

Study of complications between polypropylene hernia system (PHS) and lichtenstein repair in inguinal hernia

Salve P G^{1*}, Anmod G L², Dahiphale Aruna³

¹Associate Professor, ²Professor, Department of General Surgery, GMC Latur, Maharashtra, INDIA.

³Resident, Department of Surgery, SRTR GMC, Ambajogai, Maharashtra, INDIA.

Email: drpgsalve@rediffmail.com

Abstract

Introduction: For hernia, many surgical procedures have been described. Because of the recurrence of hernia, there is no standard treatment for hernia till now. In review of literature, there were recurrences even with the use of mesh. The recurrence rate for inguinal hernias after doing primary repair is about 0.5% - 10% **Aims and Objectives:** To Study Complications Following Lichtenstein Mesh Repair and polypropylene Hernia system for Inguinal Hernia repair.

Methodology: This was a Prospective, observational study carried out with approval of Institutional Ethical Committee. This is a comparative study in 260 patients were included in the study from January 2012 to January 2015. All the patients signed a written informed consent. Patient were kept nil by mouth for at least 6 hours before procedure Statistical analysis done by Chi square test has been applied for testing the significance of difference between two proportions.

Result: Out of 130 patients undergone PHS were 6 (4.60 %) patients developed hematoma at operative site, while it was 4 (3.07%) out of 130 patients in case of LMR. The p-value is >0.05 The seroma was present in majority of the PHS patients i.e. 16.22% as compared to LMR i.e. 13.84% this was not statistically significant (P=0.485) Infection was present in majority of the PHS patients i.e. 7.70% as compared to LMR i.e. 4.61% but the difference is not statistically significant (p=0.383). In our study, 13 patients (10.00%) out of 130 patients in PHS repair group developed recurrent hernia, while, 3 patients (2.30%) out of 130 patients in Lichtenstein mesh repair group developed recurrent hernia. The p-value is <0.01, suggesting that the incidence of recurrence is significantly low following mesh repair compared to PHS.

Conclusion: The complications of Repair for Inguinal Hernia were comparable to each other in both the type of Lichtenstein Mesh Repair and polypropylene Hernia system (PHS) group except the recurrence rate of hernia was significantly higher in PHS as compared to Lichtenstein mesh repair group.

Keywords: Lichtenstein Mesh Repair, Polypropylene Hernia system (PHS), Inguinal hernia repair.


Address for Correspondence

Dr. Salve P. G., Associate Professor, Department of General Surgery, GMC Latur, Maharashtra, INDIA.

Email: drpgsalve@rediffmail.com

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INTRODUCTION

The history of hernia is as old as the history of surgery. Inguinal hernias are the commonest of all hernias, surgery is the definitive treatment and hernia repair is the most

commonly performed general surgical procedure in clinical practice. Despite high frequency of this procedure, very few have ideal results.¹ For hernia, many surgical procedures have been described. Because of the recurrence of hernia, there is no standard treatment for hernia till now. In review of literature, there were recurrences even with the use of mesh. The recurrence rate for inguinal hernias after doing primary repair is about 0.5% - 10%¹⁻³ There are many publications claiming that mesh repair is the best procedure, but non-mesh repair still continues and we are in search of best surgical technique⁴. Herniology flourished mainly due to many anatomical discoveries. In spite of many important discoveries from 18th to 19th century the treatment results were still unsatisfactory. Hernia repair is a

commonly performed procedure in the world. Several methods have been developed over the years to improve on the traditional methods of hernia repair, the most important being the Lichtenstein mesh repair¹⁰⁻¹³ and laparoscopic mesh repair^{12,13}. Traditional tissue based techniques (e.g. Bassini, McVay, Shouldice) characterized the armamentarium of the inguinal hernia surgeon during the 1970s and early 1980s. With the need to reduce the rate of hernia recurrence, as well as postoperative pain and convalescence, the treatment of inguinal hernias underwent a dramatic evolution over the past 15 years. The major advances included the introduction of the concept of tension-free hernia surgery, the use of prosthetic materials, and the development of laparoscopic techniques. The recognition that excessive suture-line tension was primarily responsible for high recurrence rates and significant postoperative pain following tissue based repairs led to the introduction of the concept of tension-free hernia surgery. The development of prosthetic materials ushered in the current era of hernia surgery, allowing a tension-free repair to be performed even for the largest defects and the most difficult procedures. Tension free mesh based repairs (e.g. Lichtenstein, plug and patch) began to increase in number in the late 1980s. The presence of a strangulated inguinal hernia cannot be considered a contraindication for the use of a prosthetic mesh. Lichtenstein hernioplasty can be successfully used not only as an elective operation but also as an emergency operation for incarcerated inguinal hernia with a good outcome and an acceptably low rate of postoperative complications, and the risk of the local infectious complications is low.¹⁴⁻¹⁶ However, the outcomes of emergency Lichtenstein hernioplasty were inferior to the outcomes of elective Lichtenstein hernioplasty.¹⁷ More recently, with the advent of laparoscopy for general surgery, various laparoscopic techniques have been developed for inguinal hernia repair, including the transabdominal preperitoneal repair, the intraperitoneal only mesh repair, and the totally extra peritoneal repair¹

MATERIAL AND METHODS

This was a Prospective, observational study carried out with approval of Institutional Ethical Committee. This is a comparative study. 260 patients included in the study from January 2012 to January 2015. Congenital inguinal hernias, Bilateral inguinal hernias, Complicated inguinal hernia, Recurrent inguinal hernias, Femoral hernia, umbilical and incisional hernias excluded from the study while All patients with inguinal hernia with age >16years who give informed consent for participation in study were included in the study. Sampling was done by consecutive sampling method. Consecutively operated first 127

patients had undergone polypropylene Hernia System (PHS) repair group and 130 patients who had undergone Lichtenstein Mesh Repair group who fulfilled the inclusion criteria were included in the study. Patients underwent history taking, clinical systemic and local examination, and routine preoperative investigations. Information was given to the patients as regards the anaesthetic procedures. All the patients signed a written informed consent. Patient were kept nil by mouth for at least 6hours before procedure. Statistical analysis done by Chi square test has been applied for testing the significance of difference between two proportions.

