



## ANALYSIS OF POST OPERATIVE COMPLICATIONS OF LICHTENSTEIN TENSION FREE MESH REPAIR OF INGUINAL HERNIA

### General Surgery

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### ABSTRACT

**BACKGROUND:** Mesh based tension free Lichtenstein repair is the most common type of repair performed for inguinal hernia. This study is aimed at analysing and determining the frequency of post-operative complications following Lichtenstein tension free mesh repair of inguinal hernia. **METHODS:** This is a descriptive study which was performed prospectively in the Department of General Surgery of Sree Balaji Medical College and Hospital, Chennai during the period of June 2018 to December 2018. A total of 50 patients with inguinal hernia were included in the study. All the patients underwent Lichtenstein's Hernioplasty. Following surgery post-operative complications and recurrence rates were analysed. **RESULTS:** Average post-operative hospital stay was 4.2±1.04 days. Immediate post-operative complications observed were seroma (3 cases,6%), wound infection (2 cases,4%) and scrotal hematoma (2 cases,4%). Long term complications observed were foreign body sensation in 3 cases (6%) and chronic persistent pain in 2 cases (4%) at the end of 6 months follow up. No recurrence was observed at the end of 6 months. **CONCLUSION:** Lichtenstein tension free mesh repair has low rate of post-operative complications and recurrence which makes it an effective and reliable procedure in the management of inguinal hernias.

### KEYWORDS

Inguinal hernia, Lichtenstein repair, post-operative complications.

### INTRODUCTION

Hernia is derived from the Latin word meaning rupture [1]. It is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls [1]. Hernia can occur in various sites of the body but commonly involve the abdominal wall. Inguinal hernia is the most common type of abdominal wall hernias. Men are 25 times more likely to have groin hernias than women [1].

Surgery is the treatment of choice in a case of inguinal hernias [2]. Current practices in inguinal hernia surgery make use of synthetic prosthetic mesh for a tension free repair which was popularized by Lichtenstein. This method of tension free repair has become the dominant method [3] due to its reduced post-operative complications as compared to the older methods [4].

This study was carried out to analyse the post-operative complications following Lichtenstein tension free mesh repair of inguinal hernia.

### METHODS

This is a descriptive study which was performed prospectively in the Department of General Surgery of Sree Balaji Medical College and Hospital, Chennai during the period of June 2018 to December 2018. After obtaining informed and written consent a total of 50 patients were enrolled in the study.

### Inclusion criteria

- Age >18 years and <80 years
- Males and females
- Direct and indirect inguinal hernias
- Unilateral and bilateral inguinal hernias

### Exclusion criteria

- Complicated hernias like obstructed and strangulated inguinal hernias
- Recurrent hernias

Preoperative antibiotics used were either injection amoxicillin-clavulanic acid 1.2 gm or injection cefotaxime 1 gm which were continued as BD dose post operatively. The procedure was performed under spinal anaesthesia. A 7.6 x 15 cm polypropylene mesh was used in the surgery and tailored according to the need.

All patients were studied upto the time of discharge and were post

operatively followed up at 1st week, 2nd week, 1st month, 3rd month and 6 months after discharge for post-operative complications. Patients complaining of persistent pain during the 3rd month follow up were considered as having chronic pain.

### STATISTICAL ANALYSIS

The outcome of the study was analysed statistically to reach conclusion. Descriptive analysis has been carried out. Results on continuous measurements are shown as mean ± SD and results on categorical measurements are presented as numbers and percentages. Formulation of data and results has been analysed using software – Microsoft excel 2016.

### RESULTS

**TABLE 1: CHARACTERISTICS OF PATIENTS (n=50)**

IMMEDIATE POST OPERATIVE COMPLICATIONS		
COMPLICATIONS	NUMBER OF PATIENTS	PERCENTAGE
SEROMA	3	6
WOUND INFECTION	2	4
SCROTAL HEMATOMA	2	4

**TABLE 2: IMMEDIATE POST OPERATIVE COMPLICATIONS (n=50)**

CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE (%)
SEX		
MALE	49	98
FEMALE	1	2
AGE		
18-30	5	10
31-40	5	10
41-50	9	18
51-60	16	32
61-70	10	20

**TABLE 3: POST OPERATIVE PAIN AND DURATION OF HOSPITALSTAY**

POST OPERATIVE PAIN AS PER VISUAL ANALOGUE SCALE (VAS)	
POD 1	3.62
POD 2	1.98
TIME OF DISCHARGE	1.36
POST OPERATIVE HOSPITAL STAY (DAYS)	4.2 ± 1.039

