

## **A Comparison of Minimum Invasive Surgery versus Open Surgery for Abdominal and Groin Hernias**

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### **ABSTRACT:**

**Background:** Inguinal hernia repair is one of the most commonly performed general surgery operations. The present study compared minimum invasive surgery versus open surgery for abdominal and groin hernias.

**Materials & Methods:** 60 patients of abdominal and inguinal hernia of both genders were divided in two groups. Group I was laparoscopy group and group II was conventional open group. In both groups, intra-operative, and postoperative criteria, the type of surgical procedure, type of applied mesh, duration of surgery and hospitalization were evaluated.

**Results:** Group I had 20 males and 10 females and group II had 16 males and 14 females. Surgical procedure performed was TAPP in 30 in group I and lichtenstein procedure in 17 and tension-free mesh plug in 13 patients in group II. Mesh type used was parletex in 18 and progrip in 12 in group I and prolene in 30 in group II. Duration of surgery (minutes) was 82.5 and 72.9 and hospital stay (days) was 3.1 and 4.6, number of recurrences was 2, pain score (mean) was 4.3 and 7.5, return to work (weeks) was 2.7 and 3.4 and restart of physical activities (weeks) was 5.1 and 6.3 in group I and II respectively.

**Conclusion:** Laparoscopic technique of hernia repair was better as compared with open repair.

**Key words:** Abdominal hernia, Inguinal hernia, lichtenstein

### **Introduction**

Inguinal hernia repair is one of the most commonly performed general surgery operations. Throughout the years there have been many variations and advancements, including open and laparoscopic techniques, to accomplish the same task of reducing herniated contents and preventing groin hernia recurrence.<sup>1</sup> An array of factors contributes to deciding which operative technique is the best approach to managing a patient presenting with an inguinal hernia.<sup>2</sup>

Nowadays, despite the rare occurrence of bilateral inguinal hernias in medical practice, they are encountered in about 15–20% of patients with inguinal hernia.<sup>3</sup> There are still discussions regarding the treatment of bilateral hernias, whether surgery should be performed in one, or two stages.<sup>4,5</sup> A simultaneous surgical intervention seems to be more beneficial from every point of view, requiring only one hospital admission, as well as fast anesthesia and postoperative recovery. In the medical literature, only sporadic studies have compared laparoscopic surgery with conventional open procedures for the treatment of bilateral inguinal hernias.<sup>6</sup>

The advantage of laparoscopic repairs is shorter duration of hospital stay, faster recovery, and fewer wound complications.<sup>7,8</sup> However, case series have shown that serious mesh-related

complications may appear several years after the hernia repair, including small bowel obstruction due to adhesions to intraperitoneal mesh, and abscess or fistula formation owing to mesh erosion into bowel. These reports have led hernia surgeons to advocate mesh placement outside the peritoneal cavity.<sup>9</sup> The present study compared minimum invasive surgery versus open surgery for abdominal and groin hernias.

### Materials & Methods

The present study comprised of 60 patients of abdominal and inguinal hernia of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided in two groups. Group I was laparoscopy group and group II was conventional open group. Each group had 30 patients. In group I, the surgery was performed according to the transabdominal preperitoneal procedure (TAPP). In group II, conventional open surgery was performed following the Lichtenstein or tension-free mesh plug techniques. In both groups, intra-operative, and postoperative criteria, the type of surgical procedure, type of applied mesh, duration of surgery and hospitalization were evaluated. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

### Results

**Table I Distribution of patients**

Groups	Group I	Group II
Method	laparoscopy group	conventional open group
M:F	20:10	16:14

Table I shows that group I had 20 males and 10 females and group II had 16 males and 14 females.

**Table II Assessment of parameters**

Parameters	Variables	Group I	Group II	P value
Surgical procedure	Lichtenstein procedure	0	17	0.01
	Tension-free mesh plug	0	13	
	TAPP procedure	30	0	
Mesh type	Prolene mesh	0	30	0.01
	Parletex mesh	18	0	
	Progrip mesh	12	0	

Table II, graph I shows that surgical procedure performed was TAPP in 30 in group I and lichtenstein procedure in 17 and tension-free mesh plug in 13 patients in group II. Mesh type used was parletex in 18 and progrip in 12 in group I and prolene in 30 in group II. The difference was significant ( $P < 0.05$ ).

