

STUDY CLINICAL PROFILE IN TERMS SURGICAL MANAGEMENT AND OUTCOME OF BILATERAL HERNIA REPAIR: A OBSERVATIONAL LONGITUDINAL STUDY

Dr. Zulfikar Rupani¹, Dr. Nitin Appasaheb Raje^{2*}, Dr. Michelle Pereira Raje², Dr. Seema Rupani³

¹Assistant Professor, Department of General Surgery, Vedantaa Institute of Medical Sciences, Dahanu, Maharashtra, India

²Associate Professor, Department of Radiology, Vedantaa Institute of Medical Sciences, Dahanu, Maharashtra, India

³Private Practice

***Corresponding Author:** Dr. Nitin Appasaheb Raje, Associate Professor, Department of Radiology, Vedantaa Institute of Medical Sciences, Dahanu, Maharashtra, India

ABSTRACT

Background: Bilateral inguinal hernia accounts for approximately 12–16% of all inguinal hernias. Various surgical techniques, including Stoppa repair, Lichtenstein repair, and laparoscopic totally extraperitoneal (TEP) repair, are commonly employed. The present study was undertaken to evaluate the clinical profile, surgical management, and outcomes of bilateral inguinal hernia repair using these techniques.

Materials and Methods: This hospital-based observational longitudinal study was conducted in the Department of General Surgery of a tertiary care teaching hospital from November 2023 to October 2025. A total of 47 patients with clinically diagnosed bilateral inguinal hernia were included. Demographic characteristics, risk factors, operative time, postoperative complications, recurrence, and chronic pain were evaluated. Statistical analysis was performed using STATA version 10.1, with $p < 0.05$ considered significant.

Results: The mean age of patients was 45.23 ± 14.28 years. Mean operative time was significantly lower in the Stoppa group (90.78 ± 10.18 minutes) compared to the Lichtenstein group (122.72 ± 14.23 minutes) and laparoscopic TEP group (98.32 ± 8.72 minutes) ($p = 0.03$). Seroma formation was more common in patients undergoing Stoppa repair without Romovac suction drainage (26.6%), while no seroma was observed in patients with Romovac drainage. Chronic pain at 3 months was observed only in one patient (7.2%) who underwent bilateral Lichtenstein repair. No recurrence was noted during follow-up.

Conclusion: Stoppa repair is a safe, effective, and reliable technique for bilateral inguinal hernia repair, offering shorter operative time, low postoperative morbidity, minimal chronic pain, and excellent short-term outcomes with no recurrence observed during follow-up.

Keywords: Bilateral inguinal hernia, Stoppa repair, Lichtenstein repair, Laparoscopic totally extraperitoneal (TEP) repair, Recurrence

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INTRODUCTION

Hernia defined as abnormal protrusion of a viscous or part of viscous through an defect in its surrounding wall of the cavity in which it is contained.¹

As many as one in six to eight percent of inguinal hernias are bi-lateral.² Patients with bilateral hernias are typically between the ages of 40 and 85, with the average age being somewhere in the middle. Stoppas, Lichtensteins, and laparoscopic TEP are the most commonly used surgical procedures for bilateral inguinal hernias. Inguinal hernia repair using preformed mesh has become widely accepted.³

Inguinal hernia surgery aims to fix the problem and improve the patient's quality of life. Intraoperative difficulties, bleeding, and postoperative pain are just some of the issues that can arise during surgery.^{4,5} Major complications include bladder and bowel injury as well as minor complications such as neurovascular injury,

hematoma, retention of urine, seroma formation, cord edema, wound infection and testicular pain.^{6,7}

The key to improving the quality and outcomes of all three procedures may lie in standardising surgical techniques and incorporating them into educational curricula. Hernias of the groyne can be eliminated using a large prosthetic reinforcement of the visceral sac, which was described in 1975 by Stoppa et al.⁸

For bilateral and recurrent inguinal hernias, laparoscopic hernia repair is the preferred method. In comparison to open mesh repair, lap TEP repair has shown better outcomes in terms of shorter postoperative hospital stays, reduced postoperative pain, and an earlier return to normal activity.⁹ It has become the standard procedure for repairing bilateral or unilateral inguinal hernias using the Lichtenstein tension-free repair method.¹⁰

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Therefore, the present study was done to know chronic pain affecting quality of life, and results vary with different surgical techniques and effectiveness of stoppa, lichtenstein, and laparoscopic bilateral hernia repair.