RESULT

Table 1: Frequency of Post- Operative Hematoma Following PHS and LMR

	Hematoma			p-value
	Present	Absent	Total	
PHS	6 (4.60 %)	124 (95.40%)	130	0.521
LMR	4(3.07%)	126 (96.92%)	130	

Out of 130 patients undergone PHS were 6 (4.60 %) patients developed hematoma at operative site, while it was 4(3.07%) out of 130 patients in case of LMR. The p-value is >0.05, thus there was no significant difference observed in incidence of post operative hematoma in two groups in over study.

Table 2: Frequency of Post- Operative Seroma Following PHS and LMR

	Seroma			p-value
	Present	Absent	Total	
PHS	22 (16.22)	108 (83.07)	130	0.485
LMR	18 (13.84)	112 (86.15)	130	

The seroma was present in majority of the PHS patients i.e. 16.22% as compared to LMR i.e. 13.84% this was not statistically significant (P=0.485)

Table 3: Frequency of Post-Operative Infection Following PHS and LMR

	Infection			p-value
	Present	Absent	Total	
PHS	10 (7.70)	120 (92.30)	130	0.383
LMR	6 (4.61)	124 (95.39)	130	

Infection was present in majority of the PHS patients i.e. 7.70% as compared to LMR i.e. 4.61% but the difference is not statistically significant (p=0.383) .

Table 4: Frequency of Recurrence of Inguinal Hernia Following PHS and LMR

	Recurrence			p-value
	Present	Absent	Total	
PHS	13 (10.00)	117 (90.00)	130	0.01
LMR	3 (2.30)	127 (97.70)	130	

In our study, 13 patients (10.00%) out of 1130 patients in PHS repair group developed recurrent hernia, while, 3 patients (2.30%) out of 130 patients in Lichtenstein mesh repair group developed recurrent hernia. The p-value is <0.01 , suggesting that the incidence of recurrence is significantly low following mesh repair compared to PHS.

DISCUSSION

In our study Out of 130 patients undergone PHS were 6 (4.60 %) patients developed hematoma at operative site, while it was 4(3.07%) out of 130 patients in case of LMR. The p-value is >0.05 , thus there was no significant difference observed in incidence of post operative hematoma in two groups in over study. The seroma was present in majority of the PHS patients i.e. 16.22% as compared to LMR i.e. 13.84% this was not statistically significant ($P=0.485$) Infection was present in majority of the PHS patients i.e. 7.70% as compared to LMR i.e. 4.61% but the difference is not statistically significant ($p=0.383$). In our study, 13 patients (10.00%) out of 1130 patients in PHS repair group developed recurrent hernia, while, 3 patients (2.30%) out of 130 patients in Lichtenstein mesh repair group developed recurrent hernia. The p-value is <0.01 , suggesting that the incidence of recurrence is significantly low following mesh repair compared to PHS. In study done by Naveen N *et al*, of 35 patients underwent mesh repair 2.9% and 5.7% of 35 patients underwent Bassini's repair developed post operative surgical site hematoma, suggesting no significant difference between two procedures for hematoma.¹³ In Scott NW *et al* study, there were no clear differences between mesh and non-mesh groups for haematomas.¹⁴ In Sinha SP *et al* study, 12.5% (2 out of 16) underwent Bassini's repair, and 6.25% (1 out of 16) patients underwent Lichtenstein mesh repair developed post operative hematoma. Suggesting no significant difference in two procedures.¹⁵ In present study, out of 127 patients done with Bassini's repair 16.5% (21 patients) developed post operative seroma, while 13.4% (17 patients) in 127 patients who underwent Lichtenstein mesh repair developed seroma. There is no significant difference observed in the occurrence of post operative seroma in two groups in present study. This is similar to other studies where 22.9% patients in LMR group and 8.6% in BR group in Naveen N *et al*¹³ study, developed operative site seroma with no significant difference between the two. In Naveen N *et al* study, 22.9% of patients in LMR group and 8.6% in BR group developed seroma. The p-value was found to be insignificant.¹³ In post operative surgical site pain, no significant difference was found between two procedures in present study. 6.3% (8 out of 127 patients) in Bassini's

repair, while 3.93% (5 out of 127 patients) underwent Lichtenstein mesh repair developed surgical site infection. This is consistent with other studies where in Sinha SP *et al* study 6.25% patients in Bassini's group while 12.5% patients in LMR group developed operative site infection; in Naveen N *et al* study, 5.7% patients in LMR group while none in BR group had operative site infection. In Shi Y *et al* study, a total of 552 patients with inguinal hernia were randomly divided into the following two groups: the Bassini group (n = 269) and the tension-free mesh group (n = 283). The recurrence rate in the Bassini group was 8.9% (24/269), significantly higher than that in the tension-free repair group 2.8% (8/283).¹⁶

CONCLUSION

The complications of Repair for Inguinal Hernia were comparable to each other in both the type of Lichtenstein Mesh Repair and polypropylene Hernia system (PHS) group except the recurrence rate of hernia was significantly higher in PHS as compared to Lichtenstein mesh repair group.

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