

## Original Research Article

# Post-operative complications and pain comparison between modified Bassini's repair and Lichtenstein's hernioplasty in inguinal hernia repair

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### ABSTRACT

**Background:** Modified Bassini's repair and the Lichtenstein's tension free mesh hernioplasty are commonly used hernia repair techniques and yet there is no uniform opinion as to which is the best technique. This study was undertaken to compare the postoperative complications so as to determine the best suitable of the two procedures.

**Methods:** A comparative randomized study was conducted on a total of 80 patients reporting to our hospital with inguinal hernia and were subjected to detailed examination, operated upon by either of technique and followed up. The post operative complications & pain were observed, analyzed and compared with other similar studies.

**Results:** In this randomised study pain after 12 and 24 hours was significantly less in the Lichtenstein's group when compared with Modified Bassini's repair. However there was no significant difference at 36 hours. Chronic pain after 1, 3 & 6 months was also not significant.

**Conclusions:** The Lichtenstein's hernioplasty was comparatively better than Modified Bassini's repair due to its simplicity, less dissection, lesser complications & lesser early pain and chronic pain in our study.

**Keywords:** Inguinal hernia, Mesh, Modified Bassini's repair

### INTRODUCTION

Hernia repair is the most commonly performed general surgical procedure in clinical practice. Hernia repair has evolved over the past few decades, from anatomical repairs to mesh hernioplasties to laparoscopic repair. And hernia surgeries are being performed as day care surgery which suggests the improvements in the management of hernia. Advances in the field of anaesthesia and pain management have been contributory to this evolution.

Frequent occurrence of hernia in inguinal region, enigmatic quality of the etiologic background and selection of treatment method make it one of the significant parts of surgery.

An unacceptable recurrence rate and prolonged postoperative pain and recovery time after tissue repair along with our understanding of the metabolic origin of inguinal hernias led to the concept of tension-free hernioplasty-Lichtenstein mesh repair.<sup>1</sup> Numerous comparative randomized trials have clearly demonstrated the superiority of the tension-free mesh repair over the traditional tissue approximation method.<sup>2</sup> However tissue repair methods like Bassini's have the advantage of being simple and cost effective.<sup>3</sup> Numerous studies have been done to decide on the most suitable technique.<sup>4</sup> But, there is no general agreement regarding the same. In the recent past merits of these methods has become the subject of debate.

Objectives of the study were to compare the two operative methods with respect to post operative complications like seroma formation, hematoma and wound infection and to compare Modified Bassini's Repair & Lichtenstein's hernioplasty with respect to pain at 12, 24, 36 hours and chronic pain after 1, 3 & 6 months.

**METHODS**

All patients admitted in the surgical wards in all the units of MNR Medical College Hospital Sangareddy, diagnosed to have inguinal hernia were included in the study.

This is a comparative randomized study consisting of 80 patients with 40 patients in Group Lichtenstein's Hernioplasty and 40 patients in Group Modified Bassini's repair undertaken to study the clinical presentation, risk factors and complications of surgical procedures over a period of 18 months from March 2017 to Aug 2018. The study was conducted after taking approval from the hospital ethical committee. Simple random sampling method used. Patients were followed up at intervals of 1,3 & 6 months after discharge.

**Inclusion criteria**

All patients coming to the surgical outpatient department at our hospital with complaints of swelling and/or pain in the inguino-scrotal region and diagnosed to have inguinal hernia.

**Exclusion criteria**

Patients admitted for femoral or any other abdominal hernia, children presenting with congenital inguinal hernia, patients with recurrent inguinal hernia and bilateral hernia, patients admitted with complicated

inguinal hernia and patients with coagulopathy and those on anti-coagulant therapy.

**Statistical analysis**

Descriptive statistical analysis has been carried out in the present study. Results on categorical measurements are presented in Number (%). Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

**RESULTS**

A total of 80 patients who fulfilled the inclusion criteria were included in the present comparative randomized study conducted from March 2017 to August 2018 over a period of 1 year and 6 months at hospital. 40 patients underwent Bassini's repair and 40 patients underwent Lichtenstein's hernioplasty. Immediate post operative complications like seroma, hematoma and wound infection were less in Lichtenstein's hernioplasty (7.5%) as compared to Modified Bassin's herniorraphy (22.5%).

