rate might be expected due to the low number of patients and multiple surgeons. For this reason, better results can be achieved with restrictions on patient selection (small defect diameter, weak patient, etc.) and increased experience, since the learning curve is related to the individual and amount of practice. To provide better functional and cosmetic out-

comes, laparoscopic incisional hernia repair should be tailored considering the diameter of the hernia defect and patients' health status.

Disclosures

Ethics Committee Approval: This study was approved by our local ethical committee with a registration number of 2629.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Concept – P.Y.; Design – P.Y.; Supervision – P.Y., E.K.G.; Materials – P.Y., E.K.G.; Data collection and/or processing – P.Y., E.K.G.; Analysis and/or interpretation – P.Y.; Literature search – P.Y., E.K.G.; Writing – P.Y.; Critical review – P.Y., E.K.G.

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