

Ilioinguinal Neurectomy in Open Inguinal Hernia Mesh Repair

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Objectives: To evaluate the long-term impact of ilioinguinal neurectomy on the incidence of postoperative neuralgia and paraesthesia following the tension free Lichtenstein's hernia repair. **Study design:** Case Descriptive Study. **Place and duration of study:** DHQ Hospital, Faisalabad (January 2003 – January 2005). **Patients and methods:** A total of 200 patients having unilateral inguinal hernia were included in the study. After a detailed history, patients were subjected to standard Lichtenstein inguinal hernioplasty. All patients underwent elective ilioinguinal neurectomy at the time of hernioplasty. Postoperative pain and paraesthesia were recorded and categorized on a mild, moderate or severe scale. Patients were followed 1 month, 6 month and 1 year postoperatively. **Results:** The incidence of chronic pain was 9% at 1 month & 6% at 6 months and 1 year postoperatively. None of the patients developed severe persistent pain in inguinal region. The incidence of post operative paraesthesia showed a continuous decline. It was 32% at 1 month, 24% at 6 month and 19% at 1 year of follow up. The paraesthesia was never severe or bothersome at the end of the follow up period. **Conclusion:** Routine ilioinguinal neurectomy significantly reduces the chronic posthernioplasty inguinal pain. Moreover it is safe to perform & well tolerated by the patients.

Key words: Ilioinguinal Nerve, Inguinal Hernia, Postoperative Neuralgia, Postoperative Paraesthesia, Neurectomy.

Chronic inguinodynia or chronic postoperative inguinal pain syndrome is a recognized and potentially debilitating sequelae following elective inguinal hernia surgery. The increasing popularity of prosthetic mesh and laparoscopic hernia repair has highlighted this complication further. Diagnosis and definitive treatment constitute challenging issues both for the surgeon and patient. Incidences of long-term postoperative neuralgia reported for Lichtenstein's repair of inguinal hernia range from 6% to 54%. In a significant number of patients, it is severe enough to affect the quality of life.

There are many causes for this 'Inguinodynia' including nerve damage, scar tissue itself or tissue damage, misplaced mesh, meshomas, infection, recurrent (or persistent) hernia, constriction or narrowing of the internal inguinal ring around the spermatic cord, periostitis & pain from unrelated causes. The exact cause of any individual patient's pain is difficult to diagnose as X-rays, MRI or CT scans are often normal in these circumstances. Among these the most common cause is due to nerve involvement. It may be due to operative trauma to the nerve (stretching, laceration, division leading to neuroma formation or suture entrapment) or entrapment in the scar tissue.

Management may involve local anaesthetic injections in form of nerve blocks, cryoablation, physiotherapy, NSAIDS, antidepressants and/or additional surgery.

Excision of ilioinguinal nerve has been recommended as a means to avoid this incapacitating complication of posthernioplasty neuralgia. Theoretically the excision of ilioinguinal nerve would eliminate the risk of postoperative neuralgia arising from entrapment, inflammation, neuroma formation or fibrotic reactions.

The concept of prophylactic neurectomy to deal with postoperative neuralgia is not new in general surgical practice. In invasive ductal carcinoma of breast during the axillary dissection, the intercostobrachial nerve is routinely

sacrificed to avoid similar complications with minimal additional morbidity.

This present study was carried out to find the effect of routine ilioinguinal neurectomy on the incidence of chronic post hernioplasty pain and to evaluate the severity of additional morbidity of the procedure.

Patients and methods:

A total of 200 patients presented in surgical OPD of DHQ Hospital, Faisalabad from January 2003 to January 2004 were included in the study. All the patients had unilateral inguinal hernia and were resident of Faisalabad. Patients who had bilateral inguinal hernia, recurrent hernia and those who did not complete the follow up were excluded from the study.

While considering any underlying cause of hernia, a detailed history was taken and thorough clinical examination was carried out. Patients above the age of 45 years had ECG and X-Ray chest in addition to the baseline investigations.

