

Original Research Article


# A comprehensive study on complications of laparoscopic inguinal hernia repair

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## Abstract

**Background:** Laparoscopic hernia repair has been in use for some time now and has been found to cause lesser postoperative pain and earlier recovery when compared with open methods of hernia repair although they are associated with higher costs and a steep learning curve. The various complications associated with laparoscopic hernia repair needs to be studied and compared with open methods.

**Aim:** The aim of this study was to understand the intraoperative and postoperative complications of laparoscopic inguinal hernia repair and formulate methods to prevent them.

**Materials and methods:** This is an observational study consisting of 50 patients who underwent laparoscopic inguinal hernia repair (TEP, TAPP) in our institution from September 2014 to March 2016. Intra operative and postoperative complications were documented. The following factors were considered: Type of hernia, Type of hernia vs complications, Operation time, Operation time vs complications, Post-operative hospital stay.

**Results:** The mean operative time was 66.8 min. There were no major complications. There were 4 minor complications namely – surgical emphysema, groin pain, shoulder pain, scrotal pain. Surgical emphysema (21 patients, 42%) depends upon operation time. Groin pain (11 patients – 22% all are indirect) depends upon type of hernia mainly in indirect type, because of the dissection carried out for separating indirect sac. Shoulder pain (6 patients, 12%) is directly proportional to the time of surgery (all were >90 min) probably due to retention of CO<sub>2</sub> which lead to diaphragmatic indentation. Scrotal edema (6 patients, 12%) depends upon the type of hernia as it occurred only in indirect hernias due to the dissection for indirect sac. All these minor complications subsided with supportive care without any surgical intervention. Mean postoperative hospital stay - 2.6 days. Laparoscopic hernia repair has a steep learning curve and time consuming initially

**Conclusion:** Laparoscopic hernia repair has a steep learning curve and fearsome complications but once mastered, it is a safe and effective technique with early postoperative recovery. In our study we encountered only minor complications all those complications were managed conservatively.

## Key words

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Laparoscopic repair, Hernia, Complications, TEP, TAPP.

## Introduction

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Hernios means budding in greek. Earliest written records dealing with inguinal hernia dated to 1500 BC. After so many ups and downs by the first decade of the 19<sup>th</sup> century, giants like Astley cooper, Franz Hesselbach and Antonio Scarpa facilitated the development of modern hernia repairs. Later Ger and his colleagues revolutionized the concept of open repair into so called laparoscopic repair.

Of all abdominal hernias 75% occur in inguinal region. Groin hernia repairs can be performed conventionally i.e., open repair or by Laparoscopic techniques.

Laparoscopic inguinal herniorrhaphy is technically more challenging than tension free repair, thus has a long learning curve but it underwent numerous modifications after its invention like Trans abdominal pre-peritoneal repair(TAPP), Totally extraperitoneal repair (TEP) but these revolutionary concepts did not drastically reduce the complications.

## Materials and methods

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This study consisted of 50 patients who were operated for inguinal hernia laparoscopically (TAPP, TEP) whose complications were documented both intraoperatively and postoperatively in our hospital from September 2014 to March 2016.

### Inclusion criteria

- Patients who were diagnosed as having inguinal hernias(unilateral, bilateral, recurrent)
- Patients who were eligible for giving written valid consent(>18 years)

### Exclusion criteria

- Patients who require emergency exploration (strangulated/obstructed hernias)
- Other hernias like femoral, ventral wall hernias
- Patients who were not willing for follow up

### Methodology

- Patients who were admitted in out hospital with inguinal hernia from September 2014 to March 2016
- A detailed history taking and clinical examination were done
- Thorough preoperative evaluation was done including cardiac evaluation and USG of abdomen
- Explained about the laparoscopic procedure and its complications with written consent
- All the patients were subjected to TEP, one patient TEP was converted to TAPP
- Adequate post op care given including NPO till anesthetic effects weaned off, parenteral antibiotics (3<sup>rd</sup> generation cephalosporins)
- Patients were discharged once free of complications usually on third postoperative day
- Postoperative complications were documented
- Advised to come for suture removal
- All the patients were kept on follow up for a minimum period of 6 months

## Results

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This observational study was done in patients admitted in department of general surgery,

Stanley medical college from September 2014 to March 2016.

