

## Original Article

# Laparoscopic Repair of Inguinal Hernia : Early Experience in A Tertiary Care Hospital

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## Abstract

**Background :** The introduction of laparoscopic techniques has added a new dimension to groin hernia surgery. The laparoscopic repair of inguinal hernia has had a staggering beginning in the surgical arena. Laparoscopic repairs have had to compete with the current gold standard for inguinal hernia repair ie Liechtenstein repair. This study shows the results of laparoscopic inguinal hernia repair in comparison to open repair in a similar group of patients.

**Methods and materials :** This is a prospective study done on 50 male patient of inguinal hernia aging from 18-65years. Among 50 patients selected for study 25 patient underwent open hernioplasty and 25 patient underwent laparoscopic hernioplasty. In the laparoscopic group, in 20 patients (80%) TAPP procedure was done & in 5 patients (20%) TEP procedure was done.

**Aims and Objective :** The aim of this study is to compare the effectiveness and safety of laparoscopic and conventional open repair, in the treatment of inguinal hernia.

**Results :** Average operating time in open procedure was 55±12 minutes, and in laparoscopic procedure 65±10 minutes. Opioid analgesics were required in 36% patient in open group and 16% in laparoscopy group. Within 7 days most of the patient (76%) in laparoscopic group returned to their normal activity, but in the open group 92% patient required more than 7 days to return to normal activity. Post operative complication like hematoma formation (8%), Testicular pain (8%), retention of urine (3%), and mesh infection (4%) was more in open repair than in laparoscopic repair. In Laparoscopic group 1patient (5%) had bladder injury, and 1 patient (5%) developed ileus.

**Conclusion :** Early results of laparoscopic inguinal hernia repair are encouraging, but the chance of organ injury like bladder, or major vessel injury are more. So laparoscopic repair of inguinal hernia should only be practiced with adequate training and experience in laparoscopic surgery.

**Key Words :** Prospective, Laparoscopic, Hernioplasty, TEP, TAPP.

## Introduction :

Repair of Hernia in the groin (an inguinal hernia) is one of the most frequently performed operations in general surgery. The standard method for inguinal hernia repair had changed little over a hundred years until the introduction of synthetic mesh. This mesh can be placed by either using an open approach or by using a minimal access laparoscopic technique.

Only two laparoscopic repairs have proven to be viable with early results comparable or superior to the Liechtenstein repair. These repairs are Transabdominal pre-peritoneal repair (TAPP) and totally extra peritoneal repair (TEP)<sup>1</sup>

The study is designed to compare the merits and demerits of open mesh repair and laparoscopic repair, taking into account the operation time, possible chance of per operative

complication, post operative pain, total hospital stay, return to normal activity, patient acceptance, post operative complication & chance of recurrence.

## Aims & Objective :

The aim of this study is to compare the effectiveness and safety of laparoscopic inguinal hernia repair with the current gold standard lichtenstein tension free open repair, in the treatment of inguinal hernia. Comparison was done on the basis of following parameters- Operating time, Per operative complication, Post operative pain & amount of Analgesia required, post operative recovery time, Hospital stay, post operative complication, Recurrence.

## Methods & Materials :

It is a prospective study done in Department of Surgery BIRDEM Hospital. Study period was from October 2007 to February 2009. Selection criteria included unilateral medium size direct hernia, Male patient, Age- 18-65 years. Exclusion criteria included obstructed hernia, strangulated hernia, Very large complete hernia, Obese patient BMI> 30, Patient Unfit for G/A, and extreme of age. 50 cases of inguinal hernia were selected during this one and half year time who suits the criteria and voluntarily consented to take part in the study. Every alternate patient was attributed to open and laparoscopy group as per their date of admission. Data was collected by open ended questionnaire. In all cases a standard protocol according to Data sheet was maintained.

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**Results :**

50 patients were selected for study, 25 patient underwent open hernioplasty and 25 patient underwent laparoscopic hernioplasty. In the laparoscopic group, in 20 patients (80%) TAPP procedure was done & in 5 patients (20%) TEP procedure was done.

In the study group all selected patients had medium sized uncomplicated direct inguinal hernia in both open and laparoscopic group.

64% patients in open group and 72% in Laparoscopic group were Diabetic. In open group 40% patients had controlled cardiac disease, in laparoscopic group 28% had controlled cardiac disease. The rest of the patient in both group (16% in open & 24% in laparoscopic) did not have any co morbid condition.

Average operating time in open procedure was 55±12(SD) minutes, and in laparoscopic procedure 65±10(SD) minutes.

For post operative pain relief 36% patient in open group required opioid analgesics the remaining 64% were controlled by NSAID, compared to this in laparoscopic group 84% patients were maintained pain free with NSAID and only 16% required opioid analgesic.

88% patients having laparoscopic repair were discharged from hospital in 1-3 days, 8% discharged in 4-7 days, and 4% (one patient) had to stay more than 7 days. Compared to that in open repair 64% patients stayed in hospital for 4-7 days, 28% for more than 7 days and only 8% were discharged within 3<sup>rd</sup> post-operative day.

Within 7 days most of the patient (76%) in laparoscopic group returned to their normal activity, but in the open group 92% patient required more than 7 days to return to normal activity.

In the laparoscopic group more or less all patient were satisfied with the cosmetic outcome of operation, on the other hand a significant portion (36%) of patient in open group was not satisfied with there open procedure scar.

