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Original Research Article

Prospective trial comparing open approach of Lichtenstein tension-free mesh with laparoscopic transabdominal preperitoneal approach for repair of inguinal hernia: tertiary center experience

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ABSTRACT

Background: The introduction of various open mesh and laparoscopic techniques has increased the interest in inguinal hernia surgery. But still controversy persists about the most effective inguinal hernia repair. The aim of this study was to compare the results of open Lichtenstein tension-free mesh technique and laparoscopic transabdominal preperitoneal (TAPP) repair for inguinal hernia.
Methods: We considered 55 patients were enrolled between. Patients were divided into two groups, group A had open mesh repair and group B had laparoscopic TAPP repair of groin hernia. Time to full recovery and return to work, operative time, postoperative pain, hospital postoperative stay, complications and recurrence rate were recorded in both groups.
Results: Significant difference was observed in the median time to return to normal activities in TAPP group versus in open approach. The mean hospital postoperative stay was 1-2 days in both groups. On follow up of our patients we found that in group A 3 patients had seroma, no haematoma discovered among our patients, 3 patients had wound infection, all previous complications were managed conservatively, in group B none of all 30 patients develop seroma, haematoma or infection. In group A 4 patients who were had bilateral hernia develop recurrence, while in group B we had no recurrence among the patients.
Conclusions: Laparoscopic (TAPP) approach to inguinal hernia repair is considered safe and effective as excellent alternative to conventional surgery repair. It is associated with less postoperative pain, hospital postoperative stay, postoperative complications, and recurrence, earlier return to normal activities.

Keywords: Hernia, TAPP, Mesh, Seroma, Laparoscopic hernia

INTRODUCTION

The introduction of various open mesh and laparoscopic techniques has increased the interest in inguinal hernia surgery. But still controversy persists about the most effective inguinal hernia repair. The aim of this study was to compare the results of open Lichtenstein tension-free mesh technique and laparoscopic transabdominal preperitoneal (TAPP) repair for inguinal hernia. [1]

Inguinal hernia is a very common complaint, About 700,000 patients in the United States, 200,000 in Germany and 80,000 patients in England annually undergo surgical repair of their inguinal hernia. [1]

The use of mesh to repair inguinal hernias is accepted widely and is replacing repairs by suturing. Many techniques have been described since the first application of laparoscopy to the management of hernias. [2]

Laparoscopic inguinal hernia repair have been introduced after the success of laparoscopic cholecystectomy on the hope that there would be less postoperative discomfort and pain, the repair of recurrent hernias would be easier, and bilateral hernia could be treated concurrently with improved cosmesis.[3]

Long-term follow-up shows that 15-30% of all hernia repairs will fail and 60% of these recurrences will cause symptoms.[4]

From all patients undergoing hernia repair ten percent of them present with recurrent inguinal hernia and 7.5% present with bilateral inguinal hernia. In many areas of general surgery minimal access surgery has rapidly become established, and by 2013 laparoscopic hernia repair accounted for 10% of all hernia surgery.[5]

Advantages of laparoscopic repair include a reduction in postoperative pain and a shortened recovery period but issues such as violation of the peritoneal cavity and occurrence of several complications, e.g., intestinal obstruction subsequent to entry of the peritoneal cavity had always been a concern for this approach. [6]

It seems logical that if such benefits occur for patients undergoing primary inguinal hernia repair, there may be an even greater benefit to patients undergoing bilateral inguinal hernia repair as the open approach requires two incisions. In addition, there could also be greater benefit to patients undergoing recurrent inguinal hernia repair because a second groin exploration via an open route would be necessary cutting through scar tissue and you should expect additional trauma. Retrospective comparisons have been made by several investigators that show that laparoscopic repair is a safe and effective alternative to conventional repair in such patients. [7]

The National Institute for Clinical Excellence in the United Kingdom recently published guidance on the use of laparoscopic surgery for inguinal hernia. It recommended that laparoscopic surgery be considered for recurrent and bilateral hernias only. This guidance will be reviewed in 2013. Despite this advice, most published trials provide data on groups containing a mixture of patients, with only one trial considering patients with recurrent hernias alone.[8]

METHODS

This study was a prospective study which was conducted at Sohag faculty of medicine, Sohag Gouvernrate Egypt from May 2018 to March 2019, the data base was reviewed.

The data were analysed by SPSS data base with application of Chi - square test and test of comparison of proportions, p<0.01-0.05.

Agreement of ethical committee and consents from patients was obtained.

The study include 55 patients with inguinal hernia either unilateral or bilateral we divided patients into two groups group A include patients who underwent open surgery while group B include laparoscopic treated patients, mesh was used in both groups, during the period of this study from May 2018 to March 2019. Analysis of the clinical presentation, age of patients, risk factors, unilateral or bilateral hernia, route of management, operative time, postoperative pain and length of postoperative hospital stay.

