Original Article

Inguinal Hernia-Hernioplasty

Inguinal Hernia: Compare the Laparoscopic Trans-Abdominal Pre-Peritoneal Hernioplasty with the Gold Standard Open Tension-Free Lichtenstein's Hernioplasty

Rahmat Ullah Shah[1], Sadia Shah[2], Gul Sharif[1], Adnan Badar[3], Haroon Muhammad[1] and Shabir Ahmad[1]

ABSTRACT

Objective: To compare laparoscopic trans-abdominal pre-peritoneal hernioplasty with open Lichtenstein's hernioplasty.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Department of Surgery, MTI, Lady Reading Hospital, Peshawar from 1st January 2019 to 31st December, 2019.

Materials and Methods: Seventy patients with primary, unilateral inguinal hernia which were randomly divided into two equal groups. Group-A patients had laparoscopic trans-abdominal pre-peritoneal repair while Group-B patients underwent open Lichtenstein's repair. Both groups were compared for mean operative time, intra- & post-operative complications including pain & development of recurrent hernia, in-hospital stay and time taken to resume daily activities.

Results: The mean taken time for repair was greater in laparoscopic trans-abdominal pre-peritoneal (72.4±6.09 minutes) than Lichtenstein's repair (53±6.97 minutes) (p-value<0.001). Postoperative complications, such as wound infections, seroma formation and urinary retention were more common in Lichtenstein's group. The mean pain score was significantly less for laparoscopic trans-abdominal pre-peritoneal hernioplasty than Lichtenstein's group especially on post-operative day 7 (p-value<0.001). The mean in-hospital stay was 2±1.5 days in both groups. The time taken to resume daily activities was shorter after laparoscopic trans-abdominal pre-peritoneal repair than Lichtenstein's repair (p<0.001).

Conclusion: Though mean operative time was more in laparoscopic trans-abdominal pre-peritoneal repair, there were no significant difference in complications rate, but patients who underwent trans-abdominal pre-peritoneal repair had significantly less post-operative pain with shorter in-hospital stay and resume their routine activities earlier when compared to Lichtenstein's group.

Key Words: Inguinal hernia, Laparoscopic trans-abdominal pre-peritoneal hernioplasty, Lichtenstein tension-free hernioplasty

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INTRODUCTION

Inguinal hernioplasty is among the commonest surgeries carried out by surgeons globally. Surgery for inguinal hernia has evolved greatly especially in the recent past but still there is controversy about its ideal surgical procedure.[1,2]

Annually around seventy thousand procedures are carried out for repairing hernias in USA. There is an improvement in outcome of surgical repair because of better technique, use of synthetic meshes and understanding the finer anatomical details.[3] The surgeon's skills and potential plus patient's desire are the main driving forces behind the technique used for surgical repair ofhernia.[4]

Repair of inguinal hernia with mesh, either laparoscopically or by open technique is the norm now-a-days.[5] Currently open mesh hernioplasty introduced

[1.] Department of Surgery, Lady Reading Hospital, Peshawar.
[2.] Department of Surgery, Kuwait Teaching Hospital, Peshawar.
[3.] Department of Anatomy, Saidu Medical College, Swat.

Correspondence: Dr. Gul Sharif, Assistant Professor of Surgery, Lady Reading Hospital, Peshawar.
Contact No: 03005959004
Email: gulafridi1@yahoo.com

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by Lichtenstein, is regarded as the gold-standard procedure for inguinal hernia.[6] For primary, unilateral hernia, various guidelines recommend Lichtenstein's repair and Laparoscopic hernioplasty.[7,8]

Laparoscopic mesh repair has many benefits including reduced post-operative pain, shorter in-hospital period plus the added capability of visualizing and repairing hernia on opposite site.[5] Lengthy duration of surgery, more postoperative complications and requiring skilful expertise are the major constraints of hernia repair done laparoscopically.[9-11]

The objective of this study was to compare the outcomes of laparoscopic trans-abdominal preperitoneal repair with Lichtenstein repair in terms of mean operative time, intra- and post-operative complications including pain and development of recurrent hernia, in-hospital stay and time taken to resume daily activities.

