



Laparoscopic Versus Open Mesh Repair for Inguinal Hernia

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ABSTRACT

Objective: To compare transabdominal laparoscopic (TAP) Hernia repair under general anaesthesia with tension-free open mesh hernioplasty under local anaesthesia.

Subjects: 100 patients with a diagnosis of groin hernia, 50 in each group.

Outcome measures: operation time, Time of discharge, postoperative pain, and surgical complications – upto to 3 months followup.

Results: Patients with open hernia repair group (>95%) were discharged on the same day compared to laparoscopic hernia group (90%). The open hernia group patients had less pain initially with the effect of local anaesthesia but subsequently developed pain later. Pain scores after open repair were significantly higher for each day of the first week. Laparoscopic repair patients were more satisfied with surgery at 1st month and 3 months after surgery.

Conclusion: In our study it is concluded that laparoscopic hernia repair has satisfactory short term clinical advantages after discharge compared with open hernia mesh repair, although it was more expensive.

KEYWORDS

Introduction

The wide use of mesh in the groin hernia repair¹, has gained more popularity and has almost replaced the suture repairs such as shouldice or maloney repair². There is, however, a very large debate on relative merits of laparoscopic mesh placement by using two to three small abdominal incisions compared with placement of mesh by using an open approach through a standard groin incision. In this study we have tried to compare these two methods.

Camper, Scarpa, Cooper, Hasselbach and Hunter helped us in understanding the anatomy of the inguinal canal. But until late nineteenth century, it was Edoardo Bassini who proposed his first successful image of inguinal floor and then the surgical techniques started evolving rapidly. Later in late twentieth century the tension-free repair, introduced by Irving Lichtenstein, which caused a dramatic drop in recurrence rates and became the procedure of choice for many years till the introduction of a laparoscopic technique by Ralf Ger in the early 1990s.^{2,4}

Patients and methods

All patients with an inguinal hernia seen at Department of Surgery, SBMC, Chitradurga from Dec 2011 to Dec 2013 were considered in the study.

Inclusion criteria : Patients who were not fit for general anaesthesia, and all patients who were under 18 yrs of age.

Exclusion criteria : recurrent groin hernias.

After obtaining the written consent the Patients were admitted to the unit ward on the morning of their surgery and were assessed by the anaesthesiologist. The operative details were recorded on a standardised form.

All patients were allowed to go home after they were able to do all things by themselves and after passing urine. Those who were unable to were admitted to ward. All Patients were provided with a discharge card at the time of discharge after surgery. Follow up data were obtained at visits in outpatient at 1 week, 1 month, 3 months and 6 months after surgery. Surgical techniques

All laparoscopic hernia repair patients were subjected under general anaesthesia and all The patients having undergoing open repair were under local anaesthesia.

Laparoscopic repair —standard three port technique for Laparoscopic repair was adopted^{4,5,6,7,8}. 15×12 cm polypropylene mesh was placed in a preperitoneal space and was Tackered. The peritoneum was sutured back to avoid direct contact of mesh with peritoneal cavity. Bilateral laparoscopic repair was performed with two separate meshes.

Open repair —in the open technique the mesh was placed onlay and secured after the doing Lichtenstein^{4,9}.

Results

Surgical procedures – operation time It is important to Consider the factors that impact the efficiency of each surgery like the time taken for operation. This factor can determine the feasibility of each procedure at an institution.

In respect to operation length, most evidence in the literature points to a shorter operation duration with open repair^{10,11}. The 2003 Cochrane Database Systematic Review demonstrated that the duration of operation was longer in the laparoscopic groups (weighted mean difference 14.81 min; $p < 0.001$). A meta-analysis in the British Journal of Surgery described a similar increase of 15.2 min with laparoscopic inguinal hernia repair ($p < 0.001$)¹². The difference in the duration of the operation can be partly attributed to operative complications, which although uncommon for both methods, were more frequent in the laparoscopic group for visceral (overall 8/2315 vs. 1/2599) and vascular (overall 7/2498 vs. 5/2758) injuries¹³.

Although it is evident that the laparoscopic approach to inguinal hernia repair is associated with a long learning curve probably due to the increased complexity and technical difficulty of the surgery. The vigours and effective training has along with increased number of cases being performed has significantly reduced the operation time¹⁴.

Table 1. Operation time

Duration of surgery	Unilateral	bilateral
Laparoscopic	50 ± 3.5 mins	66 ± 2 mins
open	48 ± 4 mins	75 ± 4.5 mins
p value	0.009	0.0001

p value <0.05 is statistically significant

In our study The median duration of surgery (“first skin incision” to “last stitch”) was the same for the two procedures. for unilateral repairs (48 minutes) and bilateral repairs (66 minutes). there was no difference in the duration of surgery for open and laparoscopic repair of unilateral hernias (no time reduction; -7% to 6%). Bilateral hernia repairs, however, were performed significantly more quickly laparoscopically (15% time reduction; 4% to 29%).

