

INTERVENTIONAL STUDY FOR COMPARING THE OUTCOMES OF LICHTENSTEIN AND MODIFIED BASSINI'S REPAIR OF INGUINAL HERNIA

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Abstract

Background: The modified Bassini's repair and Lichtenstein's mesh hernioplasty are popular methods for hernia repair. An interventional study was conducted on Lichtenstein's tension-free method versus modified Bassini repair for treating inguinal hernias, aiming to assess the techniques and their postoperative outcomes between the two approaches. **Materials and Methods:** An interventional study was conducted on patients reporting to Susheela tiwari hospital, Haldwani with inguinal hernias. A total of 50 patients were included in this study of which, 25 patients were operated by LMR and 25 patients were operated by MBR and followed up for a period of 3 months. The outcomes of the both techniques were compared. **Result:** 25 participants in each of the study's Modified Bassini's Repair (MBR) and Lichtenstein's Mesh Repair (LMR) were involved. Compared to Bassini's repair, which had an infection rate of 8%, the Lichtenstein group had a higher rate of 16%. The MBR group experienced two recurrences, while the LMR group experienced none. Chronic pain was less common in the Lichtenstein repair group 8% versus 12% in the Bassini group. **Conclusion:** In our study, LMR proved to be more effective than MBR because of its straightforward nature, fewer post-operative complications, and no instances of recurrence.

INTRODUCTION

The origin of hernia dates back to the early days of surgical procedures. Hernias in the inguinal area are the most prevalent type of hernias. Surgery is the ultimate treatment for this condition, and repair of hernias is the most often done routine surgical operation in clinical practice.^[1] Although this technique is performed often, there are often problems following surgery. The high prevalence of hernias in the inguinal region, the mysterious nature of their causes, and the complexity of choosing the appropriate treatment strategy make them a crucial aspect of surgical practice.^[2]

An inguinal hernia occurs when the contents of the abdominal cavity protrude into an inguinal canal, resulting in a visible bulge in the groin area. The protrusion could potentially be the small intestine, appendix, omentum. Inguinal hernias can be classified as either 'direct' or 'indirect', depending on the aetiology and anatomical site of the herniation.^[2,3] A direct inguinal hernia occurs when a weakening area of the transverse fascia on the bottom of the inguinal canal allows tissue to protrude. This

condition is typically worsened by factors such as ageing, obesity, and increased pressure in the abdomen, such as from heavy lifting or chronic coughing.^[3] An indirect inguinal hernia occurs when it enters the inguinal canal via the internal (deep) inguinal ring, following the course of the spermatic cord, and potentially extending into the scrotum. Indirect hernias may arise from a congenital condition when the processus vaginalis fails to fully close. To distinguish between the two kinds of inguinal hernia, determine the position of the inferior epigastric vessels in relation to the protruding sac. An indirect hernia would appear on the lateral side of the blood vessels, while a direct hernia would appear on the medial side of the blood vessels.^[4]

Throughout the world, hernia repair is a frequently carried out operation. Over time, a number of techniques have been developed to enhance the conventional techniques for hernia repair, the two most crucial ones being laparoscopic mesh repair and Lichtenstein mesh repair.^[1-4] The purpose of this study was to ascertain whether employing the mesh repair instead of the widely utilized modified Bassini repair offered any advantages to a typical surgeon.

The recurrence rate, postoperative pain, infection rate, seroma development, and funiculitis were compared in patients who underwent the Bassini and Lichtenstein method of repair in this interventional study.

MATERIALS AND METHODS

The present study was conducted in the Department of General Surgery, Government Medical College, and STM Hospital, Haldwani, after due permission from the Institute Ethical Committee for 18 months. We will include all patients who are undergoing for surgical repair of inguinal hernia in General Surgery department of Government Medical College, Haldwani in the study. Patients will be randomised alternatively into two groups: those in which Modified Bassini's repair is done (group A) vs. those in which Lichtenstein's hernioplasty is done (group B). This will be an interventional study. This will be a single surgeon, single unit study. The patients within the age group 18 years to 80 years will be included in the study and the patients who are not fit for surgery will be excluded from the study. Inclusion Criteria will be, 1) Patients with age more than 18 years and less than 80 years and fit for surgery; 2) Uncomplicated inguinal hernia; 3) Patients giving consent to be part of the study. Exclusion Criteria will be: 1) Complicated Hernia (Incarcerated hernia, Obstructed hernia, Strangulated hernia) 2) Patients with co-morbid conditions like Diabetes Mellitus, Ischemic heart diseases etc; 3) Patients not giving consent to be part of the study. This study will be carried out on all patients of inguinal hernia (either direct or indirect) admitted in the surgical ward in the Department of General Surgery, Government Medical College, Haldwani. Prior to admission, proper screening along with detailed clinical evaluation of each patient will be carried out in the form of the following: complete blood count, routine biochemistry, bleeding time, clotting time, urine examination, chest x-ray and ECG.