All the patients had Lichtenstein tension free hernioplasty with polypropylene mesh under general or spinal anaesthesia. All patients underwent ilioinguinal nerve excision which was dissected and ligated with catgut No. 2/0 before division with scalpel as high as possible, while gently pulling the dissected nerve. The distal nerve is similarly divided hence completing the neurectomy.

The patients were reviewed 1 month, 6 month & 1 year postoperatively. On follow up visit they were evaluated for chronic inguinodynia and the severity of pain. Patients were categorized as having mild (not bothering the patients), moderate (patient has to take oral medications occasionally but not interfering quality of life) and severe (Seriously interfering with quality of life). The postoperative paraesthesia in the distribution of ilioinguinal nerve and its severity was also evaluated.

Paraesthesia was categorized as mild (not bothering the patients) and severe (incapacitating for the patients). All the information was recorded on a preformed Performa.

Results:

A total of 200 patients were studied for chronic postoperative inguinaldynia and postoperative paraesthesia after Lichtenstein tension free hernioplasty. 20 patients were excluded from the study due to incomplete follow up. All patients were male and the average age was 54.6 years with a range of (31 years – 70 years).

Table 1: Incidence of Chronic Postoperative Pain (n=180)

Duration	=n	%age
1 Month	16	9.0
6 Month	11	6.0
1 Year	11	6.0

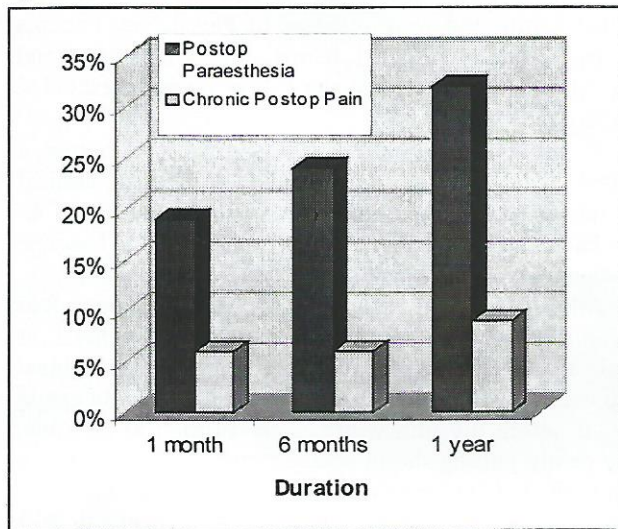
Table 2: Severity of Chronic Postoperative Pain (n=180)

Severity of Pain	No. of Patients
Mild	11
Moderate	05
Severe	0

Table 3: Incidence of Postoperative Paraesthesia (n=180)

Duration	=n	%age
1 Month	58	32
6 Month	43	24
1 Year	34	19

Fig.1



The postoperative inguinaldynia was experienced by 16 patients (9%) at the end of first month that decreased to 11 patients (6%) at 6th month but did not changed further at 1 year postoperatively.

Among those who experienced inguinaldynia no one had severe pain, 5 patients (3%) had moderate and 11 patients (6%) had mild pain. (Table 1)

The postoperative paraesthesia in the distribution of ilioinguinal nerve showed a continuous trend towards decline with the passage of time. It was noticed in 58 patients (32%) at the 1st month, 43 patients (24%) at 6th month and 34 patients (19%) at 1 year postoperatively (Fig.1).

The postoperative paraesthesia was not severe in any patient at the end of 1 year. (Table 2)

Discussion:

Chronic postoperative pain was believed to be a recognized and distressing complication of inguinal hernia repair. Evidence suggests that patients with chronic pain place a considerable burden on health services. Minor, not readily visible nerves are invariably damaged in every surgical operation. Major cutaneous nerves are also excised during few surgical procedures like neck and axillary dissections. When these cutaneous nerves are excised, usually there are variable patterns of numbness followed by gradual recovery that is based on the collateral nerves.

Ilioinguinal neurectomy is a recognized procedure to deal with postherniorrhaphy neuropathic pain in patients not responding to other modalities of treatment. Many studies show its significant effect on the relief of neuropathic pain^{1, 2}. It may be combined with neurectomy of iliohypogastric and genitofemoral nerves (triple neurectomy) to relieve the neuralgia^{3, 4, 5}.

