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 patients of inguinal hernia aging from 18-65 years. 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 1 patient (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.
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 3rd 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

<table>
<thead>
<tr>
<th>Surgical procedure</th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open hernioplasty</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Laparoscopic hernioplasty</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>TAPP</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>TEP</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Co-morbidity</th>
<th>Open repair n=25</th>
<th>Lap.Repair n=25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>16 (64%)</td>
<td>18 (24%)</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>10 (40%)</td>
<td>7 (28%)</td>
</tr>
<tr>
<td>No Comorbidity</td>
<td>4 (16%)</td>
<td>6 (24%)</td>
</tr>
</tbody>
</table>

### Table-3: Outcome of surgery in studied subject

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

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Open repair n=25 (100%)</th>
<th>Lap. Repair n=25 (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seroma</td>
<td>1(4%)</td>
<td>1(4%)</td>
</tr>
<tr>
<td>Hematoma</td>
<td>2(8%)</td>
<td>1(4%)</td>
</tr>
<tr>
<td>Testicular pain &amp; swelling</td>
<td>2(8%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>3(12%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Wound infection</td>
<td>4(16%)</td>
<td>1(4%)</td>
</tr>
<tr>
<td>Mesh infection</td>
<td>1(4%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Chest infection</td>
<td>0(0%)</td>
<td>5(20%)</td>
</tr>
<tr>
<td>Recurrence</td>
<td>2(8%)</td>
<td>1(4%)</td>
</tr>
</tbody>
</table>
Table-5: Complications of laparoscopic procedure

<table>
<thead>
<tr>
<th>Variable</th>
<th>TAPP repair n= 20</th>
<th>TEP repair n= 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seroma</td>
<td>1(5%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Hematoma</td>
<td>0(0%)</td>
<td>1(20%)</td>
</tr>
<tr>
<td>Port infection</td>
<td>1(5%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Chest infection</td>
<td>3(15%)</td>
<td>2(40%)</td>
</tr>
<tr>
<td>Bowel injury</td>
<td>0(0%)</td>
<td>1(20%)</td>
</tr>
<tr>
<td>Bladder injury</td>
<td>1(5%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Omental injury</td>
<td>0(0%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Ileus</td>
<td>1(5%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Recurrence</td>
<td>0(0%)</td>
<td>1(20%)</td>
</tr>
</tbody>
</table>

**Discussion:**

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

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

Champault et al (5) 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 (6) 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.

<table>
<thead>
<tr>
<th>First author</th>
<th>Laparoscopic</th>
<th>open</th>
</tr>
</thead>
<tbody>
<tr>
<td>McCormac (7)</td>
<td>14.8 minute longer</td>
<td></td>
</tr>
<tr>
<td>Memon (8)</td>
<td>15.2 minute longer</td>
<td></td>
</tr>
<tr>
<td>MRC trial group4</td>
<td>58.4 minute</td>
<td>43.3 minute</td>
</tr>
<tr>
<td>Bringman (9)</td>
<td>50 minute</td>
<td>45 minute</td>
</tr>
<tr>
<td>Picchio (10)</td>
<td>49.6 minute</td>
<td>33.9 minute</td>
</tr>
<tr>
<td>Chung (11)</td>
<td>Laparoscopic longer in all group</td>
<td></td>
</tr>
<tr>
<td>Wright (12)</td>
<td>58 minutes</td>
<td>45 minute</td>
</tr>
<tr>
<td>Our Series</td>
<td>65 minutes</td>
<td>55 minutes</td>
</tr>
</tbody>
</table>

Most randomised trials assessing postoperative pain between open and laparoscopic repairs report less pain in the laparoscopic group (13, 14, 15, 16). 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.

**References:**


