laparoscopic TAPP repair of indirect inguinal hernia. This is a retrospective study to ascertain the long-term results of this technique in terms of recurrence and chronic groin pain.

Methods: 79 cases of indirect inguinal hernia operated by laparoscopic transabdominal preperitoneal approach were included. Standard surgical technique was applied, wherein no form of mesh fixation was used. All cases were retrospectively evaluated for recurrence, other complications and CGP. The mean follow-up duration was 3.3 years, (range: 1-7 years)

Results: Of the 79 cases, none developed recurrence, other complications or moderate/severe CGP. 2 cases (2.5%) had mild CGP (VAS 2 and 3).

Discussion: Application of tacker or suture for mesh fixation plays a central role in many of the causes of CGP. Hence it can be inferred that chance of CGP is likely to decrease if mesh fixation is avoided. The concern of recurrence with this approach can be negated by the findings of this study and others, which suggest that recurrence rate does not increase if mesh is not fixed in laparoscopic TAPP done for indirect inguinal hernia. By Avoiding the use of a tacker, a significant reduction in cost of the materials occurs.

Conclusion: Based on our findings in this study, we can conclude that avoidance of mesh fixation in laparoscopic transabdominal preperitoneal hernia repair of indirect inguinal hernia does not increase the risk of recurrence, and may reduce chronic groin pain, and clearly reduces cost of the materials needed for the surgery. Hence, omission of mesh fixation can be safely tried in TAPP done for indirect inguinal hernia without an increase in the risk of recurrence.

KEYWORDS
Inguinal hernia, laparoscopic, transabdominal pre-peritoneal, repair, mesh fixation, non-fixation, tacker, chronic groin pain, recurrence.
enthusiastically, and accurately to the best of their ability.

Of the 79 cases, none reported recurrence, or any other complication. Most of the patients did not require any extended follow-up postoperatively. None of the patients had to take long term pain medications, or sought further medical care from other practitioners or institutes for the operated hernia.

Of the 9 cases invited to the hospital, the detailed evaluation confirmed the telephonic findings, and gave an opportunity to assess the VAS. No cases reported moderate or severe chronic groin pain. 2 cases (2.5%) reported mild chronic groin pain – one had a VAS of 3 at 27 months of follow up, and the other had a VAS of 2 at 29 months of follow up.

2 cases had persistent foreign body sensation – one at 2 years, and other at 4 years of surgery.

<table>
<thead>
<tr>
<th></th>
<th>Number of cases</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Recurrence</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other complications</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Chronic groin pain (mild)</td>
<td>2</td>
<td>2.5%</td>
</tr>
<tr>
<td>Foreign body sensation</td>
<td>2</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

4. DISCUSSION

The major causes of CGP include:

- Nociceptive pain (somatic) due to ligamentous or muscular trauma during dissection or because of trauma of tacker or suture.
- Neuropathic pain due to Local nerve damage or entrapment: Nerves at greater risk of entrapment in laparoscopic techniques are the genitofemoral and lateral femoral cutaneous nerves, as compared to the ilioinguinal and iliohypogastric nerves in anterior repairs.
- Visceral pain due to sympathetic plexus injury.
- Osteitis pubis due to application of tacker or suture directly on the periosteum of the pubic tubercle.[2]

As evident, a high proportion of the etiological factors are directly related to fixation of the mesh with either a tacker or suture. Hence, clearly it can be inferred that avoidance of fixing the mesh altogether would eliminate majority of the causative factors, leading to a lower incidence of CGP. This is reflected in the findings of large studies done for fibrin glue fixation, a technique that avoids traumatic mesh fixation methods. These studies found a significantly lower incidence of CGP in the fibrin glue fixation group, compared to the tacker fixation group. [2,4]

Based on these findings, the benefit of a significantly lower incidence of CGP, can be confidently extrapolated to our study, where no method of mesh fixation is used.

But with no mesh fixation at all, a remaining concern is the theoretical risk of mesh displacement or rolling leading to recurrence. This concern can be appeased by the results of our study, where even with relatively long follow up (mean 3.3 years), we had zero recurrences out of the seventy-nine cases included.

Another factor that should be focused on, considering the substantial burden that hernia surgery has on the health care sector, is the cost implications. The tackers used in modern hernia surgery represent a substantial portion of the cost of the materials used. Thus, not using a tacker would no doubt significantly reduce the cost of the materials used in the surgery.

Our findings concur with other recent studies in this area, which suggest that risk of recurrence does not increase when mesh fixation is not done in laparoscopic TAPP in indirect inguinal hernia. [5,6,8]

Limitations of our study:

This was a retrospective study, without any control group.

Follow up was not done at a specific time interval from the surgery. In some cases, due to a long follow up period, some findings like perioperative complications or pain in the initial couple of years of surgery are subject to recall bias. However, it should be noted that recall bias does not apply to recurrence.

As we included only indirect hernia cases in this study, we cannot comment on the effects of this technique in direct inguinal hernia. On the contrary, some studies have found a higher recurrence rate when mesh was not fixed in large direct hernias. [6] Hence, the fellow surgeon must be warned that the implications of this study should not be applied to direct or pantaloon defect cases.

5. CONCLUSION

Based on our findings in this study, we can conclude that avoidance of mesh fixation in laparoscopic transabdominal preperitoneal hernia repair of indirect inguinal hernia does not increase the risk of recurrence, and may reduce chronic groin pain, and clearly reduces cost of the materials needed for the surgery. Hence, omission of mesh fixation can be safely tried in TAPP done for indirect inguinal hernia without an increase in the risk of recurrence.

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Disclosures

The authors have no conflicts of interest to report.

REFERENCES: