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Comparison of Ilioinguinal Nerve Preservation and Division during Lichtenstein's Open Mesh Hernioplasty: An Observational Study

Prof. Dr. B. Santhi[1], Dr. Dharini Prasad[2]

[1]Professor and Head of the Department, Institute of General Surgery, Madras Medical College, Chennai, India
[2]Surgical postgraduate, Institute of General Surgery, Madras Medical College, Chennai, India

Abstract

Despite considerable advances in inguinal hernia surgery, including laparoscopic repairs, open hernioplasties are widely practiced and have extensive practical applications. Of the available techniques, Lichtenstein's tension-free open mesh hernioplasty is now the gold standard. While the steps of surgery are standardized, considerable difference of opinion exists in the handling of the ilioinguinal nerve. Some surgeons advocate for the division of the nerve, to avoid injury, whereas some preserve the nerve in order to maintain sensation in the external genitalia and medial thigh.

This prospective observational study followed 65 patients with inguinal hernias admitted to the Institute of General Surgery, Madras Medical College, Chennai. Intraoperatively, they were taken up for division or nerve preservation as per the surgeon's decision. Postoperatively, patients were assessed for loss of sensation in the area supplied by the ilioinguinal nerve as well as chronic pain on performing normal activities.

In this study, it was found that patients who underwent preservation of the ilioinguinal nerve had a statistically significantly lower incidence of chronic inguinal pain and loss of sensation. Although further studies in larger populations are warranted to establish clear guidelines favoring one variant over the other, ilioinguinal nerve preservation may be considered as a noninferior alternative to division.

Keywords: Inguinal hernia, hernioplasty, mesh, ilioinguinal nerve, inguinodynia, nerve preservation

1. Introduction

Inguinal hernia repair is a widespread surgical intervention, with the Lichtenstein open mesh hernioplasty being a commonly utilized approach [1]. However, the optimal management of the ilioinguinal nerve during this procedure remains a subject of debate among surgeons. Postoperative pain in the groin after inguinal hernia repair, also known as inguinodynia, has been reported to be up to 30% [2]. While some advocate for the preservation of the nerve to minimize the risk of postoperative complications, others favor its deliberate division [3]. This observational study aims to compare the clinical outcomes, including postoperative pain, sensory loss, and the incidence of chronic groin pain, as well as any associated complications between the ilioinguinal nerve preservation and division approaches in patients undergoing the Lichtenstein open mesh hernioplasty procedure.

1. Methods

This was a prospective observational study conducted at the Institute of General Surgery at Madras Medical College in Chennai, India over a 2-year period from June 2022 to June 2024. After obtaining approval from the ethical committee, informed consent was obtained from the study participants. 65 patients between the ages of 18 and 80 years, belonging to the American Society of Anesthesiologists class I or II, who underwent an elective Lichtenstein's open mesh hernioplasty were included in the study. Patients with bilateral inguinal hernia, previous inguinal hernia repair, strangulation or obstruction, intellectual disability or peripheral neuropathies were excluded. Patients with significant wound complications, ischemic orchitis, and seromas/hematomas were excluded to avoid confounding as these complications may be associated with inflammation, fibrosis, and long-term pain.

Patients were divided into two groups based on the management of the ilioinguinal nerve: preservation and division. The decision to do so was determined at the time of the surgery by the primary surgeon, without external influence, based on individual patient characteristics and the ease of elucidating the anatomy of the inguinal canal.

The steps of a standard Lichtenstein tension-free open mesh hernioplasty were followed, and all procedures were performed under spinal anesthesia. Ilioinguinal nerve identification was documented in all cases, and the surgeon proceeded with their method of choice – division of the nerve or preservation. A standard 16 x 8 cm polypropylene mesh was used.

The patients were followed up on an inpatient basis until discharge and on an outpatient basis up to 6 months postoperatively. The primary outcome measures were postoperative pain, sensory loss, and the incidence of chronic groin pain at 6 months follow-up. Secondary outcomes included operating time, intraoperative complications, and length of hospital stay.

Postoperative pain was measured using a visual analogue scale on postoperative days 1, 2 and 3, following which the patients were invariably discharged. All patients were started on an oral diet on postoperative day 0 after which they received oral NSAIDs BD. Chronic inguinal pain was defined as pain or discomfort of any character that was experienced either during rest, or during what was normal physical activity for the patient. This included squatting, sitting, extension of the ipsilateral leg, and bending forward. Postoperative sensation was elicited using a monofilament test and documented accordingly, and absolute sensory loss or discrepancy between both sides was recorded as significant.

3. Statistical analysis

The data was entered in IBM SPSS version 20. SPSS software was used to analyze the collected data. Significance was defined as a p value of < 0.05.

4. Results

A total of 65 patients were included in the study, with 32 patients in the ilioinguinal nerve preservation group and 33 in the division group. The groups were well-matched in terms of demographic and clinical characteristics. The mean operating time was slightly longer in the nerve preservation group (72.5 ± 10.2 minutes vs. 68.3 ± 9.8 minutes), but the difference was not statistically significant. Postoperative pain and sensory loss were significantly lower in the nerve preservation group compared to the division group at 6 months follow-up. However, the incidence of chronic groin pain was similar between the two groups. Intraoperative complications, such as bleeding and mesh-related issues, were qualitatively assessed comparable between the two groups.

Table 1: Age incidence

Age (year)	Ilioinguinal Nerve Preservation (n=32)	Ilioinguinal Nerve Division (n=33)
>30	4	6
31-40	8	7
41-50	11	10
51-60	6	8
61-70	3	2

Table 2: Type of hernia

Type of hernia	Ilioinguinal Nerve Preservation (n=32)	Ilioinguinal Nerve Division (n=33)
Right indirect	7	8
Left indirect	6	7
Right direct	10	10
Left direct	9	8

Table 3: Incidence of postoperative sensory loss and inguinodynia

Outcome Measure	Ilioinguinal Nerve Preservation (n=32)	Ilioinguinal Nerve Division (n=33)
Sensory loss (6 months)	18	30
Chronic groin pain (6 months)	4	7

Table 4: Mean operating time

Outcome Measure	Ilioinguinal Nerve Preservation (n=32)	Ilioinguinal Nerve Division (n=33)
Operating time (mean)	73 min	68 in

5. Discussion

The ilioinguinal nerve is a critical structure that needs to be considered during inguinal hernia repairs, as its injury can lead to significant postoperative complications, such as chronic pain and sensory loss. Several studies have investigated the impact of nerve preservation versus division on the outcomes of inguinal hernia repair, with mixed results [4].

The preservation of the ilioinguinal nerve during Lichtenstein's open mesh hernioplasty appears to be associated with reduced postoperative pain and sensory loss when compared to the division of the nerve [3]. This finding is consistent with previous studies, which have highlighted the importance of nerve preservation to minimize the risk of chronic pain and sensory disturbances.

However, it is important to note that the decision to preserve or divide the nerve should be made on a case-by-case basis, taking into account the surgeon's experience, the anatomical variations, and the intraoperative findings. Further research is needed to elucidate the long-term outcomes and the potential impact of mesh characteristics on the ilioinguinal nerve.

6. Conclusion

This observational study suggests that the preservation of the ilioinguinal nerve during Lichtenstein's open mesh hernioplasty may be associated with reduced postoperative pain and sensory loss compared to the division of the nerve.

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