

## Original Research Article

# A COMPARATIVE STUDY OF STOPPA'S REPAIR AND BILATERAL LICHTENSTEIN HERNIOPLASTY IN BILATERAL UNCOMPLICATED INGUINAL HERNIAS

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**ABSTRACT**

**Background:** Bilateral inguinal hernias are commonly managed using tension-free mesh repair techniques. Bilateral Lichtenstein hernioplasty remains a widely practiced procedure; however, Stoppa's preperitoneal repair has emerged as an effective alternative owing to its single-incision approach and extensive preperitoneal mesh coverage. The aim is to compare the clinical outcomes of Stoppa's repair and bilateral Lichtenstein hernioplasty in patients with bilateral uncomplicated inguinal hernias.

**Materials and Methods:** This prospective comparative study included 60 patients with bilateral uncomplicated inguinal hernias admitted to a tertiary care teaching hospital. Patients were divided into two groups of 30 each. Group A underwent Stoppa's preperitoneal mesh repair, while Group B underwent bilateral Lichtenstein hernioplasty. Operative time, postoperative pain, hospital stay, postoperative complications, recurrence, and patient satisfaction were assessed. Statistical analysis was performed using SPSS version 26, with  $p < 0.05$  considered statistically significant.

**Results:** The mean operative duration was significantly shorter in the Stoppa's repair group ( $72.4 \pm 9.5$  min) compared to the bilateral Lichtenstein group ( $89.6 \pm 11.3$  min) ( $p < 0.001$ ). Postoperative pain scores, hospital stay, and time to ambulation were significantly lower in the Stoppa's group. Postoperative complications and chronic groin pain were less frequent following Stoppa's repair. No recurrence was observed in the Stoppa's group, whereas one recurrence occurred in the bilateral Lichtenstein group during follow-up.

**Conclusion:** Stoppa's repair demonstrated superior perioperative and postoperative outcomes compared to bilateral Lichtenstein hernioplasty. The technique was associated with reduced pain, faster recovery, lower morbidity, and improved patient satisfaction, making it an effective alternative for bilateral uncomplicated inguinal hernias.

**Keywords:** Bilateral inguinal hernia; Stoppa repair; Lichtenstein hernioplasty; Preperitoneal mesh repair; Tension-free hernia repair.

**INTRODUCTION**

Inguinal hernias represent a significant portion of abdominal wall pathologies, with bilateral presentations accounting for approximately 6–8% of all cases.<sup>[1]</sup> While bilateral Lichtenstein hernioplasty has historically served as the standard tension-free approach, the Stoppa procedure offers a potential alternative through a single-incision preperitoneal

mesh placement.<sup>[2,3]</sup> This comparative investigation aims to evaluate the clinical efficacy of these techniques by analyzing perioperative outcomes, including total operative time, postoperative pain scores, and the incidence of long-term recurrence.<sup>[4]</sup> By contrasting the traditional tension-free mesh hernioplasty with the Stoppa approach, this study seeks to determine which modality better mitigates the complications and recurrence risks associated

with the management of bilateral defects.<sup>[5]</sup> The Rives-Stoppa technique leverages a posterior approach to provide comprehensive coverage of all potential hernia sites within the preperitoneal space, whereas the Lichtenstein method utilizes distinct synthetic mesh reinforcement for each defect.<sup>[6]</sup> This strategic placement in the preperitoneal space allows for complete coverage of the myopectineal orifice, potentially reducing the likelihood of missed hernias or subsequent recurrences in complex bilateral cases.<sup>[7]</sup> Furthermore, the bilateral Lichtenstein approach requires two separate incisions, which may correlate with an increased incidence of local wound complications and prolonged recovery times compared to the singular access point utilized in Stoppa's repair.<sup>[8]</sup> However, the technical demand of the Stoppa approach necessitates careful dissection of the retropubic space to ensure adequate prosthetic positioning without compromising neurovascular structures.<sup>[9]</sup> Consequently, the inherent design of this preperitoneal repair allows for a broader operative field, facilitating the inspection of all potential hernia orifices simultaneously while minimizing postoperative morbidity associated with pain.<sup>[10]</sup>

## MATERIALS AND METHODS

This prospective comparative study was conducted in the Department of General Surgery at a tertiary care teaching hospital over a period of 18 months after obtaining approval from the Institutional Ethics Committee. A total of 60 adult patients diagnosed with bilateral uncomplicated inguinal hernia and fulfilling the inclusion criteria were enrolled in the study. Patients aged above 18 years with reducible bilateral inguinal hernias planned for elective surgery were included. Patients with recurrent, strangulated,

obstructed, or complicated hernias, severe systemic illness, or previous lower abdominal surgery were excluded.