TABLE 4: LONG TERM COMPLICATIONS

LONG TERM COMPLICATIONS			
COMPLICATIONS	AT 1 MONTH FOLLOW UP N(%)	AT 3 MONTHS FOLLOW UP N(%)	AT 6 MONTHS FOLLOW UP N(%)
FOREIGN BODY SENSATION	12(24%)	6(12%)	3(6%)
PAIN AT THE OPERATED SITE	10(20%)	7(14%)	2(4%)
RECURRENCE	0	0	0

As shown in table 1, most patients belonged to the age group of 51 years to 60 years of age (n=16, 32%). Youngest patient being 27 years of age and oldest being 72 years of age. Male dominance was seen (n=49, 98%) with only 1 female patient. Right side (n=26, 52%) was the most common side of hernia in this study followed by left side (n=22, 44%) and only 2 patients presenting as bilateral inguinal hernia. 31 (62%) patients had indirect hernia and 19 (38%) patients had direct hernia.

There were no intra-op complications. Immediate post-operative complications included wound site seroma in 3 patients (6%), wound infection in 2 patients (4%) and scrotal hematoma in 2 patients (4%). (Table 2)

In the study, the average pain score as per visual analogue scale was 3.62 on post-operative day 1, which reduced to 1.98 on post-operative day 2 and was 1.36 on the day of discharge. The average post-operative hospital stay was 4.2 ± 1.04 days. (Table 3)

The common long term complications were foreign body sensation which was experienced by 12 patients (24%) at 1 month follow up, 6 patients (12%) at 3 months follow up and 3 patients (6%) at 6 months follow up. Persistent pain at the operated site was experienced by 10 patients (20%) at the end of 1 month follow up, 7 patients (14%) at the end of 3 months follow up and 2 patients (4%) at the end of 6 months follow up. (Table 4)

No recurrence was found at the end of 6 months follow up. (Table 4)

## DISCUSSION

Lichtenstein tension free mesh repair is a simple and effective procedure which opened a new age in the groin hernia repairs [5]. It is associated with low recurrence rates and has few post-operative complications. This method can be performed under local or regional anaesthesia and even as a day care procedure [9]. It is because of these reasons that it is the most preferred and most commonly done procedure for the repair of inguinal hernias around the world [9-11].

In the present study, a total of 50 patients were included. Male dominance was seen which is similar to what is given in many literatures [1&9]. The average age group of patients was 53.3 ± 12.88 years. Right sided inguinal hernias were found to be slightly more common than left sided hernias which was similar to the observations of Falah SQ et al [10]. Indirect hernias were found to be more common than direct hernias which was similar to the observations of Vasu et al [11].

One of the observed immediate post-operative complications was seroma in 6% of patients which is slightly higher compared to the studies of Timisescu et al [12].

Only 2 patients (4%) developed wound infection post-operatively. The wound infection rate of this study is comparable with studies of Najamulhaq et al [13] and Ahmed et al [14]. Low infection rate is

achievable with good preparation of inguinal region of the patients and antibiotic prophylaxis preoperatively and also using properly sterilized instruments during surgery.

Scrotal hematoma was seen in 2 patients (4%) which is comparable with the studies of Khan et al [15] and Saeed et al [16]. Reducing excessive tissue handling during surgery, achieving proper haemostasis and providing scrotal support post operatively plays an important role in reducing this immediate postoperative complication. Long term complications observed in this study were persistent pain and foreign body sensation at the operated site. Persistent pain at the operated site was observed in 10 patients (20%) at the end of 1 month which reduced to 14% at the end of 3 months and which further reduced to 4% at the end of 6 months. This chronic persistent pain maybe caused by nerve damage during surgery [17,18]. Foreign body sensation was experienced by 12 patients (24%) at the end of 1 month, 6 patients (12%) at the end of 3 months and 3 patients (6%) at the end of 6 months. This foreign body sensation may be due to difference in elasticity of the mesh to the abdominal wall [19]. Placing the mesh in a relaxed manner [10] and protection of nerves and preventing their damage during the surgery can help in reducing these complications. No recurrence of hernia was found at the end of 6 months follow up. This result is comparable with several studies across the world [19-24]. Recurrence rate is an important factor in evaluating the effectiveness of this procedure with that of other procedures. However, 6 months is an inadequate time for estimating long term recurrence rates which is the limitation in the present study.

## CONCLUSION

Lichtenstein tension free mesh repair is an effective and reliable procedure in the management of inguinal hernias. Analysis in this study revealed a low rate of complications post-operatively with zero recurrence till the follow up period. Good preparation of parts, proper use of preoperative antibiotic prophylaxis, care at sterilization of instruments, meticulous surgical technique, good control of hemostasis and proper post-operative care plays a vital role in reducing and avoiding postoperative complications.