OBJECTIVE:

- To study clinical profile in terms of surgical Management and Outcome of bilateral hernia repair.

MATERIALS AND METHODS

The present hospital-based observational longitudinal study was conducted in the Department of General Surgery of a tertiary care teaching hospital. The study was carried out over a period of two years from November 2023 to October 2025.

The study population comprised patients admitted with a clinical diagnosis of bilateral inguinal hernia, with or without complications. The sample size was estimated using OpenEpi version 3 software, considering a confidence level of 95%, power of 80%, hypothesized frequency of 5%, population size of 200, and design effect of 1. Based on these parameters, a minimum sample size of 47 patients was calculated and included in the study.

Patients with clinically diagnosed bilateral inguinal hernia, including both uncomplicated and complicated cases, and those belonging to ASA grades I, II, and III were eligible for inclusion. Patients with ascites, scrotal abdomen, and major obstructive uropathy were excluded from the study.

Institutional Ethics Committee approval was obtained before commencement of the study. Written informed consent was obtained from all participants. Confidentiality of patient information was maintained throughout the study. Data were collected using a structured proforma, entered into Microsoft Excel, and periodically reviewed for accuracy by the guide and statistician. Appropriate measures were taken to ensure secure storage and backup of data.

For the purpose of this study, hernia was defined as the abnormal protrusion of an abdominal viscus or part of a viscus through a defect in the wall of the cavity in which it is normally contained. Surgical techniques evaluated included Stoppa repair, Lichtenstein repair, and laparoscopic totally extraperitoneal (TEP) repair.

Detailed demographic information, including age, gender, and body mass index (BMI), was recorded. Risk factors such as obesity, chronic cough, chronic urinary retention, diabetes mellitus, smoking, and complicated hernia status (obstructed or irreducible hernia) were assessed. Obesity was defined as a BMI greater than 30 kg/m².

A thorough clinical examination was performed in all patients. Local examination of the hernia included assessment of its position, size, shape, consistency,

cough impulse, reducibility, condition of overlying skin, and size of the fascial defect. Baseline investigations performed for anaesthetic fitness included haemoglobin estimation, total and differential leukocyte counts, random blood sugar, HIV and HBsAg screening, blood grouping, urine routine and microscopy, chest radiography, and electrocardiography. Ultrasonography of the abdomen and groin region was performed to confirm bilateral inguinal hernia, determine the site and size of defects, identify occult defects, and exclude associated intra-abdominal pathology. Ultrasound examinations were conducted using a Samsung HS70A machine with convex and linear probes.

All diagnosed cases were admitted and managed surgically. The choice of operative procedure was made by the treating surgeon based on clinical assessment and patient factors. Surgical techniques employed included Stoppa repair, Lichtenstein mesh repair, and laparoscopic totally extraperitoneal (TEP) repair.

Postoperatively, patients were followed up monthly for the first three months and subsequently at three and six months. During follow-up visits, patients were evaluated for recurrence, postoperative complications, and pain. They were also advised regarding smoking cessation, weight reduction, avoidance of heavy lifting for at least three months, and gradual return to normal activities.

Outcome measures were categorized as immediate and delayed postoperative outcomes. Recurrence was defined as the reappearance of symptoms and clinical signs of unilateral or bilateral inguinal hernia after complete wound healing and was confirmed by ultrasonography. Chronic pain was defined as pain persisting beyond three months following surgery.

Statistical analysis was performed using STATA software version 10.1. Quantitative variables were summarized using mean and standard deviation, whereas categorical variables were expressed as frequencies and percentages. P value <0.05 was considered statistically significant.

