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IS LICHTENSTEIN'S TENSION FREE REPAIR STILL THE GOLD STANDARD FOR INGUINAL HERNIA IN THE ERA OF MINIMALLY INVASIVE SURGERY?

General Surgery

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ABSTRACT

Introduction: Totally extraperitoneal repair (TEP) and transabdominal preperitoneal repair (TAPP) have constantly challenged the gold standard procedure of Lichtenstein tension free mesh hernioplasty (LMR) for inguinal hernia (IH) surgery in the current era of minimally invasive surgery. A study to compare post-operative clinical outcomes, return to normal activity and complications in Laparoscopic TEP versus LMR was done.

Methods: 50 consecutive male patients with uncomplicated IH were randomly allocated in two groups for surgery by either LMR or TEP. Comparison between the two groups was done in terms of postoperative pain, length of stay in hospital and number of days required to return to normal activity and complications following the procedure.

Results: Overall pain scores, length of hospital stay and number of days required to return to normal activity was found to be significantly low in TEP group. There was no statistical difference in the two groups with respect to complications rate.

Conclusion: TEP can be considered as standard surgery for inguinal hernia due to its advantages over open procedure.

KEYWORDS

Inguinal hernia, inguinal hernia surgery, Lichtenstein's tension free mesh hernioplasty, Laparoscopic totally extraperitoneal repair, minimally invasive surgery

INTRODUCTION

Hernia surgery has fascinated surgeons for almost two centuries and the search of ideal repair for inguinal hernia (IH) still continues. Evolving from tension tissue repair to tension free prosthetic repair, hernia surgery has come a long way. Today plenty of options are available for IH surgery but none can be termed as an ideal procedure.

Lichtenstein's tension free mesh repair (LMR) is the gold standard surgery for IH (1). Since late 1980s laparoscopic IH surgery (LIHS) have been in vogue. Totally extraperitoneal repair and the transabdominal preperitoneal repair have constantly challenged the gold standard procedure of LMR (2) for many years now. The recent guidelines recommend LIHS for repair of IH (3) owing to its numerous advantages (4–6). The disadvantage of increased operative time, costs and the learning curve (7,8) has been outweighed by the benefits of the procedure.

We designed a study to compare post-operative clinical outcomes, return to normal activity and complications in Laparoscopic Total Extra Peritoneal Mesh Repair (TEP) vs Lichtenstein Tension Free Mesh Hernioplasty (LMR) in IH. The findings of this study would add data to Indian literature and guide us to reframe the gold standard surgery and standard of care for IH.

METHODOLOGY

A prospective observational study was conducted in a tertiary care teaching hospital for a period of 15 months. 50 consecutive male patients with uncomplicated IH were admitted for mesh repair to be done by either Lichtenstein or TEP mesh hernioplasty.

Inclusion criteria:

a. Patients diagnosed with uncomplicated IH
b. Patients within age group of 15- 75 years

Exclusion criteria:

a. Recurrent hernia or complicated hernia
b. History of any previous abdominal surgeries
c. Patients with communicative or cognitive limitations to give informed consent
d. Patients with bleeding diathesis, active skin infections or any presence of any risk factor for delayed wound healing
e. Patients in whom there was per-operative conversion from laparoscopic to open surgery due to any reason
f. Patients unwilling for inclusion into the study

Patients were randomly allocated to two groups by random selection method (Group A; LMR, Group B; TEP), with 25 patients in each group. Surgery was performed by surgeons with a minimum experience of more than 100 Laparoscopic / open hernia repair surgeries. All patients were operated on elective basis under appropriate anaesthesia. Polypropylene mesh of 15x7 cm in open and 15x12 cm in laparoscopic procedure was used. Pain assessment was done using Visual Analogue Scale (VAS), first after 6 hours of surgery followed by every 6 hours. Post-operative surgical complications were recorded. Patients were reviewed every day till they got discharged. Patients were assessed for performance of self-care activities as per "Barthel index of activities of daily living" (9). Patients with pain score less than 5 and not requiring injectable analgesia, healthy wound with no signs of surgical site infection and Barthel index score of 20 were discharged. Late follow-up was done in OPD at 3 months and 6 months, for pain scores and complications. Patients who were not able to come to OPD were interviewed telephonically.

All the details of the patient and information thus obtained were recorded in Microsoft excel and statistically analysed using software SPSS version 20.0. P-value less than 0.05 was considered significant. Ethical clearance for the study was obtained from the Institutional ethical committee prior to the commencement of the study.

RESULTS

25 patients (Group A) underwent LMR and 25 patients (Group B) underwent TEP repair for IH in our study. Comparison between the two groups was done prospectively in terms of postoperative pain, length of stay in hospital and number of days required to return to normal activity and complications following the procedure (Table 1).