**Table - 1** documents the age distribution of the patients taken for the study. **Table - 2** shows the types of inguinal hernias included in the study. **Table - 3** shows the number of patients with subcutaneous emphysema and their percentage for each type of hernia. **Table - 4** shows the relative percentage of subcutaneous emphysema for each type of hernia. **Table - 5** shows the number of patients with groin pain and their percentage for each type of hernia. **Table - 6** shows the relative percentage of groin pain for each type of hernia. **Table - 7** show the number of patients with shoulder pain and their percentage for each type of hernia. **Table - 8** shows the relative percentage of shoulder pain for each type of hernia. **Table - 9** shows the number of patients with scrotal edema and their percentage for each type of hernia. **Table - 10** shows the relative percentage of scrotal edema for each type of hernia. **Graph - 1** shows the operating time for each type of hernia.

**Table - 1:** Age Distribution.

Age Group (Years)	Total
<20	1
21-30	7
31-40	9
41-50	11
51-60	14
61-70	7
>71	1

**Table - 2:** Types of Inguinal Hernia.

Type of Hernia	No. of patients	%
LDIH	1	2%
LIIH	10	20%
LRIH	1	2%
RDIH	4	8%
RIIH	19	38%
RRIH	1	2%
BDIH	7	14%
BIIH	7	14%

**Table - 3:** Subcutaneous Emphysema.

Type of Hernia	No. of patients with Subcutaneous Emphysema	%
IIH	13	26%
DIH	0	0
RIH	0	0
BIIH	4	8%
BDIH	4	8%

**Table - 4:** Type of Hernia vs Subcutaneous emphysema.

Type of Hernia	No. of patients with subcutaneous emphysema	Total patients	%
IIH	13	29	44.82%
DIH	0	5	0
RIH	0	2	0
BIIH	4	7	57.14%
BDIH	4	7	57.14%

**Table - 5:** Groin pain.

Type of hernia	No. of patients with groin pain	%
IIH	7	14%
DIH	0	0
BDIH	1	2%
BIIH	3	6%
RIH	0	0

**Table - 6:** Groin pain vs type of hernia.

Type of Hernia	No. of patients with groin pain	Total patients	%
IIH	7	29	24.1%
DIH	0	5	0
RIH	0	2	0
BIIH	1	7	14.2%
BDIH	3	7	42.8%

## Discussion

This observational study of 50 patients patient who underwent laparoscopic inguinal hernia

repair (TEP and TAPP) in the department of general surgery, Stanley medical college, Chennai from September 2014 to March 2016.

**Table - 7:** Shoulder pain.

Type of Hernia	No. of patients with shoulder pain	%
IIH	5	10%
DIH	0	0
RIH	0	0
BDIH	1	2%
BIIH	0	0

**Table - 8:** Shoulder pain vs type of hernia.

Type of Hernia	No. of patients with shoulder pain	Total patients	%
IIH	5	29	17.2%
DIH	0	5	0
RIH	0	2	0
BDIH	1	7	14.2%
BIIH	0	7	0

**Table - 9:** Scrotal edema.

Type of Hernia	No. of patients with scrotal edema	%
IIH	2	4%
DIH	0	0
RIH	0	0
BDIH	0	0
BIIH	4	8%

**Table - 10:** Scrotal edema vs type of hernia.

Type of Hernia	No. of patients with scrotal edema	Total patients	%
IIH	2	29	6.9%
DIH	0	5	0
RIH	0	2	0
BDIH	0	7	0
BIIH	4	7	57.14%

### Age and sex incidence

All the patients were male and age group with highest incidence was the 51-60 group followed by the 41-50 years group.

### Complication rates

There were no major complications and the percentage of patients with minor complications was 46%.

In a study by Yassar Hamaza, et al. [1] the complication rate was 8%. In a study by Felix, et al. [2] the complication rate was 9% and in a study by Cohen, et al. [3] the complication rate was 13.5%.

All patients were discharged on the 3<sup>rd</sup> postoperative day in our study while in studies by Yassar Hamaza, et al. [1] and Palanivelu, et al. [4] patients were discharged on POD 1.

