

# Non-Fixation Versus Fixation of Mesh in Totally Extraperitoneal Repair of Inguinal Hernia

Punit Kumar 

Assistant Professor, Department of General Surgery, SRMSIMS, Bareilly, Uttar Pradesh, India .

## Abstract

**Background :** To compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia. **Subjects and Methods:** One hundred twenty adult patients age ranged 18-56 years of aged with inguinal hernia were selected among those visiting the general surgery department. Patients were divided randomly into 2 groups and each group had 60 subjects. Group I was non-fixation and group II was fixation group. Parameters such as the operative times, immediate post-op pain, incidence of urinary retention, duration of hospital stay, days taken to return to activity, recurrence rates and chronic groin pain was recorded. Post-operatively, injection paracetamol 1 g 8 hourly was given to all patients on the day of surgery for analgesia. Oral fluids were allowed 6 hours post-operative and progressed to normal diet the next day. Visual analog scale was used to assess pain in the post-op period. **Results:** ASA grade I was seen among 42 in group I and 38 in group II and II in 18 in group I and 22 in group II. Duration of symptoms was primary symptoms seen among 56 and 52 and recurrent hernia in 4 and 8 in group I and II respectively. Side was unilateral seen in 37 and 40 in group I and II and bilateral in 23 and 20 in group I and II respectively. Operative time (mins) was 42.6 and 35.2, conversion was seen among 3 and 1, injury to viscera in 1 and 2, injury to vas deferens in 1 and 1, injury to testicular vessels in 2 and 1, injury to major vessels in 3 and 4, injury to inferior epigastric vessels was seen in 1 and extensive surgical emphysema in 1 and 1 in group I and group II respectively. A significant difference was observed ( $P < 0.05$ ) (Table II, Graph II). **Conclusion:** Decreased operative times, lesser post-operative pain, and decreased costs are advantages of non-fixation inguinal repair.

**Keywords:** Inguinal Repair, Transabdominal Preperitoneal Repair, Totally Extraperitoneal Repair.

**Corresponding Author:** Punit Kumar, Assistant Professor, Department of General Surgery, SRMSIMS, Bareilly, Uttar Pradesh, India .  
E-mail: [dr.punitkumar16@gmail.com](mailto:dr.punitkumar16@gmail.com)

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## Introduction

Inguinal hernia is the most common type of hernia. The incidence is approximately 25% in males and 2% in females. There are numerous procedures for inguinal hernia repair and even further variations in techniques.<sup>[1]</sup> Two laparoscopic techniques have become the most common procedures for the repair of these hernias: transabdominal preperitoneal repair (TAPP) and totally extraperitoneal (TEP) repair.<sup>[2]</sup> Of these two, TEP has emerged as the favored technique. Laparoscopic TEP hernia repair has gained ground, in recent years, and is preferred over TAPP, as it is less invasive and is associated with fewer complications such as port-site hernias and visceral injuries.<sup>[3]</sup>

Surgeons have previously fixed the mesh using laparoscopic stapling devices, tacks, and suturing techniques, and recently adhesives.<sup>[4]</sup> Fixation of mesh is done to prevent migration of mesh resulting in recurrence. However, fixing the mesh increases the cost, duration of procedure, hospital stay, and

complications like postoperative pain.<sup>[5]</sup>

Laparoscopic inguinal hernia surgery (LIHS) is the recommended procedure for bilateral and recurrent inguinal hernias (IH) while it is one of the options dealing with a unilateral IH.<sup>[6]</sup> Laparoscopic approach to inguinal hernia surgery started in the 1980s. Mesh fixation is usually done by laparoscopic tackers and multiple tacks were being used.<sup>[7]</sup> Subsequently, in an attempt to reduce CGP, the number of tacks has now been reduce to two, one medially over the coopers ligament and another laterally at the level of anterior superior iliac spine.<sup>[8]</sup> We performed present study with the aim to compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia.