MATERIALS AND METHODS

This prospective study was carried out in Department of Surgery, MTI Lady Reading Hospital Peshawar from 1st January 2019 to 31st December, 2019. A total of 70 patients aged ≥18 years presenting with primary, unilateral inguinal hernia were included. Patients with large scrotal/bilateral/recurrent hernia or those having hydrocele/varicocele along with hernia were excluded. Also, patients having hernia with complications like incarceration, strangulation, or obstruction were put in the exclusion criteria. The patients were randomly divided in two equal groups of 35. Patients' demographics, history/examination findings and drug history were noted and necessary work up like full blood picture and abdominopelvic sonographic studies were carried out on initial visit. Patients in group-A had laparoscopic trans-abdominal preperitoneal (TAPP) mesh repair under general anaesthesia while those in group-B, operated by open Lichtenstein technique mostly received regional/spinal anaesthesia. All patients received perioperative broad-spectrum antibiotics as per hospital protocol and intravenous non-steroidal anti-inflammatory drugs (Ketorolac) every 8 hours for 1 day and then switched to oral medications. The following intra- and postoperative variables were noted; mean operative-time, intra- and postoperative complications including pain and development of recurrent hernia, in-hospital stay, and time taken to resume routine daily activity.

The data was entered and analyzed through SPSS-25. Visual analogue pain scale was used for assessing post-operative pain. The t-test was used for comparing the mean of two groups and $p<.05$ was considered significant.

RESULTS

All the patients were males (100%), having age ranging from 18-70 years and mean age of 44.51±11.56 years in TAPP repair while 47.97±11.05 years for Lichtenstein's repair. Patients were operated in either group, had unilateral inguinal hernia. 64.28 percent (45 patients) had right inguinal hernia while 35.7 percent (25 patients) had hernia on left side.22 patients (31.4%) had direct while 48 patients (68.57%) had indirect hernia. Among patients having direct hernia 9 patients had laparoscopic while 13 patients had open repair (Table I). The mean duration of surgery for open and laparoscopic TAPP repairs was 53±6.97 and 72.4±6.09 minutes respectively (p-value<0.001), while the mean length of hospital stay was 2±1.5 days in both groups.

None of the patients in both groups experienced any intraoperative complication such as bleeding or injury to the spermatic cord/bowel/bladder. Postoperative wound infection developed in 5 cases (14.3 percent) whereas seroma formation was noted in 6 cases (17.1 percent) of group-B/open repair. While in group-A/laparoscopic TAPP only one patient (2.8%) had wound infection while 4 cases (11.4 percent) had seroma formation. Urinary retention was recorded in 7 cases (20 percent) from group-B. Group-A patients did not suffer from retention as they were already catheterized during surgery. All patients were followed up at 1 month, 6 months and 1 year and none of them has recurrent or port-site hernia. There was no significant difference in post-operative complications in both groups (Table 2)

Using visual analogue scale, mean pain score was recorded for every patient on postoperative day, 0, 3 and 7. When the two groups were compared, the mean score was not different significantly on postoperative day 0 [5.8±1.5 in TAPP group vs 6.5±2.4 in open group (p=0.21)], however this difference was remarkable on postoperative day 3 [4.1±1.5 vs 4.9±1.7 (p=0.04)] and on postoperative day 7 [1.5±1.1 vs 2.9±1.3 (p=<0.001)] (Table 3). Similarly, the time taken to resume daily activities was lesser in TAPP group, 5±1.5 days as compared to 8.5±2 days in open hernia repair group [p<0.001] (Table 4).

Table No.1: Distribution of hernia (n=70)

Group	Right sided hernia (n=45)				Left sided hernia (n=25)			
	Direct		Indirect		Direct		Indirect	
	No.	%	No.	%	No.	%	No.	%
TAPP	7	15.55	17	37.77	2	8.0	6	24.0
Open	9	20.0	12	26.66	4	16.0	13	52.0

Table No.2: Intra- and post-operative complications (n=70)

Complication	TAPP (n=35)		Open (n=35)		p-value
	No.	%	No.	%	
Wound infection	1	2.8	5	14.3	0.08
Seroma formation	4	11.4	6	17.1	0.49
Urinary retention	-	-	7	20.0	-
Bleeding	-	-	-	-	-
Injury to spermatic cord/ bladder/bowel	-	-	-	-	-
Recurrent hernia (at 1 year)	-	-	-	-	-

