

## Laparoscopic Approach After Laparoscopic Inguinal Hernia Recurrence. Single Center Experience

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### Abstract

**Objective:** Recurrent inguinal hernia has occurred after endoscopic inguinal hernia repair, although far less frequently than after conventional repair. (In the literature between 0,1 -1,5 %), the aim of this study was to evaluate whether these recurrences can be repaired by means of the laparoscopic approach with acceptable complication and recurrence rates.

**Methods:** From April 2010 to May 2017, about 682 inguinal hernia Patients with 741 hernia were operated endoscopically in our institution, 644 were males and 38 females. Their age at surgery ranged from 20-71 years. 26 patients with recurrent inguinal hernias at physical examination underwent surgery at our institutions. All the recurrences occurred following endoscopic inguinal hernia repair with mesh prostheses. The recurrences were repaired endoscopically using a transabdominal approach. Depending on the size of the defect, a new polypropylene mesh was used.

**Results:** Mean surgery time was 48 min. There were no conversions to the anterior approach. After a mean follow-up of 12 months, no recurrences had been diagnosed. Mean hospital stay was 1.5 days (range, 1-3).

**Conclusion:** there is a place for laparoscopic surgery in the treatment of recurrent inguinal hernias after endoscopic herniorrhaphy. The transabdominal preperitoneal approach is a reliable technique for recurrent inguinal hernia repair after previous endoscopic herniorrhaphy.

**Keywords:** recurrent inguinal hernia, transabdominal, endoscopic herniorrhaphy

## Introduction

In 1975, Stoppa et al. developed a method for treating hernias, especially recurrent ones, with a preperitoneal synthetic mesh [1]. Their recurrence rate was 1%. Based on this technique and experience with the Lichtenstein method [2,3] laparoscopic procedures for hernia repair were developed.

After the first results were evaluated, two laparoscopic standard techniques were adopted: The Transabdominal Preperitoneal Hernia Repair (TAPP) and the extraabdominal preperitoneal inguinal hernia repair (TEP) [4].

Laparoscopic repair has gained widespread acceptance for the treatment of inguinal hernias. This is due to promising early reports, after a short follow-up, of rapid recuperation and a low recurrence rate. Laparoscopic inguinal hernia repair combines the advantage of mesh insertion (tensionfree repair) with the rapid rehabilitation offered by laparoscopy [5,6,7,8,9].

recurrent inguinal hernias have occurred after endoscopic inguinal hernia repair, although far less frequently than after conventional repair [10,11].

The salient question is how to treat these recurrent inguinal hernias. Is there still a place for laparoscopic surgery, or should we turn to conventional methods?

Because we have great confidence in the laparoscopic technique, we adopted the transabdominal approach for the repair of recurrent inguinal hernias after prior endoscopic repair.

a prospective study was performed to investigate the technical feasibility, the complication rate, and the morbidity of this procedure. In addition, we examined the recurrence rate.

The underlying reasons for these recurrences are discussed, and a modification of our technique of endoscopic hernia repair is described. Using this knowledge, hernia repair can be perfectly done in the future.

## Material and Methods

From april 2010 to May 2017, about 682 inguinal hernia Patients with 741 hernia were operated laparoscopically in our institution, 644 were males and 38 females. Their age at surgery ranged from 20-71years. There were 140 direct and 601 indirect inguinal hernias. Of these, 43 were combined cases, and 61 patients had one or more previous open repairs. The hernias were located on the right side in 440 cases and on the left in 301 patients 59 were bilateral.

26 patients (3.5%) with recurrent inguinal hernias at physical examination underwent surgery at our institutions. All the recurrences occurred following laaroscopic inguinal hernia repair with mesh prostheses. The recurrences were repaired endoscopically using a transabdominal approach. Depending on the size of the defect, a new polypropylene mesh was used. A standardized procedure for TAPP hernia repair was followed in all cases.

The essentials of this technique are as follows: general anesthesia, transabdominal approach, opening of the peritoneum above the hernial defect, preperitoneal dissection and exposure of the original mesh, reduction of the recurrent inguinal hernia, removal of old mesh if possible but usually the old mesh can be left insitu,

positioning of a polypropylene mesh prosthesis to ensure adequate positioning of the new mesh over the hernial defect, and closure of the peritoneum. The prosthesis is anchored to the abdominal wall by staples.

Patients could leave the hospital as soon as they able to walk freely, and as long as no postoperative complications requiring clinical care had occurred.

Patients were examined by staff surgeons postoperatively at regular 3-month intervals in the 1<sup>st</sup> 18months.

Initial data were collected from the patient. The location of the current hernia as found during the operation was recorded. Surgery time was defined as the time from the first incision to the last suture.

Data such as preoperative and postoperative complications (hematoma of the abdominal wall, seroma, paresthesia, wound infection, urine retention) and conversion of the transabdominal preperitoneal procedure to a conventional procedure were noted. Length of hospitalization (number of days in the hospital after surgery) and morbidity (number of days needed for recovery before returning to work or full daily activities) were assessed. Data collection was completed with recent data from the routine follow-up, including physical examination. For all patients, recurrence of the inguinal hernia was evaluated by a thorough physical examination.