Many surgeons are now finding through their experience that by routinely excising the ilioinguinal nerve during the hernia repairs, the postoperative neuralgia can be reduced tremendously. Remarkable decreases in the patient symptoms of postoperative pain seem to be the major driving force. In our study, the incidence of chronic postoperative pain after hernia repair is significantly lower which is 09% at 1 month and 6.0% at one year. In contrast to most of the international studies that show a high incidence of 54% of chronic postoperative pain after hernia repair without neurectomy which is severe in a significant number of patients (18 %) in our study the incidence was significantly low.^{6, 7}

Similar results have been documented by others. Dittrick GW and others conducted a study to evaluate the effect of ilioinguinal neurectomy on postoperative neuralgia and paraesthesia. The incidence of neuralgia was significantly lower in patients having neurectomy than those who did not have neurectomy (3% vs. 26%, P<0.001). The incidence of paraesthesia was (13% vs. 5%, P=0.32) in the groups respectively. They concluded that routine ilioinguinal neurectomy is a reasonable option to prevent the postoperative neuralgia⁸.

Tsakayannis DE and others conducted a study of elective neurectomy during open “tension free” inguinal hernia repair. They concluded that elective ilioinguinal neurectomy is safe and decreases the chronic postoperative inguinal pain with minimal additional morbidity⁹.

The postoperative numbness and sensory loss was the only complication attributed to neurectomy but the paraesthesia was well tolerated by the patients.

Similarly, Ravichandran and coworkers in a pilot randomized controlled trial observed that division of ilioinguinal nerve during open mesh repair of inguinal hernia does not appear to be associated with a significant increase in postoperative symptoms¹⁰.

Moreover there is a consistent fall in the incidence at 6 months and after 1 year from 32%, 24% and 19% respectively. This suggests a progressive sensory compensation from the adjacent sensory nerves that may continue to improve further.

Conclusion:

1. Routine ilioinguinal neurectomy is a simple, safe procedure that decreases the incidence of chronic post operative inguinodynia.
2. The resultant paraesthesia after neurectomy is well tolerated by the patients and had no long term consequences.

References:

1. Heise CP, Starling JR. Mesh inguinodynia: a new clinical syndrome after inguinal herniorrhaphy? *Journal of American College of Surgeons* Nov 1998; 187(5):514-8.

2. Kim DH, Murovic JA, Tiel RL, Kline DG. Surgical management of 33 ilioinguinal and iliohypogastric neuralgias at Louisiana State University Health Sciences Center. *Neurosurgery* May 2005; 56(5): 1013-20.
3. Amid PK. A 1-stage surgical treatment for postherniorrhaphy neuropathic pain: triple neurectomy and proximal end implantation without mobilization of the cord. *Archives of Surgery* Jan 2002; 137(1):100-4.
4. Aasvang E, Kehlet H. Surgical management of chronic pain after inguinal hernia repair. *British Journal of Surgery* July 2005; 92(7):795-801.
5. Amid PK. Causes, prevention and surgical treatment of postherniorrhaphy neuropathic inguinodynia: triple neurectomy with proximal end implantation. *Hernia* Dec 2004; 8(4):343-9.
6. Poobalan AS et al. A review of chronic pain after inguinal herniorrhaphy. *Clin J Pain* Jan-Feb 2003; 19(1):48-54.
7. Kumar S, Wilson RG, Nixon SJ, Macintyre IM. Chronic pain after laparoscopic and open mesh repair of groin hernia. *British Journal of Surgery* Nov 2002; 89(11):1476-9.
8. Dittrick GW, Ridl K, Kuhn JA, McCarty TM. Routine ilioinguinal nerve excision in inguinal hernia repairs. *American Journal of Surgery* Dec 2004; 188(6):736-40.
9. Tsakayannis DE, Kiriakopoulos AC, Linos DA. Elective neurectomy during 'tension free' inguinal hernia repair. *Hernia* Feb 2004; 8(1):67-9.
10. Ravichandran D, Kalambe BG, Pain JA. Pilot randomized controlled study of preservation or division of ilioinguinal nerve in open mesh repair of inguinal hernia. *British Journal of Surgery* Sep 2000; 87(9):1166-