All the data was recorded, tabulated and statistically analysed emphasizing on:

- Clinical data including patient age, risk factor.
- All investigations laboratory and radiological will also be added.
- Follow up the patients up to ten months after discharge to detect any complications.

RESULTS

A total of 55 patients were admitted to the outpatient surgery clinic at Sohag University Hospital complaining of inguinal hernia from May 2018 to March 2019. Patient age ranged from 19 to 65 years.

We divide our patients into two groups according to method of management, group A who underwent open surgery include 25 patients (45.4%) mean for age was 44.52 while group B include 30 (54.5%) patients subjected to laparoscopic treatment. Images from our cases, mean of age was 44.80 (Figure 1-4).

Comparing two groups as regard side of hernia (unilateral or bilateral), presence of risk factors (DM, HTN, smoking), gender of patient, operative time, intraoperative complications, post-operative time needed to regain activity, post-operative pain and post-operative complications as seroma, haemotoma, infection and recurrence.

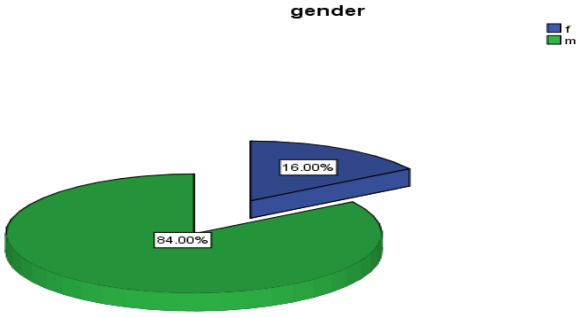

Figure 1: Gender in group A.

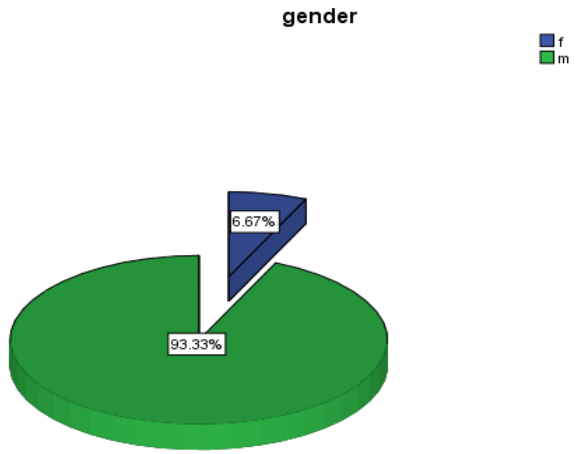

Figure 2: Gender in group B.

We found that there were great difference between mean of time needed to regain activity between both groups, it was 26.3 in group A while in group B was 5.73.

Also operative time mean it was 55.8 in group A while in group B it was 47.3.

In both groups the hospital stay don't expanded more than two days.

As regard complications two patients (6.7%) from group B failed to complete laparoscopic approach because of adhesions and converted to open treatment, in the rest of 53 patients none of them had intraoperative complications.

As regard postoperative pain we noticed that in patients with bilateral hernia managed laparoscopically less analgesia required (mean of VAS score 4.29) while in open procedure they needed more analgesia (mean of VAS score 6.74), it did not differ between both groups as regard unilateral hernias.

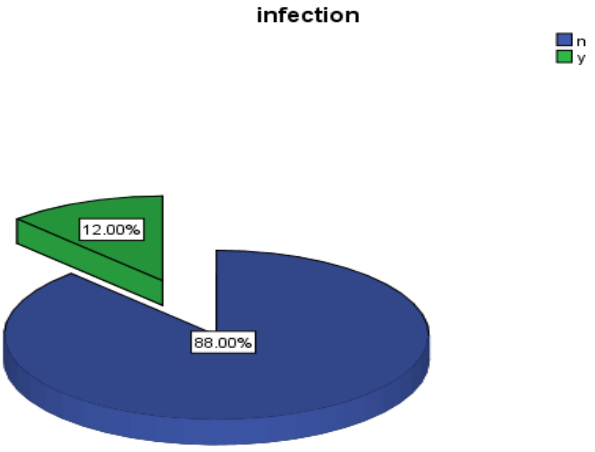

Figure 3: Postoperative infection.

Follow up of our patients which expanded to ten months post operatively to discover complications we found that in group A 3 (12%) patients had seroma, no haematoma discovered among our patients, 3(12%) patients had wound infection Figure 3, all previous complications were managed conservatively, in group B none of all 30 patients develop seroma, haematoma or infection.

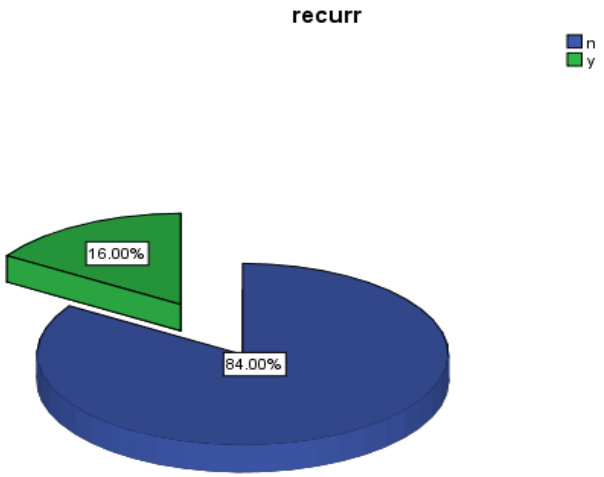

Figure 4: Recurrence in group A.