## Subjects and Methods

A total of one hundred twenty adult patients age ranged 18-56 years of either aged with inguinal hernia were selected among those visiting the general surgery department. All were

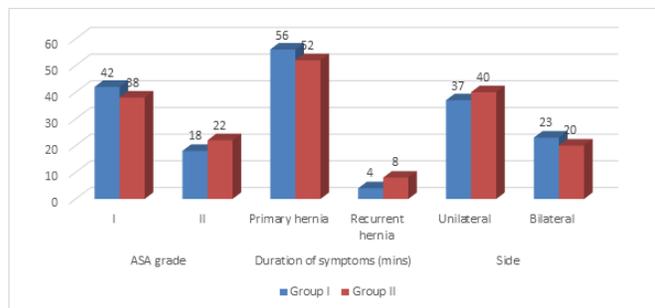
informed regarding the study and their written consent was obtained. Ethical clearance was also obtained from ethical review committee.

Data related to patients was recorded. Patients were divided randomly into 2 groups and each group had 60 subjects. Group I was non-fixation and group II was fixation group. Parameters such as the operative times, immediate post-op pain, incidence of urinary retention, duration of hospital stay, days taken to return to activity, recurrence rates and chronic groin pain was recorded.

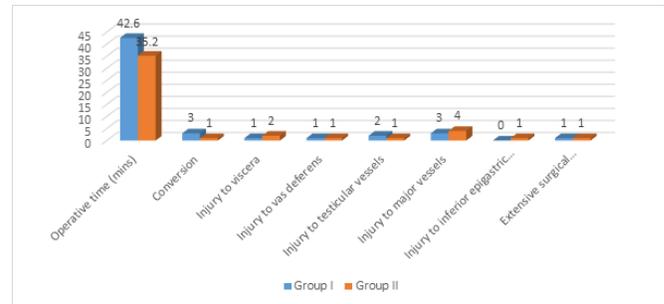
Post-operatively, injection paracetamol 1 g 8 hourly was given to all patients on the day of surgery for analgesia. Oral fluids were allowed 6 hours post-operative and progressed to normal diet the next day. Visual analog scale was used to assess pain in the post-op period. Results of the study was compiled and assessed statistically using Mann Whitney U test and level of significance was set below 0.05.

## Results

ASA grade I was seen among 42 in group I and 38 in group II and II in 18 in group I and 22 in group II. Duration of symptoms was primary symptoms seen among 56 and 52 and recurrent hernia in 4 and 8 in group I and II respectively. Side was unilateral seen in 37 and 40 in group I and II and bilateral in 23 and 20 in group I and II respectively. A significant difference was seen ( $P < 0.05$ ).



Operative time (mins) was 42.6 and 35.2, conversion was seen among 3 and 1, injury to viscera in 1 and 2, injury to vas deferens in 1 and 1, injury to testicular vessels in 2 and 1, injury to major vessels in 3 and 4, injury to inferior epigastric vessels was seen in 1 and extensive surgical emphysema in 1 and 1 in group I and group II respectively. A significant difference was observed ( $P < 0.05$ ) [Table 2, Figure 2].



## Discussion

Laparoscopic hernioplasty has been described according to the principles of the Stoppa technique in an attempt to prevent any kind of tension in the hernia repair and amply cover the myopectineal space with minimal surgical aggression.<sup>[9,10]</sup> However, is it necessary to fix the mesh in the extraperitoneal space to prevent it from slipping? The question is important because mesh fixation has been related to early recurrence, postoperative pain, and hospital costs.<sup>[11]</sup> Some authors have tried to tackle the problem with retrospective analyses and prospective series without or with control groups.<sup>[12]</sup> Today, the major issue with IH surgery is the incidence of CGP along with recurrence rates. During LIHS, mesh fixation is done routinely in order to prevent mesh migration which may lead to uncovering of the defect and, consequently, increased recurrences.<sup>[13]</sup> It has been shown that mesh fixation with tackers/sutures can lead to increased incidences of both acute and chronic groin pain. Since CGP majorly affects the QOL of patients undergoing IH surgery, concerns have been drawn towards mesh fixation. However, the opposing view is that if mesh fixation was not done, it would lead to increased recurrences.<sup>[14]</sup> We performed present study with the aim to compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia.

