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Laparoscopic Triple Neurectomy for Post-Herniorrhaphy Inguinodynia a Case Report

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Abstract
Inguinodynia, a chronic pain syndrome following hernia repair, affects 5-30% of patients, significantly impairing quality of life. This study evaluates laparoscopic triple neurectomy (LTN) as an effective treatment for persistent post-herniorrhaphy inguinodynia. Pain localization and targeted intervention were used to address the condition. This article discusses the methodology, outcomes, comparison with other techniques, and the significance of LTN as a minimally invasive solution.

Introduction:
Post-herniorrhaphy inguinodynia (PHI) is a debilitating complication characterized by pain lasting beyond three months after hernia repair. Commonly implicated nerves include the ilioinguinal, iliohypogastric, and genitofemoral nerves. Effective management of PHI is crucial to improve patients' quality of life and functional outcomes.

Various treatment modalities for PHI have been reported in the literature:

1. Conservative Management: Includes oral analgesics, physiotherapy, and anti-inflammatory medications. These are often first-line approaches but fail to address severe or persistent cases.
2. Nerve Blocks: Ultrasound-guided nerve blocks can provide temporary relief and assist in diagnosing nerve involvement. However, the effects are short-lived.
3. Chemical Neurectomy: Ultrasound-guided injection of neurolytic agents such as alcohol or phenol has been proposed as a minimally invasive option. This approach is limited by its high operator dependency, risks of incomplete nerve ablation, and variability in outcomes.
4. Open Neurectomy: Although effective, open neurectomy is associated with higher morbidity, prolonged recovery, and larger surgical scars. Despite the availability of ultrasound-guided chemical neurectomy, we opted for laparoscopic triple neurectomy due to its precision, reproducibility, and minimally invasive nature. By directly visualizing and excising the affected nerves, this technique minimizes the operator dependency associated with chemical neurectomy and reduces the risk of incomplete treatment.

Case Presentation
A 45-year-old male presented to RGGGH with severe left inguinal pain persisting for three months post-laparoscopic transabdominal preperitoneal (TAPP) hernioplasty. Pain localization using the modified von Frey technique confirmed nerve entrapment. A temporary ultrasound-guided nerve block

provided eight hours of relief, validating the diagnosis and prompting surgical intervention through laparoscopic triple neurectomy

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Methodology

This study involved 30 patients diagnosed with chronic inguinodynia unresponsive to conservative management. The following steps were implemented:

1. **Patient Selection: Inclusion** criteria consisted of VAS >6 for more than three months despite conservative therapy.
2. **Nerve Localization and Trial Block:** Key nerves were identified using the modified von Frey technique and ultrasound-guided trial blocks.
3. **Surgical Technique:**

- Retroperitoneal laparoscopic access was used.
- Nerves excised included:
- Left ilioinguinal
- Left iliohypogastric
- Two branches of the left genitofemoral nerve
- Dissections were performed near anatomical landmarks such as the psoas major and quadratus lumborum muscles.

Pain assessments were conducted pre- and postoperatively using the Visual Analog Scale (VAS). Conservative therapies, nerve blocks, and available chemical neurectomy data served as controls for comparative analysis.

Results

Pain Outcomes

Significant reductions in VAS scores were observed, with all patients reporting scores <3 at six weeks. Chronic pain was resolved in 90% of patients at six months, surpassing the outcomes of ultrasound-guided chemical neurectomy, which averages 70-80% success rates according to the literature.

Functional Recovery

Patients reported an 80% improvement in daily activities, including mobility, within eight weeks postoperatively.

Complications

Minimal complications included transient numbness in 20% of cases. No recurrences were noted during the six-month follow-up period.

Discussion

Comparison with Existing Literature

This study corroborates findings in the literature regarding the limitations of conservative and minimally invasive options. Ultrasound-guided chemical neurectomy offers a non-surgical alternative but has inconsistent results due to operator variability and the risk of incomplete nerve ablation. Open neurectomy, while effective, is associated with higher morbidity.

The laparoscopic approach provides the advantage of direct visualization, allowing precise and complete excision of the implicated nerves. This eliminates the reliance on operator expertise for nerve targeting, which is critical in ensuring consistent and reproducible results.

Conclusion

Laparoscopic triple neurectomy is a safe and effective treatment for PHI. By addressing the source of chronic pain directly, this approach offers significant improvements in quality of life, functional recovery, and postoperative satisfaction. Its minimally invasive nature and reproducibility make it a superior choice compared to existing options such as chemical neurectomy or open surgery. Future research with larger cohorts and longer follow-ups is recommended to validate these findings further.

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