**Table 1: Early complications.**

Variables	Modified Bassini's Herniorraphy	Lichtenstein's Hernioplasty
<b>Seroma</b>	03(7.5)	01(2.5)
<b>Hematoma</b>	02(5)	00(0)
<b>Infection</b>	04(10)	02(5)
<b>Normal</b>	31(77.5)	37(92.5)
<b>Total Patients</b>	40(100)	40(100)

Immediate pain was significantly less in the Lichtenstein's group when compared to Modified Bassini's group at 12 and 24 hours after surgery. However there was no significant difference at 36 hours after surgery.

**Table 2: Comparison of immediate pain.**

Time of assessment (in hours)	Immediate pain								Chi-Square Test
	Modified Bassini's Herniorraphy				Lichtenstein's Hernioplasty				
	Mild	Mod	Sev	No Pain	Mild	Mod	Sev	No Pain	
<b>12</b>	18	22	0	0	30	10	0	0	X <sup>2</sup> =7.5 P=0.0062 Significant
<b>24</b>	24	16	0	0	33	07	0	0	X <sup>2</sup> =4.943 P=0.0262 Significant
<b>36</b>	36	04	0	0	34	0	0	06	P=0.1197 NS

**Table 3: Comparison of chronic pain.**

Time of assessment (in months)	Chronic Pain								Fischer's Test
	Modified Bassini's Herniorraphy				Lichtenstein's Hernioplasty				
	Mild	Mod	Sev	No Pain	Mild	Mod	Sev	No Pain	
<b>1</b>	15(37.5)	0	0	25(62.5)	10(25)	0	0	30(75)	P>0.005 Not Significant
<b>3</b>	02(5)	0	0	38(95)	0	0	0	40(100)	
<b>6</b>	01(2.5)	0	0	39(97.5)	0	0	0	40(100)	

Chronic pain after 1, 3 and 6 months were analysed using Visual Analogue Scale. There was no significant difference between two groups.

**DISCUSSION**

The description of the Lichtenstein tension free mesh repair opened a new era in groin hernia repair. The

method is very simple, effective and with minimal complications. So it is currently the preferred method for inguinal hernia repair worldwide<sup>5</sup>. However Bassini’s repair though done infrequently, has advantages in situations like contaminated field and in low resource settings<sup>6</sup>. Moreover in terms of post operative complications and overall success of procedure both Bassini’s repair and Lichtenstein’s hernioplasty are rated equal in many studies.<sup>7</sup>

**Table 4: Comparison of post-operative complications between studies.**

Post operative complications	MM Harjai Study <sup>9</sup>				Present Study			
	Modified Bassini’s (n=118)		Lichtenstein’s (n=98)		Modified Bassini’s (n=40)		Lichtenstein’s (n=40)	
	No	%	No	%	No	%	No	%
<b>Pain</b>	22	18.6	10	10.2	10	25	4	10
<b>Seroma</b>	8	6.78	4	4.08	3	7.5	1	2.5
<b>Hematoma</b>	5	4.24	1	1.02	2	5	0	0
<b>Infection</b>	11	9.32	9	9.18	4	10	2	5

**Table 5: Chronic pain compared with other studies.**

Study	Modified Bassini’s		Study	Lichtestein’s	
	Follow up	% having pain		Follow up	% having pain
<b>McGillicuddy<sup>10</sup></b>	Variable	0.01	McGillicuddy	Variable	0.01
<b>Nordin et al<sup>11</sup></b>	Variable	4.2	Nordin et al	Variable	5.6
<b>Present study</b>	6 months	2.5	Present study	6 months	0