Table 1 Comparison between various clinical outcomes of the two surgical techniques

		Surgical technique		p-value
		Group A (LMR) (n = 25)	Group B (TEP) (n = 25)	
Age group	15-25 years	1	0	0.32

	26-35 years	2	4	
	36-45 years	3	2	
	46-55 years	1	1	
	56-65 years	5	5	
	66-75 years	13	13	
	Total	25	25	
	Mean Age ± SD (in years)	55.44 ± 15.51	54.40 ± 14.98	
Pain assessment (median pain scores ± SD)	**Postop Day 0 (1800 h)**	7.48 ± 0.82	6.32 ± 0.80	**0.001**
	Postop Day 0 (2359 h)	6.6 ± 0.65	5.32 ± 0.80	
	Postop Day 1 (0600 h)	5.76 ± 0.60	4.84 ± 0.69	
	Postop Day 1 (1200 h)	5.64 ± 0.95	4.76 ± 0.72	
	Postop Day 1 (1800 h)	5.40 ± 0.71	4.32 ± 0.63	
	Postop Day 1 (2359 h)	4.88 ± 0.73	3.68 ± 1.07	
	Postop Day 2 (0600 h)	4.64 ± 0.76	3.64 ± 0.76	
	Postop Day 2 (1200 h)	4.68 ± 0.90	3.60 ± 0.91	
	Postop Day 2 (1800 h)	4.82 ± 0.80	4.50 ± 0.55	
	Postop Day 2 (2359 h)	3.77 ± 0.92	4.00 ± 0.63	
Length of hospital stay (mean ± SD in days)	4.52 ± 1.08	3.32 ± 0.63	**0.001**	
Recovery (mean ± SD in days)	**Return to self-care activities**	3.64 ± 0.91	2.56 ± 1.08	**0.001**
	Return to light work	15.88 ± 2.19	14.43 ± 3.49	**0.027**
	Return to full work	86.0 ± 8.66	80.0 ± 10	**0.031**
Complications	**Surgical site infection**	6	2	0.061
	Haemorrhage	0	4	
	Recurrence	1	1	

The mean age of the patients in group A was 54.44 ± 15.51 years with range 15-75 years and in group B was 54.4 ± 14.98 years with same age range. There was no statistical difference between the two groups ($p > 0.05$). Post-operative pain scores were assessed in both the groups starting from the evening after surgery every 6-hour using VAS. All patients were explained to mark at appropriate point of pain perception and the pain score was recorded till 2nd post-operative day. Overall pain scores were found to be significantly low in TEP group (Fig 1).

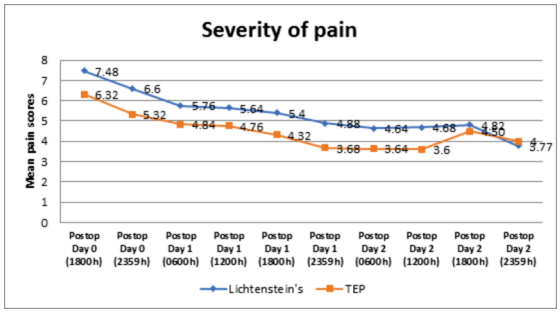

Figure 1 Pain assessment in the two groups

Patients in the TEP group had significantly lesser average hospital stay. Patients were assessed for performance of self-care activities as per "Barthel Index of Activities of daily living". A score of 20 indicated an independent patient. Patients in the TEP group achieved independence in daily activities earlier than open group (Fig 2). Patients were enquired about their ability to resume routine duties not involving lifting heavy weights and/or involving athletic activities without any discomfort and the same was recorded. Patients in the TEP group resumed to light work earlier than open group with a significant p-value (Fig 3). All patients were enquired as to when they felt comfortable in resuming full work activities involving lifting heavy weights and/or athletic activities without discomfort. TEP group had shorter time period for resuming to full work activities with statistically significant difference (Fig 4).