The study population was divided into two groups of 30 patients each. Group A underwent Stoppa's preperitoneal mesh repair, while Group B underwent bilateral Lichtenstein tension-free mesh hernioplasty. All surgeries were performed under spinal or general anesthesia by experienced surgeons following standard operative protocols. Preoperative evaluation included detailed clinical examination and routine laboratory investigations.

Postoperative parameters assessed included duration of surgery, postoperative pain using Visual Analog Scale (VAS), duration of hospital stay, postoperative complications, and recurrence during follow-up. Patients were followed at 1 week, 1 month, 3 months, and 6 months postoperatively. Data were entered into Microsoft Excel and analyzed using SPSS version 26. Continuous variables were expressed as mean  $\pm$  standard deviation, while categorical variables were expressed as percentages. Student's t-test and Chi-square test were applied, with  $p < 0.05$  considered statistically significant.

## RESULTS

[Table 1] Narrative

The mean age of patients in the Stoppa's repair group was  $54.8 \pm 10.6$  years, while in the bilateral Lichtenstein group it was  $56.2 \pm 11.1$  years. Most patients in both groups belonged to the 51–70 years age category. There was no statistically significant difference between the groups with respect to age distribution, indicating comparability of baseline demographic characteristics between the study populations ( $p=0.642$ ). Occupational profile and comorbidities were also similarly distributed among both groups. [Table 1]

**Table 1: Baseline Demographic Characteristics of Study Population**

Variable	Stoppa's Repair (n=30)	Bilateral Lichtenstein (n=30)	p-value
Mean Age (years)	$54.8 \pm 10.6$	$56.2 \pm 11.1$	0.642
Male Gender	29 (96.7%)	30 (100%)	0.313
BMI (kg/m <sup>2</sup> )	$24.7 \pm 2.8$	$25.1 \pm 3.1$	0.587
Hypertension	8 (26.7%)	9 (30.0%)	0.774
Diabetes Mellitus	6 (20.0%)	7 (23.3%)	0.754

[Table 2] Narrative

The mean operative duration was significantly lower in the Stoppa's repair group ( $72.4 \pm 9.5$  minutes) compared to the bilateral Lichtenstein group ( $89.6 \pm 11.3$  minutes). Patients undergoing Stoppa's repair also demonstrated significantly lower postoperative

pain scores at 24 hours. Mean hospital stay was shorter in the Stoppa's group compared to the Lichtenstein group. These findings suggest that Stoppa's repair may offer better perioperative outcomes and enhanced postoperative recovery. [Table 2]

**Table 2: Comparison of Operative and Postoperative Parameters**

Parameter	Stoppa's Repair (n=30)	Bilateral Lichtenstein (n=30)	p-value
Operative Time (min)	$72.4 \pm 9.5$	$89.6 \pm 11.3$	<0.001
VAS Pain Score at 24 hrs	$3.2 \pm 0.8$	$4.6 \pm 1.1$	<0.001
Hospital Stay (days)	$3.1 \pm 0.9$	$4.4 \pm 1.2$	<0.001
Time to Ambulation (hrs)	$10.8 \pm 2.4$	$14.1 \pm 3.2$	<0.001

[Table 3] Narrative

Postoperative complications were observed in both groups; however, the incidence was comparatively

lower in patients undergoing Stoppa's repair. Seroma formation and wound infection were more common in the bilateral Lichtenstein group. Mild

postoperative abdominal distension was observed more frequently following Stoppa's repair (10.0% vs. 3.3%); however, the difference was not statistically significant ( $p=0.301$ ). Chronic groin pain at 3 months follow-up was also observed more frequently

following bilateral Lichtenstein repair. No mortality was reported in either group. Overall postoperative morbidity remained lower in the Stoppa's repair group despite the slightly higher incidence of transient abdominal distension. [Table 3]

**Table 3: Postoperative Complications**

Complication	Stoppa's Repair (n=30)	Bilateral Lichtenstein (n=30)	p-value
Seroma	2 (6.7%)	5 (16.7%)	0.228
Wound Infection	1 (3.3%)	4 (13.3%)	0.161
Hematoma	1 (3.3%)	2 (6.7%)	0.554
Abdominal Distension	3 (10.0%)	1 (3.3%)	0.301
Chronic Groin Pain	2 (6.7%)	7 (23.3%)	0.072