**Table III Intraoperative and postoperative outcomes**

Parameters	Variables	Group I	Group II	P value
postoperative recovery	Duration of surgery (minutes)	82.5	72.9	0.01
	Hospital stay (days)	3.1	4.6	0.02
Recurrence and postoperative pain	Number of recurrences	2	2	1
	Pain score (mean)	4.3	7.5	0.01
Time until return to normal activity	Return to work (weeks)	2.7	3.4	0.05
	Restart of physical activities (weeks)	5.1	6.3	0.11

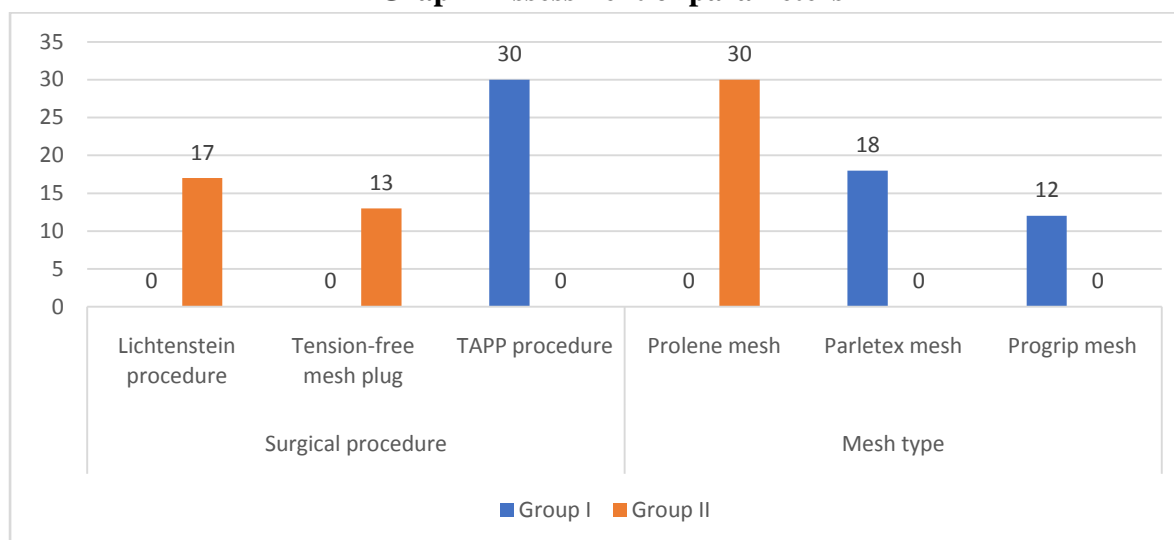
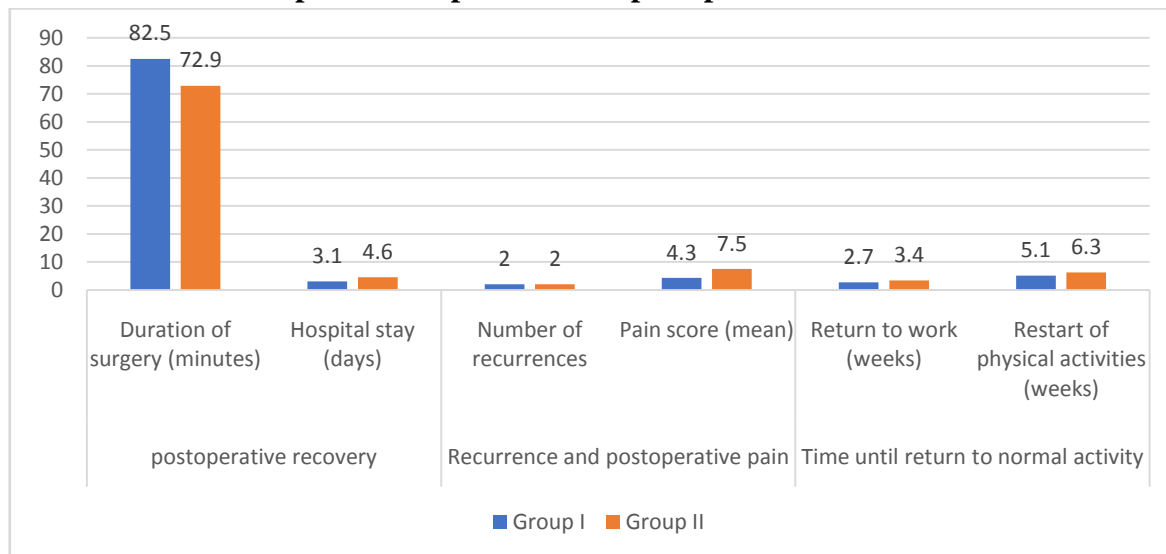
**Graph I Assessment of parameters**