RESULTS

A sample size of 47 patients with bilateral swelling in groin with clinical diagnosis of bilateral inguinal hernia included in the study. Among 47 patients with bilateral inguinal hernias Bilateral Lichtenstein was done among 14 (29.78%) patients, Stoppa Repair without Romovac suction drain was done in 15 (31.91%) patients, Stoppa Repair with Romovac suction drain was done in 09 (19.14%) patients and Lap TEP was done in 9(19.14%) patients.

Table 1: Comparison of risk factors among Operated groups:

Risk factors	Group A (n=24)	Group B (n=14)	Group C (n=09)	P value
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Mean age	42.05 ±8.72	44.72 ±10.1	41.48 ±8.7	0.71 (NS)
Strenuous work	11 (45.8)	06 (42.8)	04 (44.4)	071 (NS)
Smoking	08 (33.3)	05 (35.7)	04 (44.4)	0.68 (NS)
Chronic cough	03 (12.5)	03 (21.4)	02 (22.2)	0.81 (NS)

In the above table no. 1, The mean age of surgery in Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C) among patients was 42.05 ±8.72, 44.72 ±10.1 and 41.48 ±8.7 years respectively with no statistical significance. (P>0.05) The risk factor for bilateral inguinal hernias like strenuous work, smoking and chronic cough shows no significant difference between Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C). (P>0.05)

Table 2: Mean operative time among different operated groups:

Operative time (min)	Group A	Group B	Group C	P value
Mean	90.78	122.72	98.32	0.03 (S)
SD	10.18	14.23	8.72	

In the above table no. 2, the mean operative time of surgery in Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C) among patients was 90.78 ±10.18, 122.72 ±14.23 and 98.32 ±8.72 minutes respectively with statistical significance. (P<0.05)

Table 3: Immediate post operative complication among different groups:

Complications	Group A Without Romovac suction drain (n=15) (%)	Group A With Romovac suction drain (n=9) (%)	Group B (n=14) (%)	Group C (n=9) (%)	P value
Seroma formation	04 (26.6)	00	03 (21.4)	01 (11.1)	0.02 (S)
Cord edema	5 (33.3)	00	04 (28.6)	00	0.48 (NS)
SSI	00	00	01 (7.2)	01 (11.1)	0.63 (NS)

Wound dehiscence	00	00	00	00	-
Cuticular necrosis	00	00	00	00	-

The above table no. 3 described immediate post operative complication, Seroma in Stoppa repair without Romovac suction drain (Group A) was more (26.6%) compared to Bilateral Lichtenstein (21.4%) and Lap TEP (11.1%) with statistical significance. (P>0.05) The other complications like Cord edema, SSI shows no significant difference between Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C). (P>0.05). Other complication like urinary retention, hematoma formation is not seen any patient.

Table 4: Delayed Post operative complications among different groups:

Complications	Group A (n=24)	Group B (n=14)	Group C (n=9)	P value
Recurrence	0	0	0	--
Chronic pain after 3 months	0	1 (7.2%)	0	0.32 (NS)

The above table no. 4 described chronic pain after 3 months was observed only in patients operated by Bilateral Lichtenstein (7.2%) might be due to entrapment of nerve. The other delayed complication of recurrence was not seen in any operated method.

DISCUSSION

In general surgery, inguinal hernia repair is the most common procedure, accounting for between 10 and 15 percent of all surgeries.^{1,2} Herniorrhaphy has a significant financial and productivity impact, as these statistics show. Laparoscopic surgery and mesh procedures have not resolved the conflicting views on hernioplasty technique. All abdominal wall defects can be repaired using prosthetic materials, even if traditional surgery is still practised.

The present observational prospective study done to study the clinical profile and management of bilateral inguinal hernia. A sample size of 47 patients with bilateral swelling in groin with clinical diagnosis of bilateral inguinal hernia included in the study.

In the present study, it was observed that majority of patients were in age group 51-60 years (34.04%) with mean age of the patients was 45.23 ±14.28 years.

Yasser Hussein et al¹¹ compared techniques Stoppa versus bilateral Lichtenstein for repair of bilateral hernia observed no significant difference between both groups regarding the preoperative data like age with mean age of 44.33±7.0 and 43.23±9.0 years respectively. This finding was similar to present study.