All repairs will be performed by the same surgeon either by using non-mesh repair technique or mesh-based repair technique. Mesh repair was done by using the polypropylene mesh. A detail study of these patients will be done as per Performa to prove which method of repair is better. Patients will be followed up post operatively at the end of 1 week, 2 weeks, 1 Month and 3 Months for recurrence, foreign body sensation, pain, wound infection and return to normal activities. On the basis of above outcome and results data will be statistically analyzed to reach a definitive conclusion.

RESULTS

Inguinal hernia occurrence was investigated across various age groups. There is more prevalence of hernia in age group of 18-35 as 24 patients out of 50 from that age group. Prevalence of inguinal hernia is

more common in males compared to females as 43 out of 50 were males. The research indicated that 60 percent of the patients with inguinal hernia (30 out of 50) were heavy manual workers, such as laborers and farmers. Moderate manual workers, had an incidence of inguinal hernia at 28% (14 out of 50). Sedentary job workers had an incidence of inguinal hernia at 12% (6 out of 50). As the risk factors leading to development of inguinal hernia it is seen that BPH is responsible for 24% (12 out of 50) cases. Chronic cough is responsible for 22% (11 out of 50) cases. Heavy weight lifting is responsible for 22% (11 out of 50) cases. Chronic constipation is responsible for 14% (7 out of 50) cases. Smoking is responsible for 14% (7 out of 50) cases. Obesity is responsible for 8% (2 out of 50) cases. The study compared postoperative complications between Lichtenstein repair and modified Bassini repair for hernia treatment. Wound infections occurred in 16% (4 out of 25) of patients undergoing Lichtenstein repair compared to 8% (2 out of 25) for the modified Bassini repair. Seroma were observed in 12% (3 out of 25) of patients with Lichtenstein repair and 16% (4 out of 25) with modified Bassini repair. Haematoma occurred in 4% (1 out of 25) of patients undergoing Lichtenstein repair compared to 16% (4 out of 25) of patients with modified Bassini repair. Scrotal swelling developed in 12% (3 out of 25) of Lichtenstein repair patients and 16% (4 out of 25) of modified Bassini repair patients. Other complications like (scar tenderness, erythema, retention of urine) were reported in 12% (3 out of 25) of Lichtenstein repair cases and 16% (4 out of 25) of modified Bassini repair cases. No complications occurred in 44% (11 out of 25) of Lichtenstein repair patients and 28% (7 out of 25) of modified Bassini repair patients. The p-value was 0.001 for Lichtenstein hernia repair versus 0.021 for modified Bassini repair, indicating a statistically significant difference in the complications observed between the two surgical techniques. The average postoperative hospital stay for the LMR group is 3.92 days with a standard deviation of 1.9, while for the MBR group it is 4.22 days with a standard deviation of 1.4. This suggests that patients who underwent modified Bassini repair tend to have a longer postoperative hospital stay. The study shows late complications occurring more than 30 days post-surgery for patients undergoing Lichtenstein repair versus modified Bassini repair for hernia treatment. Among patients who underwent Lichtenstein repair, 8% (2 out of 25) experienced chronic pain, while 12% patients (3 out of 25) in the modified Bassini repair group reported this complication. There were 4% patients (1 out of 25) of Lichtenstein group experienced neuralgia while 12% (2 out of 25) in modified Bassini repair group. There were 12% patients (3 out of 25) in Lichtenstein group experienced the foreign body sensation while 4% (1 out of 25) in modified Bassini group. Recurrence is seen 8% (2 out of 25) patients underwent modified Bassini repair vs 0% in Lichtenstein hernia repair. Notably, 76% (23 out of

25) of Lichtenstein repair patients reported no late complications, compared to 68% (17 out of 25) of those who had the modified Bassini repair.