Postoperatively in the open group 4% patient developed seroma, 8% haematoma 8% testicular pain & swelling, 3% acute urinary retention, 16% wound infection, 4% mesh infection & 8% cases recurrence after 6 months.

In laparoscopic group 4% patient developed seroma, 4% haematoma, 4% port infection, 20% chest infection, 4% recurrence after 6 months.

**Table-1: Surgical procedure in the studied subject**

Surgical procedure	No. of patients	Percentage (%)
Open hernioplasty	25	100
Laparoscopic hernioplasty	25	100
TAPP	20	80
TEP	5	20

**Table-2: Clinical presentation of the studied patients**

Co-morbidity	Open repair n=25	Lap.Repair n=25
Diabetes	16 (64%)	18 (24%)
Cardiac disease	10 (40%)	7 (28%)
No Comorbidity	4 (16%)	6 (24%)

**Table-3: Out come of surgery in studied subject**

Variable	Open repair n=25 (100%)	Lap. Repair n=25 (100%)
Operative time (mins.)	55 ±12	65 ± 10
Analgesics		
NSAIDS	16 (64%)	21 (84%)
Opioids	9 (36%)	4 (16%)
Hospital stay		
1-3 days	2(8%)	22(88%)
4- 7 days	16(64%)	2(8%)
> 7 days	7(28%)	1(4%)
Return to normal activities		
< 7 days	2(8%)	19(76%)
> 7 days	23(92%)	6(24%)
Cosmetic outcome		
Highly satisfied	6(24%)	18(72%)
Satisfied	10(40%)	7(28%)
Not satisfied	9(36%)	0(0%)

**Table-4: Complications of surgery in studied subjects**

Variable	Open repair n=25 (100%)	Lap. Repair n=25 (100%)
Seroma	1(4%)	1(4%)
Hematoma	2(8%)	1(4%)
Testicular pain & swelling	2(8%)	0(0%)
Urinary retention	3(12%)	0(0%)
Wound infection	4(16%)	1(4%)
Mesh infection	1(4%)	0(0%)
Chest infection	0(0%)	5(20%)
Recurrence	2(8%)	1(4%)

**Table-5: Complications of laparoscopic procedure**

Variable	TAPP repair n= 20	TEP repair n= 5
Seroma	1(5%)	0(0%)
Hematoma	0(0%)	1(20%)
Port infection	1(5%)	0(0%)
Chest infection	3(15%)	2(40%)
Bowel injury	0(0%)	0(0%)
Bladder injury	1(5%)	0(0%)
Omental injury	0(0%)	0(0%)
Ileus	1(5%)	0(0%)
Recurrence	0(0%)	1(20%)

**Discussion :**

Systematic review of randomized controlled trials comparing laparoscopic repair with open techniques has shown benefits of the minimally invasive techniques to be ; less post operative pain, less incidence of post operative complications like haematoma, wound infection, urinary retention, or mesh infection and early recovery<sup>(2)</sup>.

VA trial group<sup>(3)</sup>, recurrence was found to be 10.1% in the laparoscopic group, 4.1% in open group, in the repair of primary inguinal hernia. MRC<sup>4</sup> laparoscopic hernia trial group found 1.9% recurrence rate in laparoscopic group, and 0% recurrence in open group after one year.

Champault et al<sup>5</sup> found recurrence rate of 6% in laparoscopic group versus 3% in open group. In our series we found 4%(1 patient) recurrence rate in laparoscopic group which is consistent with the other international studies.

Several studies like VA trial, MRC hernia trial group and in NICE paper<sup>(6)</sup> have shown that incidence of complications (like vascular & visceral injury) is higher in laparoscopic group but complications can be reduced by development of expertise & technique in laparoscopic procedure. In our series incidence of complication was lower in laparoscopic group than open group.

Different international studies shows laparoscopic groin hernia repair takes longer time than open repair, our study also shows similar trend.

First author	Laparoscopic	open
McCormac <sup>(7)</sup>	14.8 minute longer	
Memon <sup>(8)</sup>	15.2 minute longer	
MRC trial group <sup>4</sup>	58.4 minute	43.3minute
Bringman <sup>(9)</sup>	50 minute	45 minute
Picchio <sup>(10)</sup>	49.6 minute	33.9 minute
Chung <sup>(11)</sup>	Laparoscopic longer in all group	
Wright <sup>(12)</sup>	58 minutes	45 minute
Our Series	65 minutes	55 minutes

Most randomised trials assessing postoperative pain between open and laparoscopic repairs report less pain in the laparoscopic group<sup>(13, 14, 15, 16, 17)</sup>. Many cases of our series required less analgesics in laparoscopic group.

However Laparoscopic groin hernia repair is a more complex procedure with a steeper learning curve than open repair . It requires different skills and a familiarity with preperitoneal anatomy. So taking into account the outcome in our series and comparing it to other authors it can be concluded that laparoscopic groin hernia repair should be conducted by a surgeon who has specialized training in performing the procedure.

**Conclusion & recommendation :**

Laparoscopic hernia repair is safe and provide less postoperative morbidity in experienced hands. We also found substantial advantages for the laparoscopic approach in return to work and to full recovery. But all cases of groin hernia are not suitable for laparoscopic repair as in irreducible and strangulated hernia, sliding hernia and patients who are not suitable for general anaesthesia. So open mesh repair of inguinal hernia definitely has and will have its role in treatment of inguinal hernia in future.

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