

# Comparison of Laparoscopic versus Open Inguinal Hernioplasty

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## ABSTRACT

**Aim:** To compare laparoscopic vs open Inguinal Hernioplasty in regards to pain in postoperative period, complications, rejoining the work and early recurrence.

**Design:** Prospective comparative study.

**Place and duration of study:** Doctors Hospital, Chaudhary Akram Research and Teaching Hospital from July 2014 till Dec. 2016

**Methods:** Adult male patients presented to the general surgical OPD, with diagnosis of inguinal hernia underwent either Lichtenstein repair or laparoscopic repair by Transabdominal Pre-peritoneal approach (TAPP). Total 83 patients underwent repair by attending surgeons. 57 of them had open and 26 had laparoscopic repair with use of polypropylene mesh. The patients were evaluated post operatively and during follow up for early postoperative complications, postoperative pain, return to work and early recurrence.

**Result:** Patients in Group A (open-repair) had significantly greater level of local pain during rest and during routine activities than those within Group B (laparoscopic group) during zero postoperative day, 1<sup>st</sup> post op. day and after two week respectively assessed on the visual-analogue scale (used for 2 weeks). The time to resume routine activities was much shorter among those undergoing laparoscopic repair than among those undergoing open repair.

No recurrence was seen in either group on 1 year follow up.

**Conclusion:** It is concluded that Laparoscopic TAPP repair of inguinal hernia in adults is safe and preferred operation as compared to open inguinal hernia repair.

**Keywords:** Lichtenstein repair; polypropylene mesh; Laparoscopic TAPP Hernioplasty

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## INTRODUCTION

Arregui and Doin (1990) described the trans-abdominal pre-peritoneal [TAPP] hernioplasty. In this method peritoneum is cut to enter into the avascular Pre-peritoneal space which is dissected enough to place a large mesh over the hernial orifices. After mesh is fixed, the peritoneum is either sutured back or stapled. TAPP approach has the advantage of identifying other missed hernias like additional direct or femoral hernia as well as identifying any hernia in the contralateral groin.

Inguinal hernia surgery is one of most frequently performed operation. Recurrence of a hernia has always been a concern. Studies have reported around 15% recurrence rate in pre-mesh era. Also pain in postoperative period and disability was frequent<sup>1,5</sup>. Although since the introduction of tension-free surgical repair with the use of polypropylene mesh, recurrence rate was reported to be about <5%.<sup>2,3</sup>

Since the introduction of laparoscopic approach to mesh repair, different studies have reported much lower recurrence rates. Laparoscopic technique is also associated with substantially less pain and earlier return to activities than the open-repair technique<sup>4,6,7</sup>.

The laparoscopic technique do require general anesthesia, and is sometimes associated with serious intraoperative complications than is open repair<sup>11,13</sup>.

A Prospective comparative study was conducted to compare postoperative pain, return to normal activity (return to work), early complications and recurrence rates between two groups.

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## PATIENTS AND METHODS

Eighty three patients presented to general surgical OPD with diagnosis of inguinal hernia underwent either Lichtenstein repair or laparoscopic repair by Transabdominal Pre-peritoneal repair (TAPP) with age range from 18-70yrs. 57 of them had Lichtenstein repair and 26 patients underwent laparoscopic repair by Transabdominal Pre-peritoneal approach (TAPP). All those patients who did not agree to have long follow up or refused to use visual analogue score after discharge were excluded. Polypropylene mesh of 15 x 15 cm was used and was cut to size as per operative technique. All patients were evaluated post operatively and during follow up for early postoperative complications, postoperative pain, their return to work and early recurrence.

Eighty three male patients with primary inguinal hernias were divided into two groups: (group A) underwent open polypropylene mesh repair (57 patients), and group B underwent laparoscopic Transabdominal Pre-peritoneal (TAPP) repair (26 patients). All patients received a single dose of intravenous injection of c0-amoxiclav (1.2g) at the time of induction of anesthesia followed by two postoperative doses. The open repair was done using Lichtenstein method, as described by Amid<sup>14,15</sup>.

The laparoscopic technique was a Transabdominal Pre-peritoneal repair (TAPP), where the abdominal cavity is entered, peritoneum over the posterior wall of inguinal canal is incised and Pre-peritoneal space is created to place and fix a large mesh over the inguinal orifices, then the peritoneum is closed over the mesh using hernia mesh fixation device<sup>19,22</sup>.

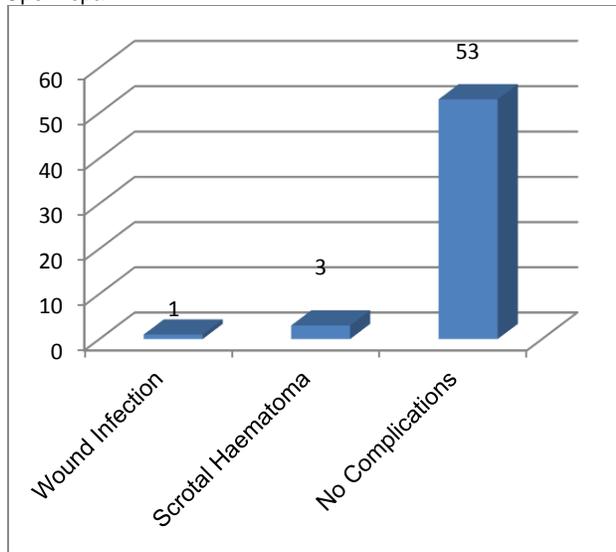
Record was maintained regarding the pain profile, return to routine activities (return to work) and early postoperative complications in the form of superficial surgical site infections, scrotal swelling, testicular atrophy,

neuralgia, mesh infection and recurrence. These parameters were assessed at zero postoperative day, two weeks, three months and finally at six months. All the patients were given standardized postoperative instructions. Patients were followed up post-operation for 1 year either in OPD or by telephonic consultation and evaluated for signs of any early complications and recurrences.