**Post-operative pain**

The pain scale used in this study was Visual Analogue Scale which is an appropriate tool to use in the clinical assessment of pain. On a scale of ‘0-10’, with 0 as no pain to 10 as worst possible pain. In our study, pain after 12 hours and 24 hours after surgery was statistically significant. But pain after 36 hours after surgery was less significant. During the repair of inguinal hernia using mesh, there is considerably less tissue tension employed to close the abdominal wall defect than in techniques in which sutures are used such as the Bassini’s method. Therefore, it would be expected that there would be less pain involved in mesh repairs because of this reduced tension. There are clinical trials which contradict these claims. Perhaps if there are significant observed differences in pain the ability to perform non mesh repair through reduced incision size may be the most important factor in achieving these differences. In a previous study by Callesen T et al, showed that there was no significant difference in pain following Lichtenstein’s hernioplasty or Modified Bassini’s repair (36% and 28%).<sup>12</sup> Accordingly, one third of patients had moderate to severe pain after one week and approximately 10% after 4 weeks irrespective of type of repair in their study. Risk of post operative pain seems to come from a variety of areas. Patient related factors include age of patient and inguinal pain before surgery. Surgical factors include type of repair. Analyzing pain in terms of age of patient is proved in various studies that pain is inversely related to age of patient that is younger patients experience more

pain as compared to older patients.<sup>13</sup> In a similar study done by Paul A et al, it was found that age was the only independent predictive factor of pain score.<sup>14</sup> The present study did not take into consideration long term chronic and persisting type of pain during follow-up to assess pain intrinsic to the technique.

**Post-operative complications**

There are a number of complications known to arise with some regularity after hernia the most common being wound haematoma or infection or seroma and urinary complications such as retention (due to post operative pain which is transient). In present study, complications in both type of repair were equal. Most common of all was seroma formation.

**Seroma**

It represents exudates (e.g. solutes, water, plasma proteins including fibrin and neutrophils). Seroma results from the trauma of scalpel, scissors, cautery and foreign bodies. In the present study, 2.5% of patients who had undergone Lichtenstein’s hernioplasty developed seroma and it was 7.5% in patients who had undergone Modified Bassini’s repair. In a study by Faish T et al 2% of patients who had undergone mesh plug hernioplasty developed seroma.<sup>8</sup> This discrepancy in the percentage between the two studies may be attributed to the criteria used to define seroma. In our study all cases with ooze from the incision site were included. In the other study only those cases

which required drainage were included. In Harjai MM study, it was 4.08% for Lichtenstein's group and 6.78% for Modified Bassini's group.<sup>9</sup>

### Haematoma

Bleeding from either artery or vein may result at all anatomic levels during an inguinal repair resulting in haematoma formation. Haematomas as a complication of Modified Bassini's repair, has been reported between 0 - 20% in different studies. In our study, no patient and 5% of patients undergoing Lichtenstein's hernioplasty and Modified Bassini's repair developed haematoma respectively. In study by MM Harjai et al, 1.02% of Lichtenstein's group developed haematoma compared to 4.24% of Modified Bassini's group.<sup>9</sup> The difference in the results of that study with ours is comparable with no significant difference.

### Infection

Infection represents a dreaded complication for all types of surgeries and it is no different in inguinal hernia surgeries. Inguinal hernia surgeries complicated by infections have a higher rate of recurrence as the repairs are destroyed along with the tissues. In the present study only 5% of cases who had undergone Lichtenstein's hernioplasty developed post operative wound infection with 10% incidence in Modified Bassini's group. In MM Harjai study, it was 9.18% in Lichtenstein's repair group and 9.32% in the Bassini's group.<sup>9</sup> In the above tables we can clearly see the superiority of mesh repairs over conventional tissue repairs, in primary inguinal hernias. The current study had its limitations due to the smaller sample size and short duration of study spanning over a period of one and half years only. Because of short duration of study we couldn't compare recurrence rate among two methods.

### CONCLUSION

The Lichtenstein's hernioplasty was comparatively better than Modified Bassini's repair due to its simplicity, less dissection, lesser complications & lesser early pain and chronic pain in our study. So individualization of cases with tailor made approach is necessary to manage the operative complications in inguinal hernia repair.

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