There were few intraoperative surgical complications in either group. only one patient required conversion from laparoscopy to open as there was dense adhesions. Two patients In the open repair group required sedation as they could not tolerate the procedure under local anaesthesia, No other surgical complications were encountered during operation.

Duration of stay in Hospital

Group (50)	Same day (Percentage)	Day1 (Percentage)	Day 2 (Percentage)	Day 3 (Percentage)	Day 4 (Percentage)	Day 5 (Percentage)
Laparoscopy	40 (80)	5 (10)	2 (4)	1 (2)	1 (2)	1 (2)
Open	47 (0.94)	2 (4)	1 (2)	0	0	0
p value	0.03	0.23	0.55	0	0	0

Table 2. Time of discharge

In open hernia repair group more patients (47), were discharged on the same day of the operation and two on day 1 and one on 2nd day . where as in laparoscopy group 40 patients were

discharged on same day and five on day one and five patients were discharged on 2nd, 3rd, 4th and 5th day respectively. Pain scores (first 4 hours)

The pain scores obtained by visual analogue scale, (Total scores range from 0 to 10, with lower score indicating less pain and a higher score indicating more severe pain (0=“no pain” to 10=“severe pain”)¹⁰, at 1/2, 1, 2, and 4 hours after surgery¹ showed that the number of patients after laparoscopic repair who had no pain was 20/50, 15/50, 18/50, and 14/50, respectively, when compared with 32/50, 34/50, 28/50, and 23/50 for the open group. Analgesics were need in few patients with both the groups after 4 hours. Laparoscopic repair has been associated with less post-operative pain than open repair. A 2003 Cochrane Database Systematic Re-

view demonstrated less persisting pain (overall 290/2101 vs. 459/2399, p < 0.0001), and less persisting numbness (overall 102/1419 vs. 217/1624, p < 0.0001) in the laparoscopic groups¹³. Similarly, another meta-analysis study from the EU Hernia Trialists Collaboration reported decreased post-operative pain with the employment of laparoscopic methods¹³.

Postoperative surgical complications

All the patients had regular follow up from day of discharge till 3 months. there were more patients in the open repair group who had groin or thigh pain(14), genital swelling(3), and local numbness(8). Bruising of groin with swelling was seen in 2 patients in the open repair group. Few patients (3) with the laparoscopic group, had urinary retention. two patients in open hernia group required antibiotic treatment for 5 days as there was wound infection. Whereas none in laparoscopic group. There were 12 patients in open hernia repair group and 3 patients who had groin or thigh pain for more than a 1 month, and 2 of them continued to have till the end of 3rd month.

Table 3. Post operative surgical complications

Surgical complications	Groin/thigh pain (Percentage)	Scrotal/genital swelling (Percentage)	Wound infection (Percentage)	Local numbness (Percentage)	Urinary retention (Percentage)
Laparoscopic	3 (6)	0	0	0	3 (6)
Open	14 (28)	3 (6)	2 (4)	8 (16)	0
p value	0.003	0	0	0	0

p value <0.05 is statistically significant

Discussion

The goal of the study was to compare between laparoscopic repair (transabdominal preperitoneal - TAP) under general anaesthesia with a standard open mesh hernioplasty as described by Lichtenstein¹¹, under local anaesthesia ²⁴. In our study we have demonstrated that for unilateral hernia repairs the laparoscopic operation does not necessarily take longer to perform when compared to open operation but it could be quicker in bilateral hernia repairs. Laparoscopic repair is, however, technically more demanding with a long learning curve and surgeons need specific training in this technique ^{20,21,22,23}.

Few operative complications were seen in either group, Local neurovascular complications was seen in the open repair group, with increased incidence of postoperative numbness and pain, which was less in case of laparoscopic hernia repair. The reduced postoperative pain after laparoscopic repair is probably due to the small incisions used lesser dissection compared to open and this has been reported previously²⁰. There was no recurrent hernias found in follow up of 3 months after surgery. As laparoscopic hernia repair was done under general anesthesia, this may be one of the reason for delayed discharge from hospital ²⁴.

Wound infection was defined as any purulent wound discharge ²⁵, however asymptomatic. Two patients in the open group were treated with antibiotics for wound infection.

Conclusion

Inguinal hernia repair is the most commonly performed general surgery procedures. Currently, both open and laparoscopic repairs are employed in the repair of inguinal hernias and has various advantages and disadvantages. As we have not taken age, co morbid conditions as a criteria in our study, these may vary the outcome of length of stay, wound infection rates.

Evidence in the literature does not point to either of these approaches as the clear superior procedure. Most randomised studies comparing laparoscopy to open repair have confirmed that the laparoscopic approach is associated with lengthier operation time, with a steeper and long learning curve, with reduced post-operative pain and post surgical complications when compared with open repair. As the results of both are some what equivocal, it is likely that surgeon’s preference will continue to dictate the approach employed in hernia repair.

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