[Table 4] Narrative

During the 6-month follow-up period, recurrence was observed in one patient (3.3%) in the bilateral Lichtenstein group, while no recurrence was noted in the Stoppa's repair group. Patient satisfaction scores

were significantly higher among patients who underwent Stoppa's repair owing to lower pain scores and earlier return to routine activity. Return to normal activity was also achieved earlier in the Stoppa's repair group. [Table 4]

**Table 4: Follow-up Outcomes**

Outcome	Stoppa's Repair (n=30)	Bilateral Lichtenstein (n=30)	p-value
Recurrence	0 (0%)	1 (3.3%)	0.313
Return to Normal Activity (days)	11.6 ± 2.9	16.3 ± 3.8	<0.001
Patient Satisfaction Score (/10)	8.9 ± 0.7	7.6 ± 1.0	<0.001
Chronic Pain at 6 Months	1 (3.3%)	5 (16.7%)	0.085

## DISCUSSION

The findings of this study corroborate the efficacy of the Stoppa preperitoneal approach as a robust alternative to conventional Lichtenstein hernioplasty for managing bilateral inguinal hernias. The observed advantages in operative duration and convalescence likely stem from the single-incision preperitoneal placement of a large mesh, which effectively covers all potential hernial orifices.<sup>[11]</sup> By avoiding bilateral inguinal incisions, this technique reduces the overall tissue trauma and the risk of mesh-related complications associated with separate mesh placement.<sup>[12]</sup> Furthermore, the tension-free nature of the giant prosthetic reinforcement creates a physiological environment that minimizes foreign body reaction and enhances the stability of the posterior inguinal wall.<sup>[13]</sup> These clinical outcomes align with previous research indicating that while laparoscopic approaches offer similar advantages, the Stoppa repair provides a reliable, cost-effective open alternative for complex bilateral cases without necessitating extensive preperitoneal dissection.<sup>[14,15]</sup> Additionally, the reduction in localized trauma to the inguinal canal architecture likely contributes to the lower incidence of chronic groin pain and sensory disturbances observed in this cohort.<sup>[16]</sup> These findings further suggest that minimizing the number of surgical access points may mitigate the risk of late-term neuropathic complications associated with traditional bilateral anterior mesh fixation.<sup>[17]</sup> Furthermore, the preperitoneal plane offers a superior anatomical vantage point for reinforcing the entire myopectineal orifice, effectively preventing the development of contralateral recurrences that may be overlooked in primary anterior repairs.<sup>[18]</sup> Consequently, the Stoppa technique's reliance on a

single giant prosthesis instead of dual meshes serves to consolidate the biomechanical support of the visceral sac, as advocated in established preperitoneal reinforcement strategies.<sup>[19]</sup> These outcomes suggest that the preperitoneal approach remains a distinct clinical advantage by reducing the incidence of reoperation and recurrence compared to anterior techniques.<sup>[20]</sup> Despite these favorable results, it is essential to consider that the Stoppa procedure requires meticulous adherence to anatomical planes to ensure proper mesh integration and to avoid potential complications related to the large prosthetic surface area. Consistent with previous reports, such as those by Anirudhan,<sup>[13]</sup> the necessity for wide dissection of the subfascial preperitoneal space highlights the learning curve and technical precision inherent to this technique. Although complications like seroma formation have been documented in earlier series,<sup>[11,13]</sup> our findings support the consensus that meticulous attention to strict hemostasis and rigorous surgical technique can effectively mitigate these risks and optimize recovery for patients with bilateral hernia presentations.<sup>[11]</sup> Future investigations should focus on large-scale multicenter trials to establish whether the preperitoneal plane provides long-term superiority over anterior repairs.<sup>[21]</sup> Given the demonstrated benefits regarding reduced operative time and lower morbidity, this technique represents a viable and often superior alternative to the standard Lichtenstein approach in the era of minimally invasive surgery.<sup>[22]</sup>

## CONCLUSION

The Stoppa technique provides a superior clinical alternative to bilateral Lichtenstein hernioplasty for patients with bilateral uncomplicated inguinal

hernias, offering enhanced patient satisfaction and a faster convalescence. These findings suggest that preperitoneal reinforcement remains a highly effective strategy for addressing the underlying anatomical weakness of the myopectineal orifice in elderly patients. Moreover, the minimal tissue disruption inherent in this approach facilitates a more favorable recovery profile, particularly in populations where avoiding prolonged convalescence is paramount. Given the lower risk of chronic postoperative inguinal pain and the efficiency of the single-mesh placement, this procedure warrants consideration as a standard surgical option, even amidst the proliferation of minimally invasive techniques.

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