Table III, graph II shows that duration of surgery (minutes) was 82.5 and 72.9 and hospital stay (days) was 3.1 and 4.6, number of recurrences was 2, pain score (mean) was 4.3 and 7.5, return to work (weeks) was 2.7 and 3.4 and restart of physical activities (weeks) was 5.1 and 6.3 in group I and II respectively. The difference was significant ( $P < 0.05$ ).

**Graph III Intraoperative and postoperative outcomes**

## Discussion

Hernias may be repaired by an open or a minimally invasive approach, but most minimally invasive repairs are performed by traditional laparoscopy, and in recent years some are being robot-assisted.<sup>10</sup> Traditionally, the laparoscopic technique requires placement of an intraperitoneal mesh (IPOM), which covers the defect and is fixated with tacks in a doublecrown technique.<sup>11</sup> In an attempt to restore abdominal wall function and avoid bulging or seroma formation, suture closure of the defect before mesh placement has also been introduced (IPOM-Plus).<sup>12,13</sup> The present study compared minimum invasive surgery versus open surgery for abdominal and groin hernias.

We found that group I had 20 males and 10 females and group II had 16 males and 14 females. Elthese et al<sup>14</sup> in their study 43 patients with bilateral inguinal hernia underwent conventional open or laparoscopic bilateral hernioplasty, and were divided into two groups: a conventional open group (COG) and a laparoscopy group (LG). Clinical, intraoperative, and postoperative outcomes were reviewed. In the laparoscopic hernioplasty group, there was a significantly shorter hospitalization period ( $p = 0.026$ ), less postoperative pain ( $p = 0.03$ ), and a prompt return to work ( $p = 0.043$ ) compared to the conventional open procedure. On the other hand, patients who underwent hernioplasty with the Progrid-type synthetic mesh developed a lower pain score, an earlier return to work, and a quick start to normal physical activities in comparison with other mesh types used for the treatment of bilateral inguinal hernias. For patients who underwent conventional open procedure, there was a significantly shorter operating time ( $p = 0.042$ ).

We found that surgical procedure performed was TAPP in 30 in group I and lichtenstein procedure in 17 and tension-free mesh plug in 13 patients in group II. Mesh type used was parletex in 18 and progrid in 12 in group I and prolene in 30 in group II. We observed that duration of surgery (minutes) was 82.5 and 72.9 and hospital stay (days) was 3.1 and 4.6, number of recurrences was 2, pain score (mean) was 4.3 and 7.5, return to work (weeks) was 2.7 and 3.4 and restart of physical activities (weeks) was 5.1 and 6.3 in group I and II respectively. Henrikson et al<sup>15</sup> in their study a total of 3090 (57.5 per cent) and 2288 (42.5 per

cent) patients had surgery by a laparoscopic and open approach respectively. The defect was closed in 865 of 3090 laparoscopic procedures (28.0 per cent). The median follow-up time was 4.0 years. Rates of readmission (502 of 3090 (16.2 per cent) versus 442 of 2288 (19.3 per cent); and reoperation for complication (216 of 3090 (7.0 per cent) versus 288 of 2288 (12.5 per cent);  $P < 0.001$ ) were significantly lower for laparoscopic than open repairs. Reoperation for bowel obstruction or bowel resection was twice as common after laparoscopic repair compared with open repair (20 of 3090 (0.6 per cent) versus 6 of 2288 (0.3 per cent). Patients were significantly less likely to undergo repair of recurrence following laparoscopic compared with open repair of defect widths 2–6 cm.

### Conclusion

Authors found that laparoscopic technique of hernia repair was better as compared with open repair.

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