In group A 4 (16%) patients who were had bilateral hernia develop recurrence, while in group B we had no recurrence among the patients (Figure 4).

DISCUSSION

Our main aim in this trial was to identifying the optimum hernia surgery which associates with quicker recovery and discharge, and therefore earlier resume to normal status. It was observed that Laparascopic operated patient significantly had less operative time than those who had a Lichtenstein operation especially in bilateral hernia.

It is clear that the choice of laparoscopic or open mesh inguinal hernia repair is multitude decision depends on the balance of costs, benefits and risks.

This trial study showed that the TAPP and Lichtenstein approaches are both effective and safe for hernia repair, since the low rates of recurrence and life-threatening complications. However, TAPP repair of inguinal hernias was associated with significantly less pain and short-term complications especially recurrence in bilateral hernia with faster returning to the normal activities when compared with the Lichtenstein hernia repair approach.

Pain is the most frequent complaint after hernia repair. The risk of postoperative pain after hernia repair varies widely. It lies between 0-75% after open-mesh and 0-29% after laparoscopic repair. Several studies have reported mesh repair is associated with less pain than non-mesh, and laparoscopic less than open mesh repair.

Therefore, pain was the main objectives in this comparison of the TAPP and Lichtenstein approaches. [9]

In the study, in patients with bilateral hernia managed laparoscopically less analgesia required (mean of VAS score 4.29) while in open procedure they needed more analgesia (mean of VAS score 6.74), it did not differ between both groups as regard unilateral hernias.

Laparoscopic techniques for inguinal hernia, which requires the use of mesh, were introduced in order to facilitate patient recovery and return to their daily occupation and claimed reduction of postoperative pain, while Lichtenstein was mainly introduced because of the low recurrence rate. A large systematic review, which did not include studies comparing laparoscopic extraperitoneal techniques (TEP) with Lichtenstein, has confirmed that patients with laparoscopic hernia repair returned to daily activities sooner. Eight systematic reviews published between 2001 and 2008 of which 7 included only prospective, randomized and quasirandomized trials concluded that Laparoscopic repairs have been associated with faster return to usual activities. [10]

Recurrence rates currently represent the most important endpoint in hernia surgery.

Until recently, recurrence rate of inguinal hernia after repair is rather high. Since, with introduction new approaches and mesh implants its rates dramatically decreased. According randomized trial studies, the recurrence rates of hernia after laparoscopic and Lichtenstein approaches have been reported 1.6-10.1% and 2.5-4.9%, respectively. It is evident that the reliable reports of recurrence rate after inguinal hernia repair needs long time follow up. However, there are a few long-term studies with over 5-years follow-up. On the other hand, the recurrence rates after inguinal hernia repair is vary. [11]

In this trial the follow-up was ten months post operatively and we found that 4 (16%) patients who were had bilateral hernia and managed by open surgery develop recurrence, while in group B we had no recurrence among the patients.

Hematoma and seroma are specific early minor complications following inguinal hernia surgery. Incidence of seromas and hematomas after hernia repair are described in various studies. There was no significant difference between the TAPP and the Lichtenstein group regarding postoperative seroma (6 vs. 8; p=0.32), hematoma (4 vs. 8; p=0.32), and infection (0 vs. 1, p=0.67). The risk of seroma formation after hernia repair is relatively common. However results of the primary studies pointed in different directions. Since, (Buunen et al) in one of the large trials have found seroma rates to be doubled in laparoscopic repair; (Itani et al) in the other larger trial reported threefold higher seroma rates after open surgery. [12]

In our series we found that in group A 3 (12%) patients had seroma,, 3(12%) patients had wound infection, all previous complications were managed conservatively, in group B none of all 30 patients develop seroma.

Avoidance of postoperative hematomas is important to the achievement of a low mesh infection rate and prevention of potential mesh displacement by the collection fluid.

Since the use of drains does not reduce the incidence of hematomas, the only way to prevent hematoma formation and related wound complications is meticulous hemostasis and obliteration of dead space. Comparison of the laparoscopic techniques with other open non-mesh techniques had shown no significant difference in the incidence of hematoma. [13]

In this study none of our 55 patients had haematoma on follow up period.

CONCLUSION

Laparoscopic transabdominal preperitoneal (TAPP) approach to inguinal hernia repair is considered safe and effective as excellent alternative to conventional surgery repair. It is associated with less postoperative pain, hospital postoperative stay, postoperative complications, and recurrence, earlier return to normal activities.

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