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Comparative Analysis of Laparoscopic vs Open Inguinal Hernia Approach for Repair of Recurrent Bilateral Inguinal Hernia

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Abstract: ***Background: Inguinal hernia repair is one of the most frequently performed surgery. The ideal procedure for recurrent bilateral inguinal hernia repair remains controversial. Open Lichtenstein tension - free mesh repair is one of the most preferred open techniques with satisfactory outcomes. Laparoscopic approach in inguinal hernia surgery remains controversial, especially in comparison with open procedures. In this study, we have reported a comparison of laparoscopic total preperitoneal (TAPP) inguinal hernia repair with Lichtenstein tension - free mesh repair . Postoperative pain, operative time, complications like seroma, wound infection, chronic groin pain, and recurrence rate were parameters to evaluate the outcome. Methods: 52 patients were included in the study by randomized prospective sampling. The patients were assigned to one of the two groups: the Lichtenstein group A or the laparoscopic TAPP group B. The procedures were performed by experienced surgeons. Following outcomes were considered for evaluation - operative time, complications like seroma, infection, and chronic groin pain. Results: The postoperative complications like chronic groin pain were observed in 12 patients (42.85%) in Lichtenstein repair group A, which was more as compared to 3 patients (22%) in laparoscopic TAPP repair group B. Seroma formation was seen in 2 patients (7.14%) in Lichtenstein repair group A and 3 patients (10.71%) in laparoscopic TAPP repair group. Conclusion: The laparoscopic method is characterized by less postoperative pain and a quicker return to work. Hence should be preferred for the treatment of recurrent inguinal hernias that are developed after the application of the conventional (non - mesh) methods. However, if there are any contraindications for the laparoscopy approach, Lichtenstein surgical intervention would be highly recommended in such cases.***

Keywords: Inguinal hernia, Laparoscopy, laparoscopic TEP, Lichtensteinmesh repair

1. Introduction

Inguinal hernia is defined as bulging of the contents of the abdomen through a weak defect in the lower abdominal wall. It is one of the most common conditions seen in surgery clinic. Laparoscopic repair and open repair with mesh are the typical treatments for inguinal hernia. However, recurrence, with a rate as high as 33%, poses a significant problem to the effective treatment of inguinalhernia. ([1]) Both surgical approach and the size of the mesh used to repair the primary hernia influence the chance of recurrence. ([2]) If the inguinal hernia reoccurs, recurrent inguinal hernia repair is a demanding procedure to perform and carries a high risk for recurrence and complications. Therefore, increasing the successful rate of hernia repair and reducing the recurrence and complication present a considerable challenge to the management of inguinal hernia.

2. Aims & Objectives

The aim of our prospective randomized trial was the comparison of the results of two methods oftreatment of recurrent inguinal hernia: tension - free repair by the Lichtenstein technique, and one ofthe two most widely used laparoscopic methods—transabdominal preperitoneal (TAPP) repair.

3. Materials & Methods

A total of 52 patients with groin hernia, older than age 20 years and less than 70 years who underwent open or laparoscopic hernia repair between January 2020 and June 2022 in CRGH, UJJAIN were included in this study. The inclusion criteria were a bilateral recurrent inguinal hernia requiring operative treatment and the patient's approval to participate in the study. The exclusion criteria were unilateral hernia, scrotal hernia, patients with incarcerated hernia who received an emergency operation, and patients who underwent another concomitant procedure, a patient's preference foreither operative technique, or a patient's refusal to participate in the study. The patients were assignedto one of the two groups: the Lichtenstein group A or the laparoscopic TAPP group B. The open procedures were performed under epidural/spinal/general anaesthesia, and all the laparoscopic procedures were performed under general anaesthesia. ([3])

4. Results

Table 1: Age Wise Distribution

Age Wise Distribution		
Age (Years)	Lichtenstein	Laparoscopic Repair (TAPP)
21 - 30	1	1
31 - 40	5	2
41 - 50	14	14
51 - 60	6	6
61 - 70	2	1
Total	28	24

As shown in Table 1 - 28 patients were included in the Lichtenstein group A with a mean age of 44.2 ± 5.8 (range 20–70years), and 24 patients were included in the TAPP

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repair group B with a mean age of 45 ± 5 (range 20–70 years).

Table 2: Gender Wise Distribution

Gender Wise Distribution		
	Lichtenstein	Laparoscopic Repair (TAPP)
Male	26	22
Female	02	02

The male to female ratio was 26: 2 and 22: 2 in Lichtenstein and TAPP groups, respectively.