Table No.3: Pain score using visual analogue score

Type of hernia repair	Pain score		
	POD 0	POD 3	POD 7
TAPP	5.8±2.3	4.1±1.5	1.5±1.1
Open	6.5±2.4	4.9±1.7	2.9±1.3
P-value	0.21	0.04	<0.001

Table No.4: Resumption of normal daily activities

Type of hernia repair	No. of Days
TAPP	5±1.5
Open	8.5±2
P-value	<0.001

DISCUSSION

In the present study, there was no statistically significant difference in age of patients in both groups (p=0.02), with mean age of 44.51±11.56 years in TAPP repair and 47.97±11.05 years for Lichtenstein's repair. Similarly, other authors also did not report any significant difference in age in their studies when comparing laparoscopic with open hernia repair.[9,10,12]

In our study all patient operated had unilateral inguinal hernia, 64.28 percent (45 patients) had right inguinal hernia while 35.7 percent (25 patients) had hernia on left side. 22 patients (31.4%) had direct while 48 patients (68.57%) had indirect hernia. Saeed et al[13] and Alam et al[14] have also reported similar results.

The mean duration of surgery for open and laparoscopic TAPP repairs was 53±6.97 and 72.4±6.09 minutes respectively (p-value<0.001). Hamza et al[9], Rathod et al[11] and Memon et al[15], all reported that mean time taken by laparoscopic hernioplasty was greater when compared to Lichtenstein's hernioplasty.

Many prospective studies and Cochrane reviews report a higher rate of visceral and vascular complications in patients who underwent laparoscopic repair.[16-20] In comparison we did not encounter any intraoperative complication such as bleeding from injury to spermatic/epigastric vessels or visceral injury to the bowel/urinary bladder or spermatic cord in either group. Wound infection developed in 5 cases (14.3 percent) whereas seroma formation was noted in 6 cases (17.1 percent) of open repair. While in laparoscopic TAPP only one patient (2.8%) had wound infection and 4 cases (11.4 percent) developed seroma. Urinary retention was recorded in 7 cases (20 percent) from group-B. In comparison, group-A patients had no such issue as they were already catheterized during surgery. All patients of this study were followed up at 1 month, 6 months and 1 year and none of them has recurrent or port-site hernia. Higher p-value suggests that there was no significant difference in post-operative complications in both groups. Sudarshan et al[10] also noted similar incidence of complications in their study.

Using visual analogue scale for pain scoring, when the two groups were compared, the mean score was not different significantly on POD-0 [5.8±1.5 in TAPP group vs 6.5±2.4 in open group (p=0.21)], however this difference was remarkable on POD-3 [4.1±1.5 vs 4.9±1.7 (p=0.04)]and on POD-7 [1.5±1.1 vs 2.9±1.3 (p=<0.001)]. Sudarshan et al[10] also observed in their study that laparoscopic group had less post-operative pain.

Various studies report differently on length of hospital stay when comparing laparoscopic hernia repair with open repair.[10,21] The mean stay in our study was same in both groups i.e., 2±1.5 days.

The time taken to resume daily activities was significantly different between laparoscopic TAPP group and Lichtenstein's repair group i.e., 5±1.5 days as compared to 8.5±2 days (p<0.001). Ugraiah et al[1]and Rathod et al[11] also demonstrated similar results in their studies.

In view of our results, it is noteworthy that with adaptation of laparoscopic technique, one can achieve all the benefits of minimally invasive surgery in hernia repair without any significant increase in post-operative complications. However, there were certain limitations to this study such as a) shorter duration, b) it didn't explore the long-term results or recurrences and c) exclusion of bilateral/recurrent/complicated hernias.

CONCLUSION

Though mean operative time was more in laparoscopic TAPP repair, there were no significant difference in complications rate, but patients who underwent TAPP repair had significantly less post-operative pain with shorter in-hospital stay and resume their routine activities earlier when compared to Lichtenstein's group.

Author's Contribution:

Concept & Design of Study:	Rahmat Ullah Shah
Drafting:	Sadia Shah, Gul Sharif
Data Analysis:	Adnan Badar, Haroon Muhammad, Shabir Ahmad
Revisiting Critically:	Rahmat Ullah Shah,

Sadia Shah
Final Approval of version: Rahmat Ullah Shah

Conflict of Interest: The study has no conflict of interest to declare by any author.

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