

Study of Ilioinguinal Neurectomy on Reducing Chronic Pain Following Inguinal Hernia

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Abstract

Introduction: Inguinal hernia is a protrusion of the contents of the abdominal cavity through the inguinal canal and is the most common male diseases that occur worldwide. Chronic neuralgia is a serious and debilitating complication following inguinal hernia repair and ilioinguinal neurectomy (IIN) has shown to reduce the chronic post-operative pain (PCP).

Aim: The aim of this study was to determine the effect of IIN on chronic PCP in patients who underwent open unilateral inguinal hernia repair through the Lichtenstein method.

Materials and Methods: In this randomized control study, patients with unilateral inguinal hernia were randomized into two groups: 40 cases in the nerve-excised group and 40 cases in the nerve preservation group. The method of hernia repair was the classic Lichtenstein method. Pain and numbness were evaluated at day 1, day 3, day 7, 1 month, and 6 months after surgery through visual analog scale system. Data were analyzed using SPSS ver.16.

Results: Out of the 80 study patients, 40 were in Group 1 and 40 were in Group 2. The mean of the patients in Group 1 and Group 2 is 36.44 and 38.21, respectively. One case of hypoesthesia was observed in Group 1 and one case of hyperesthesia was observed in Group 2.

Conclusion: IIN may be considered as a routine method in reducing chronic PCP following herniorrhaphy.

Key words: Hypoesthesia, Ilioinguinal nerve, Inguinal hernia, Lichtenstein method, Neurectomy

INTRODUCTION

Chronic post-operative pain (PCP) is the most frequent complications following inguinal hernia repair and can be disabling in some patients leading to prolonged return to work time. Pain that lasts >3 months is defined as chronic pain and following inguinal hernia repair, the pain can become persistent.^[1] The prevalence of post-operative inguinal pain is reported to be 20–30% and these pain syndromes can occur irrespective of the type of repair. Patients may require nonsteroidal anti-inflammatory drugs to physical therapies or even addition surgery to alleviate this pain.^[2] Excision of the ilioinguinal nerve to reduce the incidence of chronic pain has been practiced in the recent

years but a lot of controversies persist over this procedure. Neurectomy relieves PCP caused by entrapment and inflammation around the nerve and this procedure seems to have some theoretic benefit.^[3,4]

Along with the anteroproximal portion of the base of the penis or labia majora, the ilioinguinal nerve innervates the mons pubis and inguinal crease. In 40.6% of cadavers, the identified innervation patterns were bilaterally symmetric and hernia surgery related neuropathic pain syndromes must be differentiated from other sources.^[5] The increasing number of publications in the last decade regarding PCP syndrome following inguinal hernia repair indicates that it is a significant clinical problem and steps must be taken to address this pain. It is also mandatory to differentiate chronic pain from acute pain while early PCP may also present in a similar way. Early post-surgical pain usually resolves in 15–30 days while chronic pain generally begins in the 3rd post-operative month incurring the need for extensive management and hospitalization. In some cases, even a second surgery may be needed.^[6]

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PCP also puts the surgeon under risk of litigation and about 5–7% of the surgeons are sued. Neurectomies can eliminate the incidence of chronic groin pain which arise due to neuroma of the ilioinguinal, iliohypogastric, or genitofemoral nerve.^[7] Surgical approach to the ilioinguinal nerve has been reliably established in the recent years. This study aims to evaluate the outcome of ilioinguinal neurectomy (IIN) in reducing chronic pain following inguinal hernia repair.

Aim

The aim of this study was to determine the effect of IIN on chronic PCP in patients who underwent open unilateral inguinal hernia repair through the Lichtenstein method.

MATERIALS AND METHODS

This randomized controlled study was conducted on patients with unilateral inguinal hernia who were admitted to the Department of General Surgery at Government Headquarters Hospital, Dindigul, during the time period of February 2019–December 2019. Informed consent was obtained before surgery from hospital-admitted patients. Patients were randomized into two groups: 40 cases in nerve-excised group (Group-1) and 40 cases in nerve-preserved group (Group-2). Pain and numbness were evaluated at day 1, day 3, day 7, 1 month, and 6 months after surgery with visual analog scale (VAS) system. Data were analyzed using SPSS ver.16. Pain and numbness were assessed before the operation and on days 0, 1, 3, 7, 1 month, and 6 months after surgery. The hernia repair was done through Lichtenstein’s method in both the groups. Patients with recurrent, bilateral, strangulated, and incarcerated hernias and with a history of diabetes mellitus, hypertension, asthma, previous abdominal surgeries, opium addiction, and cerebrovascular accident were excluded from the study.

All probable complications were clearly explained to all patients. Age, gender, pre-operative and PCP, and post-surgical complications such as surgical site infection, hematoma, testicular ecchymosis, tingling or numbness in the site of surgery, and mean incision length were the parameters studied. The surgical incision length was measured with a ruler on the 1st day after surgery. The study was approved by the Institutional Ethics Committee.

RESULTS

A total of 80 patients were enrolled in the study and divided into two groups: Group 1 – inguinal hernia mesh repair and neurectomy through Lichtenstein’s method. Group 2 – hernia mesh repair through Lichtenstein’s method with nerve preservation the patients were of the age group 31–

40 years. In Figure 1, the mean age of the patients in Group 1 is 36.44 years and in Group 2 is 38.21 years. About 8% of patients had pain during presentation. In nerve-excision group, 56% of patients had right inguinal hernia and 40% had left inguinal hernia. The mean incision length in Group 1 was 7.3 cm and in Group 2 was 4.5 cm. Follow-up was done on days 0, 1, 3, 7, 1 month, and 6 months and pain assessment was made using VAS. In Group 1, hypoesthesia was observed in one case, and in Group 2, hyperesthesia was noted in one case. Figure 2 depicts the pain intensity in both the groups on day 1, 3, 7, 1 month, and 6 months after surgery. The pain intensity in neurectomy group on day 1 is 7.12 and in the nerve preservation group is 8.1 which is higher. The pain intensity in both the groups decreases gradually over a 6-month period, but at any point of time, the pain sensation was lower in the neurectomy group than in the nerve preservation group, Figure 3.