## REFERENCES

- Malangoni. A and Rosen. J., Hernias. in: Townsend. M, Beauchamp. R, Evers. B and Mattox. L eds., Sabiston textbook of surgery 19th edition, 2012., Philadelphia: Elsevier Saunders. p. 1114-1148.
- Watkin DF, Kirk RM. Abdominal wall and groin. In: Kirk RM ed. General surgical operations. 4th edition. London: Churchill Livingstone; 2000. p. 117-40.
- Khan N, Bangash A, Muzaffaruddin S, Ain UH, Haris H. Polygalactine/Polypropylene Mesh vs. Propylene Mesh: Is There a Need for Newer Prosthesis in Inguinal Hernia? Saudi J Gastroenterol. 2010;16(1):8-13.
- Van Veen, R.N., Wijsmuller, A.R., Vrijland, W.W., Hop, W.C., Lange, J.F. and Jeekel, J. (2007), Long-term follow-up of a randomized clinical trial of non-mesh versus mesh repair of primary inguinal hernia. Br J Surg, 94: 506-510. doi:10.1002/bjs.5627.
- Lichtenstein IL, Shulman AG, Amid PK, Montllor MM. The tension free hernioplasty. Am J Surg. 1989;157:188-93.
- Kurzer M, Belsham PA, Kark AE. The Lichtenstein repair. Surg Clin North Am. 1998;78:1025-46.
- Amid PK, Shulman AG, Lichtenstein IL. Open "Tension-Free" repair of inguinal hernias; The Lichtenstein technique. Eur J Surg. 1996;162:447-53.
- Goldstein HS. Selecting the right mesh. Hernia. 1999;3:23-6.
- Wagner P, Bruniciardi. F, Amid, K, Chen, C., Inguinal hernias. in: Bruniciardi. F ed., Schwartz's principles of surgery, 10th edition, 2015., McGraw-Hill Education. p. 1495-1519
- Falah SQ, Jamil M, Munir A, Khan MI. Frequency of complications following Lichtenstein repair of inguinal hernia. Gomal J Med Sci 2015; 13: 9-11.
- Vasu S, Sagar K. A clinical study of post operative complications of Lichtenstein's hernioplasty for inguinal hernia. Int Surg J 2019;6:13-6.
- Timisescu L, Turcu F, Munteanu R, Gidea C, Drăghici L, Ghinghină O. Treatment of Bilateral Inguinal Hernia - Minimally Invasive versus Open Surgery Procedure. Chirurgia. 2013;108:56-61.
- Najamulhaq R, Chaudhry IA, Khan BA, Afzal M. Groin sepsis following Lichtenstein inguinal hernioplasty without antibiotics prophylaxis: a review of 100 cases. Pak J Med Sci 2006; 22: 416-9.
- Ahmed ZN, Nazeer MA, Hassan FU, Ali M. Outcomes of mesh repair in inguinal hernias at a tertiary care hospital. Pak J Med Health Sci 2012;6: 831-3.
- Khan Z, Gardezi JR. Lichtenstein tension-free hernioplasty: an audit. Pak J Surg 2004; 20: 16-9.
- Saeed N, Khanzada TW, Samad A. Outcome of Lichtenstein hernioplasty: a multicenter study. Rawal Med J 2009; 34: 135-7.
- Poobalan AS, Bruce J. A review of chronic pain after inguinal herniorrhaphy. Clin J Pain. 2003;19(1):48-54.
- Rehman SU, Khan AA, Shamim B, Saleem R, Shahzadi M, Khan ZA. Chronic groin pain after inguinal hernioplasty. J Rawalpindi Med Coll. 2014;18(2):237-9.
- Pedroso LM, DE-Melo RM, DA-Silva NJ Jr. Comparative study of postoperative pain between the lichtenstein and laparoscopy surgical techniques for the treatment of unilateral primary inguinal hernia. Arq Bras Cir Dig. 2017;30(3):173-6.
- Patil SM, Gurujala A, Kumar A, Kumar KS, Mithun G. Lichtenstein Mesh Repair (LMR) v/s Modified Bassini's Repair (MBR) + Lichtenstein Mesh Repair of Direct Inguinal Hernias in Rural Population - A Comparative Study. J Clin Diagn Res.

- 2016;10(2):12-5.
21. Nadir SM, Islam U, Ansari MA. An experience of mesh repair in inguinal hernia with two and half years follow up at Civil Hospital, Karachi. *Pak J Surg* 2012; 28:271-5.
  22. Ahmad H, Nadeem A, Malik AM. Inguinal hernia repair: a comparison of Lichtenstein and Darn techniques. *Pak Armed Forces Med J* 2007; 57: 23-7.
  23. Majeed S, Mehmood K. Repair of inguinal hernias with Lichtenstein technique. *Pak Armed Forces Med J* 2005; 55: 95-8.
  24. Aytac B, Cakar KS, Karamercan A. Comparison of Shouldice and Lichtenstein repair for treatment of primary inguinal hernia. *Acta Chir Belg* 2004;104: 418-21.