Table 3: Post Operative Complications

Post Operative Complications		
	Lichtenstein	Laparoscopic Repair (TAPP)
Primary Complications		
Infection	01	00
Hematoma	01	01
Seroma	02	03
Urinary Retention	00	04
Recurrence	00	0
Chronic Pain		
6 Months	05	02
12 Months	07	01

The postoperative complications like chronic groin pain were observed in 12 patients (42.85%) in Lichtenstein repair group A, which was more as compared to 3 patients (22%) in TAPP repair group B. Seroma formation was seen in 2 patient (7.14%) in Lichtenstein repair group A and 3 patients (10.71%) in Laparoscopic TAPP repair group B and urinary retention was found in 4 patients (18%) was more in Laparoscopic TAPP. There was no significant difference in the recurrence rate in both groups.

Table 4: Operative Time and Hospital Stay

Operative Time and Hospital Stay		
	Lichtenstein	Laparoscopic Repair (TAPP)
Operative Time	55 + 10 MINS	35 + 10 MINS
Length Of Hospital Stay	03 + 01 DAYS	02 + 01 DAYS

The length of hospital stay was less in Laparoscopic TAPP repair group A (2 ± 01days) as compared to that in Lichtenstein repair group B (2 ± 01 days).

The duration of surgery was less in Laparoscopic TAPP repair group A (35 ± 10 mins) as compared to that in Lichtenstein repair group B (55± 10 mins).

5. Discussion

TAPP approach is defined as "trans - abdominal pre - peritoneal endoscopic inguinal hernia operation in which the approach to the inguinofemoral region is trans - abdominal, and the final placing of the prosthesis is extra - peritoneal". [(4)] The TAPP approach is contraindicated for large scrotal hernia and after radical prostatectomy and also in children. However, it is recommended in young men (aged 18 - 30 years) and women due to the low rate of recurrence. [(5)]

Lichtenstein repair is a tension - free mesh repair. In this method hernia sac is separated from cord structures and then invaginated back into the abdominal cavity. The defect in the wall is then closed by suture, after which the mesh is fixed to bridge the defect. The closure of the defect is not performed under tension, and should approximate only the transversalis fascia. Lichtenstein repair is contraindicated for strangulated hernia and in case of perforated bowel. [(6)]

Different postoperative complications were noted: seroma, hematoma, chronic pain, ischemic orchitis or testicular atrophy, infertility.

1) Seroma is apparently the most frequent complication of endoscopic hernia repair, the only complication more frequent in endoscopic techniques than in open repairs. [(7)]
2) Hematoma is less frequent in endoscopic hernia repair than in open repairs.
3) Chronic pain, defined as persistence of pain 3 months after the operation, is less frequent in endoscopic techniques, and especially after TAPP, than in open hernia repair.
4) Several other complications after endoscopic hernia repair are reported in the literature with an incidence rate of 1% or less: wound / mesh infection, urinary retention, bladder damage, mesh migration, bowel obstruction, ischemic orchitis / testicular atrophy. [(8)]
5) Treatment of recurrent inguinal hernias remains a problematic issue, and it is far more complex than the treatment of primary hernias.
6) This is because of the presentation of latter cases by the combinations of hernias.
7) It is necessary to use tension - free procedures, close all potential hernia entrances, perform complex dissection of the scar tissue, and take into account the intrinsic and age - related connective tissue weakness, and frequently diverse anatomic presentations.
8) Several methods are proposed to solve this problem, including application of open anterior (sutured/mesh - based), open preperitoneal, and endoscopic methods.
9) Although currently there is a consensus that only meshes should be used for recurrent inguinal hernias, there are still debates about the indications of these methods.

6. Conclusion

1) The incision infection rate is much lower with the laparoscopic approach and the length of hospital is much shorter than with open repair, but the laparoscopic approach does carry a longer operative time.
2) The use of mesh during laparoscopic hernia repair is associated with a relative reduction in the risk of hernia recurrence of around 30 - 50%.
3) However, there is no apparent difference in recurrence between laparoscopic and open mesh methods of hernia repair.
4) The data suggests less persisting pain and numbness following laparoscopic repair.
5) Return to usual activities is faster. However, operation times are longer and there appears to be a higher risk of serious complication rate in respect of visceral (especially bladder) and vascular injuries.
6) According to our results it may be concluded that for the treatment of recurrent inguinal hernias that are

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developed after the application of the conventional (non - mesh) methods, the first choice should be given to the laparoscopic method, which is especially appropriate for young, physically active, nonobese patients.

7) This is due to the fact that the laparoscopic method is characterized by less postoperative pain and a quicker return to work.
8) If there are any contraindications for the laparoscopy, Lichtenstein surgical intervention would be highly recommended in such cases.

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