Table 1: Distribution of study subjects according to the complication after surgery.

Complication After Surgery	Lichtenstein Repair	Modified Bassini Repair
Seroma	3 (12%)	4 (16%)
Haematoma	1 (4%)	4 (16%)
Wound Infection	4 (16%)	2 (8%)
Scrotal Swelling	3 (12%)	4 (16%)
Other Complications(Erythema, Scar Tenderness, Retention Of Urine)	3 (12%)	4 (16%)
No Complications	11 (44%)	7 (28%)
TOTAL	25	25
p-value	0.001	0.021

Table 2: Distribution Of Study Subjects According To The Late Complications (>30 Days)

Late Complications (>30 Days)	Lichtenstein Repair	Modified Bassini Repair
Chronic pain	2 (8%)	3 (12%)
Neuralgia	1 (4%)	2 (8%)
Foreign body sensations	3 (12%)	1 (4%)
Recurrence	0 (0%)	2 (8%)
No complications	19 (76%)	17 (68%)
TOTAL	25	25
p-value	0.002	0.004

DISCUSSION

The emergence of the Lichtenstein tension-free mesh repair technique marked a significant advancement in the treatment of groin hernias. Its simplicity, effectiveness, and low risk of complications have made it the preferred choice for repairing inguinal hernias worldwide.^[5,6] Despite being less common, Bassini's repair offers advantages in scenarios involving a contaminated surgical field and in resource-limited settings. Additionally, numerous studies have found similar ratings for both the modified bassini repair and Lichtenstein methods in terms of post-operative complications and overall procedural success. Recurrence – Recurrence rate is considered to be the essential factor in assessing the efficacy of the surgical procedure in hernia repair. Bendavid R,^[7] conducted a literature review and found that mesh repairs are superior to traditional tissue repairs for both primary and recurrent inguinal hernias, with a 0% recurrence rate for the LMR group and an 8% recurrence rate for the MBR group. Amid PK's study,^[8,9] indicated that mesh repair outperforms pure tissue approximation repairs. Nathan JD and Pappas TN's study,^[10] concluded that Lichtenstein mesh repair, with a recurrence rate of less than 1%, is the most commonly performed inguinal hernia operation.^[11,12] This study suggests that LMR yields better results with no recurrences (0%) compared to MBR, which had an 8% recurrence rate. Infection - The current study found that post-operative wound infections occurred in 16% of patients who underwent LMR, compared to 8% in MBR cases. This is probably due to the higher chances of pathogen presence and growth in LMR cases, attributed to the presence of a foreign body (mesh).^[13,14] In MM Harjai's research,^[3] infection rates were 9.18% in the LMR group and 9.32% in the MBR group. Seroma- In the current study, LMR

resulted in seroma occurrence in 12% of patients, while MBR resulted in seroma occurrence in 16% of patients. MM Harjai's study,^[3] indicated seroma rates of 4.08% for LMR and 6.78% for MBR. Haematoma-Hematoma was observed in 4% of patients who received LMR and in 16% of those who received MBR in our study. According to a study by MM Harjai et al,^[3] the occurrence of hematoma was 1.02% for LMR and 4.24% for MBR. The higher incidence of hematoma in MBR may be due to the tension closure of the conjoint tendon, muscles, and inguinal ligament.^[15]

CONCLUSION

The study compared the outcomes of Lichtenstein and modified Bassini repair techniques for hernia treatment across various demographic and clinical variables. The findings indicate that incidence of inguinal hernia is more common in males and in age group of 18-35yrs. The prevalence of indirect inguinal hernia surpasses that of direct hernia. Certain risk factors BPH, persistent coughing, and heavy weight lifting are the primary factors that commonly lead to inguinal hernia. Incidence of hernia is seen more commonly in labourers and farmers (heavy manual workers). The MBR group was found to have higher reported pain levels compared to the LMR group. The Lichtenstein repair group had a shorter average hospital stay than the modified Bassini repair group. Postoperative complications varied between the two techniques, with wound infections and foreign body sensation being more prevalent in the Lichtenstein group, while recurrence of hernia was slightly higher in the Bassini group.

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