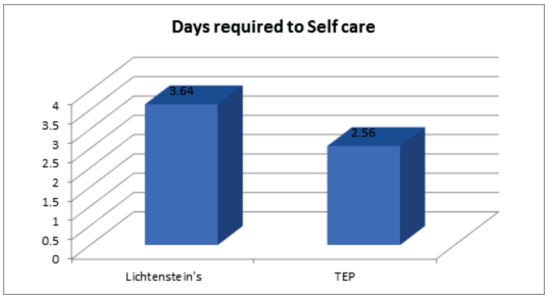

Figure 2 Days required to self-care

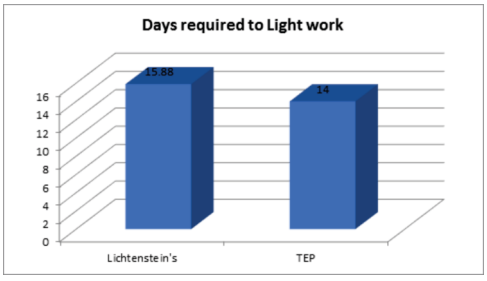

Figure 3 Days required to light work

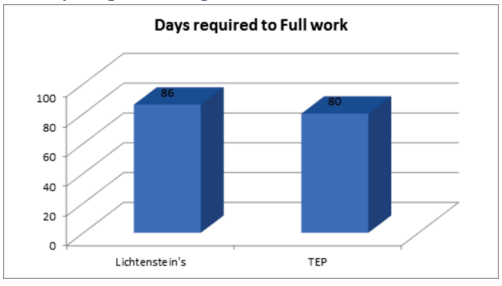

Figure 4 Days required to full work

There were 6 patients with surgical site infections in the LMR group. 03 patients had serous discharge from operated site and 03 had seroma formation. All patients were managed with daily dressings and oral antibiotics and had good recovery. In TEP group, 4 patients had diffuse intra operative bleeding which was managed by pressure using gauze piece. 2 patients had surgical site infection, which was managed with oral antibiotics. One case of recurrence was present in both the groups. There was no statistical difference in the two groups with respect to complications (Fig 5).

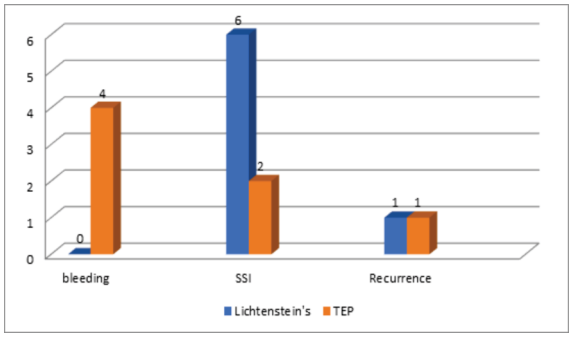

Figure 5 Complication rates in the two groups

DISCUSSION

Lichtenstein's tension free mesh hernioplasty is the gold standard treatment for IH till today (10) owing to ease of surgery, low rates of recurrence and high levels of patient safety and comfort. After the wide spread adoption of laparoscopic cholecystectomy and appendectomy, minimally invasive procedures were extended to all other surgical procedures. Laparoscopic hernia repair was first described by Robert Ger in 1982 (11), underwent significant development during last few years. Totally Extraperitoneal Repair (TEP) and Trans Abdominal Preperitoneal (TAPP) has now become the standard of care for IH repair in most of the institutes.

Several studies have been done on comparison between open and laparoscopic repair of IH. In this study we compared post-operative outcome of patients undergoing Lichtenstein tension free mesh repair (LMR) and Laparoscopic Total Extraperitoneal Repair (TEP).

In our study post-operative pain as well as time taken to resume to work were significantly lower in TEP group. The average time to return to light work was much lower when compared to findings of Schmedt et al (12). Patients were compared for time taken to return to work under three headings, time taken to return to self-care activities, light work and return to full activity levels. All were found to be significantly shorter in TEP group. Similar results were observed in the studies in the past (12–17).

In our study overall rate of post op complication in LMR group was 28% (7 out of 25 patients) including 6 cases of surgical site infection & 01 case of recurrence. SSI patients were managed conservatively. In TEP group also overall rate of post op complications were 28% (7 out of 25 patients), including 4 cases of diffuse intra op bleeding and 2 cases of surgical site infection and one case of recurrence. The diffuse bleed was managed by putting a pressure gauze. Neumayer et al (11) in their study however concluded a higher rate of complications in the laparoscopic group as compared to the present study. The lower rate of complication in the present study is may be due to enhanced skills of present generation of surgeons. We did not find any statistically significant difference in complication rate between the two techniques. Although the overall rate of complications was comparable in both the groups but it was of higher severity in the laparoscopic group. The same can be reduced by careful surgical technique and maintaining high standards of sterility.

CONCLUSION

There is no universal repair for groin hernia repair and all the techniques have their hard proponents as well as opponents. Based on our findings we recommended that, TEP to be considered as a standard procedure for groin hernia repair. However, cost consideration needs to be worked out. Laparoscopic IH repair is a technically demanding procedure associated with a long initial learning curve and increased effort must be made with respect to standardization and supervision of the laparoscopic technique until an acceptable outcome is achieved.

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