In our study, ASA grade I was seen among 42 in group I and 38 in group II and II in 18 in group I and 22 in group II. Duration of symptoms was primary symptoms seen among 56 and 52 and recurrent hernia in 4 and 8 in group I and II respectively. Side was unilateral seen in 37 and 40 in group I and II and bilateral in 23 and 20 in group I and II respectively. Mohamed et al,<sup>[15]</sup> included 40 patients with inguinal hernia who underwent TEP inguinal hernia repair. They were randomized into two equal groups (20 cases): group A: with mesh fixation and group B: without mesh fixation. All patients of both groups were males. Group A had a longer operative time than group B ( $P=0.018$ ). There was no significant difference in postoperative pain in both groups ( $P=0.6$ ). One (5%) patient in each group had an accidental peritoneal tear. No cases needed conversion. Drain was inserted in one (5%) patient in each group ( $P=1$ ). No cases

**Table 1: Patient demographics**

| Parameters           | Variables        | Group I | Group II | P value |
|----------------------|------------------|---------|----------|---------|
| ASA grade            | I                | 42      | 38       | >0.05   |
|                      | II               | 18      | 22       |         |
| Duration of symptoms | Primary hernia   | 56      | 52       | <0.05   |
|                      | Recurrent hernia | 4       | 8        |         |
| Side                 | Unilateral       | 37      | 40       | <0.05   |
|                      | Bilateral        | 23      | 20       |         |

**Table 2: Intra-operative parameters**

| Variables                             | Group I | Group II | P value |
|---------------------------------------|---------|----------|---------|
| Operative time (mins)                 | 42.6    | 35.2     | <0.05   |
| Conversion                            | 3       | 1        | <0.05   |
| Injury to viscera                     | 1       | 2        | >0.05   |
| Injury to vas deferens                | 1       | 1        |         |
| Injury to testicular vessels          | 2       | 1        |         |
| Injury to major vessels               | 3       | 4        |         |
| Injury to inferior epigastric vessels | 0       | 1        |         |
| Extensive surgical emphysema          | 1       | 1        |         |

had seroma or hematoma formation or chronic groin pain in both groups. One (5% each) patient in each group had scrotal edema, and postoperative surgical emphysema was present in two (10%) patients in each group. No cases of postoperative wound infection or mesh infection were seen in both groups. There was a recurrence in one patient in group B (after 1 week postoperative). The mean hospital stay is statistically insignificant in between both groups. The mean total cost is much higher in group A than group B ( $P < 0.001$ ). On comparing mesh fixation or non-fixation in laparoscopic TEP repair for inguinal hernia, they recommend the technique without mesh fixation as there were no differences in the complications, hospital stay, or recurrence, but longer operative time and higher cost were seen in mesh fixation technique.

We observed that Operative time (mins) was 42.6 and 35.2, conversion was seen among 3 and 1, injury to viscera in 1 and 2, injury to vas deferens in 1 and 1, injury to testicular vessels in 2 and 1, injury to major vessels in 3 and 4, injury to inferior epigastric vessels was seen in 1 and extensive surgical emphysema in 1 and 1 in group I and group II respectively. Kumar et al.<sup>[16]</sup> in their study 171 repairs was done on 122 patients (fixation 59 and non-fixation 112) during a period of 4 years with an endeavor to complete a minimum of 1 year of clinical follow-up. The primary objective was to assess the recurrence rates and CGP and the secondary objective was to assess operative times, immediate post-op pain, incidence of urinary retention, duration of hospital stay, days taken to return to activity, and cost. The mean operative times for unilateral IH for the fixation and non-fixation groups were  $41.8 \pm 11.4$  and

$35.9 \pm 9.7$  min, respectively ( $p = 0.021$ ), whereas for bilateral were  $66.2 \pm 15.6$  and  $55.3 \pm 14.2$  min, respectively ( $p = 0.018$ ). The mean pain score was  $3.44 \pm 1.2$  versus  $3.01 \pm 1.0$ ; ( $p = 0.037$ ) in the two groups, respectively. At a mean follow-up of  $33.2 \pm 17.0$  and  $18.7 \pm 6.2$  months, the incidence of CGP was 02 (3.4%) and 3 (2.7%) ( $p = 1.000$ ) and recurrences were 02 (3.4%) in the two groups, respectively ( $p = 0.118$ ). Non-fixation of mesh in TEP does not lead to increased recurrence though it does not decrease the incidence of chronic groin pain. Collateral advantage would be decreased operative times, lesser post-operative pain, and decreased costs.

### Conclusion

Decreased operative times, lesser post-operative pain, and decreased costs are advantages of non- fixation inguinal repair.

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