

POSTOPERATIVE INGUINODYNIA: PROPHYLACTIC NEURECTOMY VERSUS PRESERVATION OF ILIOINGUINAL NERVE: A QUASI EXPERIMENTAL STUDY

Kiran V A¹, Ashwyn Anand Nelson², Sanjeeva Raju Kunche³, Sampathkumar Poral⁴, Anantha velan A⁵

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Corresponding Author:

Dr. Kiran V A,
Email: rockykiranalex@gmail.com

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¹Postgraduate, Department of General Surgery, AVMC, Puducherry, India

²Associate professor, Department of General Surgery, AVMC, Puducherry, India

³Professor, Department of General Surgery, AVMC, Puducherry, India

⁴Professor and HOD, Department of General Surgery, AVMC, Puducherry, India

⁵Senior Resident, Department of General Surgery, AVMC, Puducherry, India

ABSTRACT

Background: Chronic postoperative inguinodynia is a common and challenging complication following Lichtenstein tension-free mesh hernioplasty, adversely affecting patient quality of life and functional capacity. The ilioinguinal nerve is often implicated in neuropathic groin pain due to entrapment or injury during hernia repair. The objective is to prospectively compare the effect of prophylactic ilioinguinal nerve neurectomy versus nerve preservation on postoperative inguinodynia, sensory function, and quality of life in patients undergoing Lichtenstein tension-free mesh hernioplasty. **Materials and Methods:** Sixty adult patients undergoing elective Lichtenstein hernioplasty were allocated into two groups: Group A received prophylactic ilioinguinal neurectomy, and Group B had nerve preservation. Postoperative pain scores, sensory function, and quality of life were assessed using standardized scales at Day 1, Day 7, 1 month, 3 months, and 6 months. Data were analyzed using non-parametric tests for between-group comparisons and longitudinal trends. **Result:** Group A exhibited significantly lower mean pain scores on Day 1 (3.2 ± 2.5 vs 4.9 ± 2.2 ; $p=0.010$) and trends toward lower chronic pain at 6 months (3.5 ± 2.3 vs 4.8 ± 2.7 ; $p=0.051$). Sensory scores were significantly better preserved in Group A at early time points, notably Day 7 (3.6 ± 0.5 vs 2.6 ± 0.8 ; $p<0.001$) and 3 months ($p=0.013$), converging by 6 months. Quality of life scores favored Group A at Day 7 (6.1 ± 0.8 vs 4.7 ± 1.2 ; $p<0.001$), 1 month (6.3 ± 0.7 vs 5.2 ± 1.4 ; $p=0.003$), and 6 months (5.8 ± 0.8 vs 4.9 ± 1.5 ; $p=0.014$). **Conclusion:** Routine consideration of ilioinguinal neurectomy during Lichtenstein hernia repair may be recommended to improve patient outcomes and decrease the burden of chronic groin pain.

INTRODUCTION

Inguinal hernia is a common surgical condition, particularly in India, with mesh-based repair being the standard treatment. Despite low recurrence rates, chronic postoperative groin pain (inguinodynia) after Lichtenstein hernioplasty remains a significant concern affecting quality of life. Injury or entrapment of the ilioinguinal nerve is a major cause of this pain. While nerve preservation aims to avoid sensory loss, it may increase the risk of chronic pain. Prophylactic ilioinguinal neurectomy has been proposed to reduce inguinodynia, though concerns about numbness persist. Given limited Indian data, this study compares neurectomy and nerve preservation with

respect to pain, complications, and quality-of-life outcomes.

Aims and objectives: This is a prospective study to assess postoperative inguinal pain as an effect of prophylactic neurectomy of the ilioinguinal nerve (IIN) versus nerve preservation during Lichtenstein tension-free mesh hernioplasty for the treatment of inguinal hernia.

Primary Objective: To compare the degree of postoperative inguinodynia in patients undergoing prophylactic neurectomy versus preservation of the ilioinguinal nerve during Lichtenstein tension-free mesh hernioplasty.

Secondary Objective: To assess the postoperative complications of prophylactic neurectomy in Lichtenstein tension-free mesh hernioplasty and their effect on the quality of life of patients.

MATERIALS AND METHODS

Study Design: Unblinded randomized quasi-experimental study comparing prophylactic ilioinguinal neurectomy versus nerve preservation during Lichtenstein hernioplasty, with prospective assessment of pain, sensory changes, and quality of life.

Study Setting: Conducted in the Department of General Surgery, AVMCH, a tertiary care teaching hospital with standardized surgical and follow-up protocols.

Study Duration: One year, including recruitment, surgery, and follow-up up to six months.

Participants – Inclusion and Exclusion Criteria

Adults with unilateral primary inguinal hernia included; complicated, recurrent hernias and comorbidities excluded.

Study Sampling: Unblinded randomization using sealed envelope method.

Study Sample Size: Sixty patients (30 per group), calculated from previous studies.

Study Groups: Group A: neurectomy; Group B: nerve preservation.

Study Parameters: VAS pain, sensory changes, complications, and quality-of-life scores.

Study Procedure: Standard Lichtenstein repair with group-specific nerve management.

Study Data Collection: Structured proforma with scheduled postoperative assessments.

Data Analysis: SPSS v29.0; descriptive statistics and Chi-square test.

Ethical Considerations: Institutional ethical approval, informed consent, confidentiality maintained.