## **Results**

From april 2010 to May 2017 26 patients were operated on (all were male). Their age at surgery ranged from 20-71 years, Predisposing factors for the hernia (heavy weight-bearing, chronic obstipation, urinary obstruction, chronic cough) were present in eight of 26 cases.

Location of the recurrent hernia was determined during dissection. In 11 cases, a medial recurrent hernia was found. In these cases, the original mesh probably did not cover the defect sufficiently on the medial side, since the hernia passed the mesh medially.

Another possibility is that the mesh moved laterally during or after desufflation. In 13patients, an indirect lateral recurrent hernia was found.

In these patients, either the primary hernial sac was not fully dissected or the mesh was too small, since the recurrent hernia was found to protrude under the original mesh prosthesis. In two patients, combinations of these types were seen.

The mean surgery time was 48 mins. Preoperative complications occurred in one patient (3.9 %). In this patient, it was not possible to close the peritoneum over the mesh, so it was left partially uncovered. Conversion to another procedure was never necessary.

Postoperative complications included hematoma of the abdominal wall, which disappeared spontaneously, in 2 patients. Mean hospital stay was 1.5 days (range, 1-3). Patients returned to work or full daily activities after a mean period of 8 days (range, 3-16). Mean follow-up period was 12 months.

## Discussion

Identification of the causes of recurrence after endoscopic hernia repair is crucial for the future treatment of all inguinal hernias, whether primary or recurrent.

Several possible reasons for recurrence have been proposed by various authors experienced in endoscopic inguinal hernia surgery [10,11,12,13,14,15].

The prevailing opinion is that recurrences are due to technical errors. Factors that may lead to recurrences include the limitation of the surgeon's experience, inadequate dissection, missed hernias, insufficient size of the prosthesis, insufficient overlap of the prosthesis over the hernial defect, improper fixation, folding or twisting of the prosthesis, and mesh lifting secondary to hematoma formation [10,12,14,15,16,17].

A significant factor in all these cases is the extent of the surgeon's experience. It is obvious that many technical errors could be avoided if we knew how to prevent them.

It has been shown that most recurrences occur during the surgeon's early experiences with laparoscopic hernia repair [13,14,15,18].

Incomplete dissection and missed hernias lead to early recurrences because the hernia was not repaired adequately.

Often cited as a mechanism for recurrence is the inadequate size of the prosthesis, so that not all the defect is covered, and the overlap is insufficient [10,14,16,17].

In the 11 cases of medial recurrent hernia, the mesh probably did not cover the defect sufficiently on the medial side since the hernia passed the mesh medially [12].

During a TAPP, it is sometimes difficult to create enough room to position the prosthesis correctly, which probably led to medial recurrence due to insufficient overlap on this side.

In 13 patients, an indirect recurrent hernia was found. In these cases, either the primary hernia was not fully dissected, or the mesh was too small, because the recurrent hernia was found to have slipped under the mesh prosthesis into the abdominal wall defect. In the five combined recurrences, several of these problems must have occurred together.

All recurrent hernias occurred in patients during the early period of the surgeons' experience with endoscopic hernia repair, illustrating both the presence of a learning curve and the inadequacies of the original technique.

Discussions of "to staple or not to staple" remain heated. The advantages of stapling include a lower risk of mesh migration; the disadvantages include nerve entrapment, vessel laceration, and pain in the abdominal wall [11,13,17].

Since we prefer to use staples for mesh fixation, we also advocate the use of a larger mesh prosthesis. The basic requirement is a prosthesis large enough to cover and adequately overlap all potential hernia sites in the myopectineal orifice. It is thought that all defects should be overlapped by about 2 cm if the mesh is stapled and 3 cm if it is left unstapled.

The present study evaluates the results of a second endoscopic hernia repair. We preferred the transabdominal approach. Although more lacerations of the intraabdominal structures have been reported during the TAPP than during the TEP [6,10,17,19], the transabdominal procedure did not lead to any complications in our series. The mean surgery time was equal or slightly longer than that for repair without previous mesh placement because it was necessary to dissect the peritoneum from the prosthesis and then close the peritoneum after the new mesh was placed.

Perioperative and postoperative complications were no more frequent than after primary endoscopic repair [6,7,13,16,21]. Recuperation was rapid for almost all our patients. And most important, no recurrences have been seen at physical examination after adequate follow-up period.

These results strengthen our belief in the importance of laparoscopic inguinal hernia repair in contemporary surgery.

As time passes and techniques become perfected, the recurrent hernia may become obsolete.

## Conclusions

In the course of our laparoscopic repair of recurrent hernias after primary endoscopic herniorrhaphy, we were able to study the likely causes of recurrence. Perioperative analysis suggests that the recurrences correlate predominantly with the extent of the surgeons' experience and the size of the mesh.

The application of this knowledge to future hernia repair can help us to perfect the procedure. This study shows that there is a place for laparoscopic surgery in the treatment of recurrent inguinal hernias after endoscopic hernioplasty.

The transabdominal preperitoneal approach is a reliable technique for recurrent inguinal hernia repair after prior endoscopic herniorrhaphy.

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