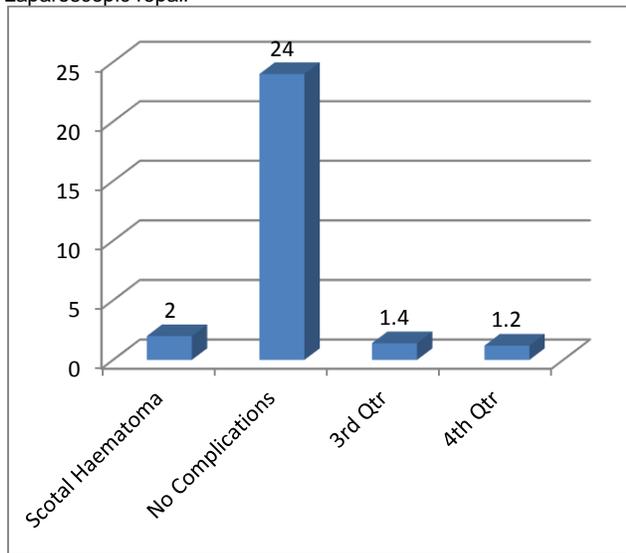
**RESULTS**

Postoperative complications were developed in 4 cases out of 57(7%) in Open Repair i.e., Group A. 3(5.2%) developed hematoma, 1(1.75%) developed wound infection. In the Laparoscopic Group B; complications were developed in only 2 case out of 26 (7.6%) that is scrotal hematoma. No major complications were developed in either group.

Open repair



Laparoscopic repair



Patients in the open-repair group had much higher levels of pain (at rest and during routine activities) than the laparoscopic group during zero postoperative day, 1st post op. day and after two week respectively assessed on the visual-analogue scale. No differences were noted three months after operation.

The comparison between the two groups revealed much shorter time scale among laparoscopic group (median 6 days) than among open repair (14 days) in terms of return to daily activities. No recurrence is seen in either group on 1 year follow up. There was no mortality, no deep vein thrombosis and no respiratory insufficiency happened in either group

**DISCUSSION**

This multicenter trial compared two tension-free, mesh-based hernia-repair techniques: the Lichtenstein repair and the laparoscopic (TAPP) procedure. Multiple parameters have been considered by different authors including recurrence, postoperative pain, postoperative complications, resumption of daily activities, return to work, length of operative time and financial costs. In our study, we have concentrated on postoperative complications, postoperative pain and Return to work and recurrence.

While comparing laparoscopic vs open repair, one of the most important factor is postoperative comfort of the patient. As in our study all most all the studies comparing the two techniques has confirmed less postoperative pain with laparoscopic method. Looking at Cochrane Database Systematic Review from 2003, it is confirmed that the incidence of persisting pain ( $p < 0.0001$ ) and numbness ( $p < 0.0001$ ) is much less in laparoscopic group<sup>[22]</sup>. Similar results are demonstrated in meta-analysis by EU Hernia Trialists Collaboration<sup>23</sup>.

Second parameter used in our study to compare the outcome is return to work. In our study, Patients who underwent a laparoscopic repair returned to their usual activities (work) 8 days sooner than those who underwent an open repair. Among different authors who have used return to work as an outcome in their comparative studies there is general consensus that patients in laparoscopic groups return to work earlier than the open group.<sup>[24,25,26]</sup> This difference is most likely down to earlier discharge and less postoperative complications in laparoscopic group. Liem et al. showed that patients undergoing laparoscopic repair have resumed their normal daily activity 4 days earlier (6 days vs. 10 days;  $p < 0.001$ ), returned to work 7 days earlier (14 days vs. 21 days;  $p < 0.001$ ) and resumed athletic activities 12 days earlier (24 days vs. 36 days;  $p < 0.001$ ) than those who had open repair. The laparoscopic operations led to significantly less pain in the early postoperative period, leading to earlier mobilization and earlier return to routine activities than open mesh repair. This was more obvious in Labor class undergoing laparoscopic operation.

It might be more sensible to consider one's work related activity in deciding about the choice of open vs laparoscopic approach in inguinal hernia repair. As we know Laparoscopic approach is more expensive and also require General anaesthesia but these two parameters

could be compromised for a shorter period of discomfort in patients with a low ASA index and busy job/sport activity<sup>18</sup>.

No recurrence is seen in our study in either group. We do accept that the follow up was shorter (6 months). There is however no consensus about the benefit in terms of recurrence of one group (laparoscopic) over the other (open). McCormack et al in their systematic review in 2003 reported no statistically significant difference in recurrence rates. They found 86 recurrences out of 3138 patients in laparoscopic group and 109 out of 3504 patients in open group with p value of 0.16<sup>22</sup>.

Some studies however suggest higher recurrence rates among the laparoscopic groups. Neumayer et al. in their randomized control trial demonstrated significantly more recurrences among laparoscopic group<sup>27</sup>. More recent studies have suggested no difference between the groups in terms of recurrence rates<sup>28,29</sup>. This is more likely due to increase in surgeon's experience and incorporation of laparoscopic repair in training of junior surgeons.

## CONCLUSION

Based on our experience we strongly recommend Laparoscopic hernia repair over open technique especially in bilateral and recurrent hernias. It is safe approach with obvious advantages over the open approach. We also recommend Laparoscopic approach for primary inguinal hernia and for sliding hernia hernias as in experienced hands they cause much less morbidity.

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