RESULTS AND DISCUSSION

The study compared postoperative outcomes between patients undergoing prophylactic ilioinguinal neurectomy and those with nerve preservation during Lichtenstein tension-free mesh hernioplasty. Both groups were comparable in baseline demographic and clinical characteristics, including age distribution and hernia type, ensuring valid comparison. Postoperative pain assessment using the Visual Analog Scale demonstrated significantly lower pain scores in the neurectomy group at one, three, and six months, both at rest and during activity. While immediate postoperative pain was similar in both groups, chronic inguinodynia was notably reduced among patients who underwent neurectomy.

Sensory disturbances such as numbness were more frequently observed in the neurectomy group during early follow-up; however, these were mild, well tolerated, and showed gradual improvement over time. Importantly, no patient reported severe functional impairment due to sensory loss. The nerve preservation group showed a higher incidence of persistent groin pain, supporting the hypothesis that

nerve entrapment or irritation contributes significantly to chronic postoperative pain.

Quality-of-life assessment using the Modified Flanagan scale revealed better overall scores in the neurectomy group, particularly in domains related to physical activity, work performance, and comfort during daily activities. Postoperative complications such as seroma, wound infection, and recurrence were minimal and comparable between the two groups, indicating that neurectomy did not increase surgical morbidity.

These findings align with several previous studies suggesting that prophylactic ilioinguinal neurectomy reduces chronic postoperative inguinodynia without significantly compromising patient satisfaction or functional outcomes. The study highlights that while nerve preservation aims to maintain sensation, it may predispose patients to neuropathic pain. Given the occupational demands of many patients in the Indian setting, prophylactic neurectomy appears to offer a favorable balance between pain reduction and acceptable sensory changes, supporting its consideration as a routine strategy during open inguinal hernia repair.

Table 1: Postoperative Pain Scores over Time (Group A: Prophylactic Neurectomy vs Group B: Nerve Preservation)

Time points	Group	N	Pain score				Normality test (Shapiro-Wilk)		Between group comparison (Mann Whitney U test)	
			Mean \pm SD	Median	IQR	Range	W	p	U	p
Day 1	A	30	3.2 \pm 2.5	3	1 - 5	0 - 7	0.904	0.010	277.5	0.010
	B	30	4.9 \pm 2.2	5	3.3 - 7	0 - 8	0.947	0.143		
Day 7	A	30	4 \pm 2.5	4	2 - 6	0 - 7	0.889	0.005	370.5	0.237
	B	30	4.7 \pm 2.2	5	3 - 7	1 - 8	0.924	0.035		
1 month	A	30	3.5 \pm 2.2	3	1.3 - 5.8	0 - 7	0.921	0.029	364.5	0.205
	B	30	4.3 \pm 2.4	4.5	2.3 - 6	0 - 8	0.951	0.185		
3 month	A	30	3.5 \pm 2.5	3	1.3 - 5.8	0 - 7	0.9	0.008	377	0.279
	B	30	4.2 \pm 2.4	4.5	2 - 6.8	0 - 8	0.918	0.024		
6 month	A	30	3.5 \pm 2.3	4	1.3 - 5	0 - 7	0.905	0.011	318.5	0.051
	B	30	4.8 \pm 2.7	5	2.3 - 7	0 - 9	0.949	0.162		

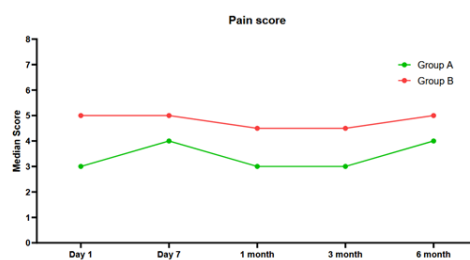


Figure 1: Pain Scores

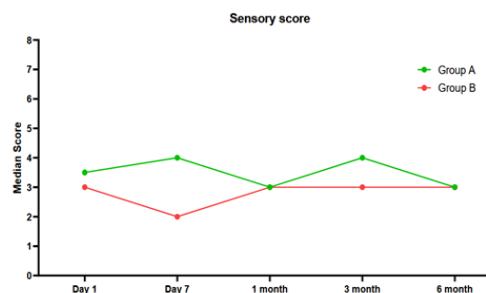


Figure 2: Sensory Scores

Summary

This study prospectively compared prophylactic ilioinguinal nerve neurectomy versus nerve preservation during Lichtenstein tension-free mesh hernioplasty in adult patients with inguinal hernia, focusing on postoperative inguinodynia, sensory function, and quality of life (QoL). The findings demonstrated that prophylactic neurectomy significantly reduced early postoperative pain and showed a trend toward lower chronic pain at 6 months. Sensory scores indicated better preservation and recovery of sensation in the neurectomy group during the early and mid postoperative periods. Additionally, patients undergoing neurectomy reported superior QoL outcomes at early, intermediate, and late postoperative time points. These results suggest that prophylactic neurectomy effectively mitigates postoperative neuropathic complications and enhances patient-centered recovery parameters.

CONCLUSION

Prophylactic ilioinguinal nerve neurectomy during open mesh hernioplasty is a valuable surgical modification that can reduce the incidence and severity of postoperative inguinodynia without causing long-term sensory deficits or compromising quality of life. Compared to nerve preservation, neurectomy provides better pain control, sensory outcome stability, and enhanced quality of life during the postoperative recovery period. Based on the evidence from this study and corroborating literature, routine consideration of ilioinguinal neurectomy during Lichtenstein hernia repair is recommended to improve patient outcomes and decrease the burden of chronic groin pain.

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