The minor complications were

- Subcutaneous emphysema
- Early transient groin pain
- Right shoulder pain
- Scrotal pain

### Subcutaneous emphysema

Of the 50 patients, 21 developed surgical emphysema. Indirect inguinal hernias and bilateral hernias had the highest incidence of subcutaneous emphysema. This was mainly due to dissection in indirect hernias and the increased operative time in bilateral hernia. All cases of subcutaneous emphysema regressed by the 2<sup>nd</sup> postoperative day.

### Early transient groin pain

Of the 50 patients, 11 developed groin pain. This complication was mostly seen in indirect hernias (bilateral and unilateral) due to the dissection involved. This complication subsided with analgesics within the first postoperative week.

### Shoulder pain

Of the 50 patients, 6 developed shoulder pain. This complication was mostly seen in indirect

hernias which had a longer duration of surgery leading to CO<sub>2</sub> retention and diaphragmatic irritation leading to referred pain to the right shoulder.

### Scrotal edema

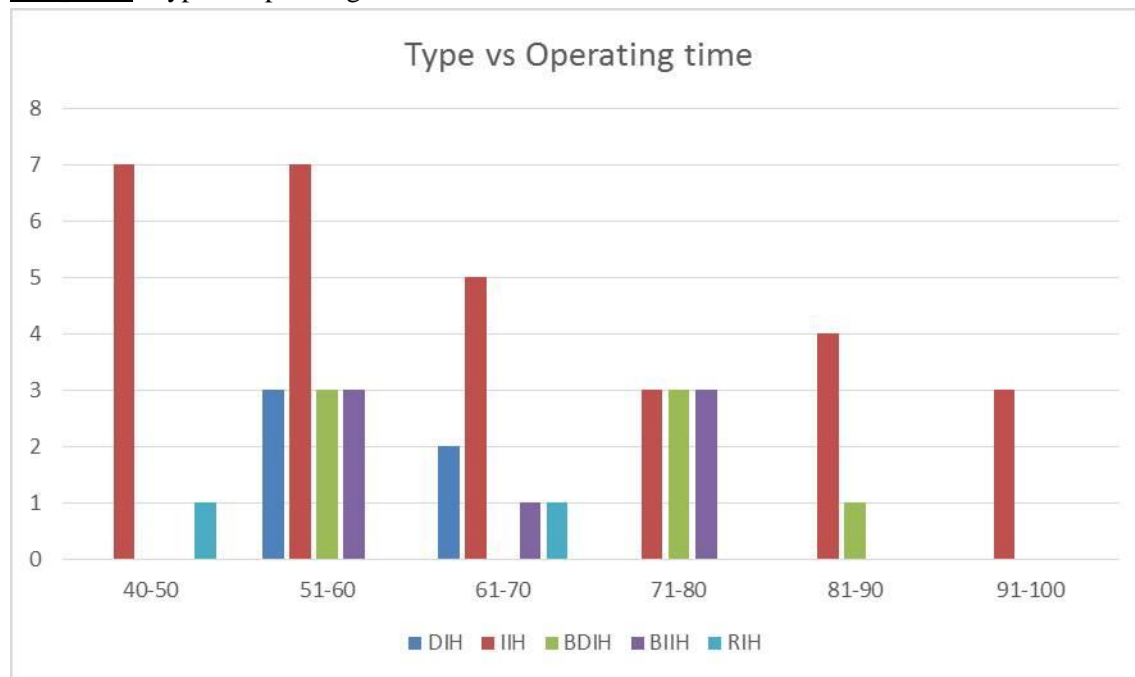
Of the 50 patients, 6 developed scrotal edema. This complication was only seen in indirect

hernias due to dissection of the sac. Scrotal edema subsided on the 3<sup>rd</sup> postoperative day.

### Operative time

The mean duration of surgery was 66.8 minutes in our study. Indirect inguinal hernias and bilateral hernias took longer in general as shown in **Graph - 1**.

**Graph - 1:** Type vs operating time.



### Conclusion

Laparoscopic hernia repair has a steep learning curve and fearsome complications but once mastered, it is the safest technique with reduced postoperative complications and early postoperative recovery. In our study, we encountered only minor complications which were managed conservatively. The mean operative time was comparable to other studies while the complications though minor were higher in our study which may be attributed to the experience of the surgeon. Thus, laparoscopic hernia repair once mastered is a better alternative to open hernioplasty in lieu of postoperative morbidity.

### References

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