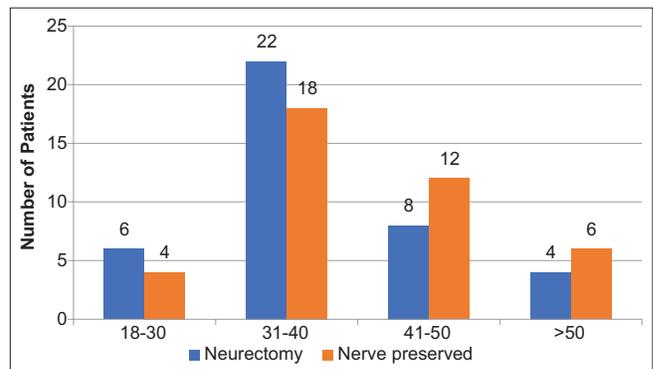


Figure 1: Age group

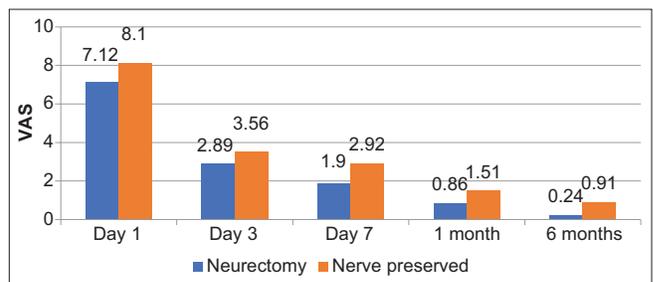


Figure 2: Visual analog score

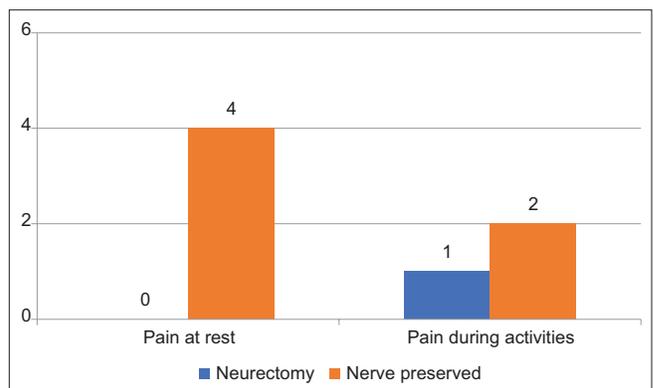


Figure 3: Pain at 6 months

DISCUSSION

In the current study, we compared the different pain scores between ilioinguinal nerve excision group and nerve preservation group following inguinal hernia repair through Lichtenstein method.

The results showed that the routine IIN can reduce chronic PCP rate and pain score at 6 months. Post-operative numbness and sensory disturbance were noticed in one patient in the IIN group and one patient in the nerve preservation group presented with hyperesthesia. The residual pain at the end of 6 months was lower in the IIN group than in the nerve preservation group. Chronic post-operative inguinal pain (CPIP) is a complex of nociceptive and neuropathic pain and the predisposing factors of the pain may vary.^[7]

Wright *et al.* agreed in his study that preoperative groin pain is caused by local nerve compression and edema, and the severity of CPIP has a positive correlation with the severity of pre-operative pain.^[8] In addition, CPIP is assumed to be caused by neurological factors such as nerve entrapment, direct nerve/suture injury, and neuromas. Ilioinguinal nerve, iliohypogastric nerve, and the genitofemoral nerve are the commonly involved nerves in CPIP and preserving them can lead to severe pain.^[9,10] The incidence of CPIP after the 1st post-operative year is approximately 29% according to the Danish Hernia Database Group.^[11] In a study by Caliskan and his team members, where the patients underwent Lichtenstein and neurectomy, the incidence of CPIP was significantly lower in the neurectomy group than in the nerve preservation group.^[12]

In a pilot study conducted by Ravichandran *et al.*, where preservation or division of the ilioinguinal nerve in an inguinal hernia open mesh repairs was compared, pain was present in 1 out of 20 patients (5%) on the nerve preserved side versus 0 out of 20 patients (0%) on the nerve division side. Moreover, numbness was present in 2 out of 20 patients (10%) on the nerve divided side. The differences between the two study groups were non-significant and elective nerve division can reduce the PCP.^[13] Picchio suggested that the reduction in CPIP following neurectomy is due to increased wound anesthesia.^[14]

Based on our study, the ilioinguinal nerve excision during Lichtenstein procedure significantly reduced the PCP up to 6 months follow-up. It also reduced the return to work time which shows the superiority of this procedure. Numbness is an unavoidable complication after the nerve excision, but from patient point of view, pain relief seems to be more important.

Hence, IIN can be performed as a routine procedure during inguinal hernia repair and this simple intraoperative maneuver can greatly reduce patient morbidity.

CONCLUSION

Routine IIN can reduce the incidence of chronic pain following hernia repair surgery. Hypoesthesia is a complication associated with IIN. Sample size calculations were not carried out in this study which may affect the credibility of the outcome of the study. The pain evaluation method was also not consistent and no perfect data conversion standard was followed. Further studies and evidence are needed to verify the findings.

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