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The mean age of surgery in Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C) among patients was 42.05 ± 8.72 , 44.72 ± 10.1 and 41.48 ± 8.7 years respectively with no statistical significance. ($P > 0.05$) In a study by Gamal Al-Shemy et al¹² on bilateral Lichtenstein hernioplasty observed there were no statistically significant differences between both groups with respect to age. Similarly, Yasser Hussein et al¹¹ in a study observed no significant difference between both groups regarding the preoperative data like age with mean age of 44.33 ± 7.0 and 43.23 ± 9.0 years respectively. The risk factor for bilateral inguinal hernias like strenuous work, smoking and chronic cough shows no significant difference between Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C). ($P > 0.05$)

In a study by Gamal Al-Shemy et al¹² on bilateral Lichtenstein hernioplasty observed smoking (76.6%), obesity (10%), chronic obstructive pulmonary disease (20%) and benign prostatic hypertrophy (20%). There is a strong correlation between direct inguinal hernias and acquired causes (ageing, neuromuscular and aponeurotic injuries, and increased intra-abdominal pressure) that has been documented (chronic cough, chronic urinary obstruction from urethral stricture or prostatic hypertrophy, chronic constipation, heavy manual work, and weight lifting).^{13,14}

In the present study, the mean operative time of surgery in Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C) among patients was 90.78 ± 10.18 , 122.72 ± 14.23 and 98.32 ± 8.72 minutes respectively with statistical significance. ($P < 0.05$) Koc et al¹⁵ stated in a comparative study between both techniques that Stoppa procedure took significantly shorter time than bilateral Lichtenstein repair. This finding was in accordance to present study. Sasso et al¹⁶ in study of repair of bilateral inguinal hernia by Lichtenstein procedure and reported a mean operative time 113 ± 19.3 min, that was significantly similar to present study. Yasser Hussein et al¹¹ in a study observed operating time was significantly increased from 55 minutes for the L group versus 75 minutes for the S group ($P < 0.05$). This finding was in contrast to present study. It may be due to they were not familiar with the Stoppa procedure.

The Seroma in Stoppa repair without Romovac suction drain (Group A) was more (26.6%) compared to Bilateral Lichtenstein (21.4%), Lap TEP (11.1%), Stoppa repair with Romovac suction drain with statistical significance. ($P > 0.05$) The other complications like Cord edema, SSI shows no significant difference between Stoppa repair (Group A), Bilateral Lichtenstein (Group B) and Lap TEP (Group C). other complication like hematoma, retention of urine are not seen ($P > 0.05$)

The chronic pain after 3 months was observed only in patients operated by Bilateral Lichtenstein. (7.6%) might

be due to entrapment of nerve. The other delayed complication of recurrence was not seen in any operated method. Yasser Hussein et al¹¹ in a study observed recurrences were observed in 2 patients of 30 (6.5%) of the contacted patients in L group without any significant difference. Koc et al¹⁵ stated that stoppa procedure is superior to bilateral Lichtenstien technique regarding long term follow up and complications with any statistical difference. M. S. Ray et al⁷ studied and conclude that stoppa novel technique has given excellent results. They recommend Stoppas repair for recurrent and multicurrent abdominal hernias, large Incisional and bilateral inguinal hernia. Manoj Kumar et al¹⁷ studied and concluded that Lap TEP is a better modality than Stoppa's repair in terms of duration of surgery, and early postoperative morbidity for bilateral Inguinal Hernia repair. This was in contrast to present study.

In addition to avoiding the need for a second anaesthetic and operation, simultaneous bilateral inguinal hernia may also reduce psychological stress and financial savings due to less time off from work or avoid the risk of incarceration or disability caused by the hernia on the other side. Dual inguinal hernia repair is a hot-button issue for some.

CONCLUSION

The present study concludes that, Stoppas repair is a reliable technique for repair of bilateral inguinal hernia repair consuming less operative time, reduced postoperative pain, seroma formation, early return to routine activity, low recurrence rate and good patient satisfaction level.

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