ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 6 | June - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPARATIVE STUDY OF PRESERVATION OR ELECTIVE oo DIVISION OF ILIO INGUINAL NERVE IN LICHENSTEIN'S MESH REPAIR IN POST OPERATIVE PAIN PERCEPTION

General Surgery

Dr. Jegadhes Kumar Devaraj Assistant professor, Department of General Surgery, Government Sivagangai Medical College, Sivaganagi

Dr. Sethu Kannan Ramasamy* Assistant professor, Department of General Surgery, Government kilpauk medical college, Chennai *Corresponding Author

ABSTRACT

Hernia repair oo is one of the most common operations performed by general surgeons. Despite the frequency of this procedure, no surgeon oo has ideal results and complications such as 8postoperative pain oo, nerve injury, infection, and recurrence continue to challenge surgeonsThe ilioinguinal nerve is a sensory nerve that innervates the skin over the groin region, the medial aspect of te thigh, the upper part of the scrotum and the penile root. It is normally encountered during open repair of inguinal hernia. Traditional surgical teaching oo dictates that the nerve should be preserved oo at all times during repair because of the supposed morbidity associated with cutaneous sensory loss and chronic groin pain following nerve injury. However, some reports suggested that elective excision of ilioinguinal nerve causes minimal morbidities and was not considered incapacitating by most patients. oo The aim of this study is to evaluate the role of prophylactic division of ilio inguinal nerve in reducing chronic post operative pain following open hernia repair Lichenstein's mesh repair The results of this prospective randomized trial demonstrate that prophylactic excision of ilioinguinal nerve during Lichtenstein inguinal hernia repair decreases the incidence of exertional chronic groin pain after surgery. Furthermore, the procedure is not associated with additional morbidities in terms of local cutaneous neurosensory disturbances or deterioration in quality of life. Ilioinguinal neurectomy should be considered as a routine surgical step during open mesh hernia repair.

KEYWORDS

Hernia, Hernia repair, Illioinguinal nerve , postoperative pain

1. INTRODUCTION:

Chronic groin pain is a significant problem following open inguinal hernia repair, with a reported incidence ranging from 18 to 61 .9%[1-3].Although the pain is often mild in nature, quality of life0 studies have shown that chronic pain, irrespective of severity, can significantly interfere with normal dailyactivities[4-5]. Moreover, the condition can sometimes be debilitating and treatment is often difficult and challenging.The ilioinguinal oo nerve is a sensory nerve that innervates the skin over the groin region, the medial aspect of te thigh, the upper part of the scrotum and the penile root. It is normally encountered during open repair of inguinal hernia. Traditional surgical teaching oo dictates that the nerve should be preserved at all times during repair because of the supposed morbidity associated with cutaneous sensory loss and chronic groin pain following nerve injury. However, some reports suggested that elective excision of ilioinguinal nerve causes minimal oo morbidities and was not considered incapacitating by most patients[6,7]. In addition, ilioinguinal neurectomy oo is a well-documented effective treatment of relieving0 chronic oo groin pain following open hernia repair, achieving more favorable outcomes than nerve block or mesh removal alone[8-10]. More recently, retrospective oo studies have shown that oo excision of ilioinguinal77 nerve during herniorrhaphy were associated with a lower oo ooincidence of chronic groin pain afterthe operation[11-12].In this trial, we studied the effect of prophylactic ilioinguinal neurectomy on the incidence and the severity00 of chronic groin pain after inguinal hernia repair (Lichienstein's mesh repair) in a prospective randomized controlled manner

2. AIM

The aim of this study is to evaluate the role of prophylactic division of ilio inguinal nerve in reducing chronic post operative pain following open hernia repair Lichenstein's oo mesh repair.

3.METHODS AND MATERIALS

50 patients between the age of 18 and 70 years who underwent unilateral inguinal hernia repair lichenstein's polyprolene mesh repair at Govt. Stanley hospital,were randomized to receive either prophylactic ilioinguinal neurectomy (Group A) or ilioinguinal nerve preservation (Group B). All operations oo were performed by surgeons specialized in hernia repair under local anesthesia or general anesthesia.

INCLUSION CRITERIA :

1. All oo male patients between the age of 18 and 70 years
2. All patients with unilateral oo inguinal hernias either direct inguinal hernia or indirect inguinal hernias.
3. All patients oo who is fit to undergo elective surgery with good performance status.
4. All patients with uncomplicated unilateral hernias.
5. All patients were planned for elective hernia repair.

EXCLUSION CRITERIA:

1. Male oo patients with bilateral inguinal hernias
2. All patients below the age of 18 years .
3. Female patients oo with inguinal hernias.
4. All male patients with complicated inguinal hernias like obstructed or strangulated inguinal hernias oo requiring emergency management.
5. Those with recurrent hernias.
6. Those with h/o oo peripheral neuropathy.
7. Those with impaired oo cognitive function.
8.. Patients with poor oo perfomance status.

The primary outcome was the incidence of oo groin pain at the end of six months.Secondary outcomes included incidence of groin numbness, postoperative oo sensory loss or change at the groin region.All follow up and measurements were carried out at the end of one and six months following surgery. 50 patients who were older than 18 years with primary unilateral oo uncomplicated inguinal hernia ,who presented for operation in the department of General surgery , Govt Royapettah Hospital, Kilpauk Medical college, were considered eligible for the study. After approval by local bioethics committees, informed consent was obtained preoperatively on hospital admission. Before operation patients were randomly allocated to undergo hernia mesh repair either with ilioinguinal nerve preservation (group A) or oo transection (group B).Operations were performed with the patients under spinal anesthesia. oo All patients received the standard flat mesh repair according to the technique described by Lichtenstein oo et al. In group A, the whole ilioinguinal nerve was excised as far lateral to the deep ring as possible and medially to where it entered the rectus muscles. The cut ends oo were left alone without implantation into muscle or ligation. Histologic examination of the nerve was performed to confirm complete excision. Any small cutaneous oo nerves that interfere with mesh placement were excised as well.In group B, the ilioinguinal oo nerve was carefully protected throughout the operation. The rest of the procedure was performed in a standardized manner. A monofilament polypropylene mesh was anchored with polypropylene sutures (PROLENE, EthicoJohnson oo & Johnson Unit) to the reflected part of inguinal ligament and the floor of the inguinal canal. Extreme oo care was used during surgery to avoid inclusion of nerve tissue during suturing and mesh placement. The patients were managed in a standard clinical pathway postoperatively and were followed up at 1 and 6 months after operation.Postoperative pain was assessed using a 4-point oo verbal scale (none, mild,

moderate, or severe), assigning numerical values of 0 to 3 oo one week after operation. Mild pain was defined as an occasional disturbance that did not limit normal activities, moderate pain as pain that interfered with normal -day life activities, and severe pain as pain that rendered

the patient unable to perform normal activities. At 1-month and 6-month follow-up visits, pain experienced during oo the last week before the visit was assessed using the same scale. Follow-up questionnaire's were performed at the end of the study with the aim of assessing the presence oo and intensity of pain related to the operation, using the same 4-point verbal scale.

In addition, during follow-upvisits, patients were also tested for the presence of numbness and sensory loss to light touch and pain sensation in the area of distribution of the ilioinguinal nerve. During each follow up visit, pain at rest and upon completion of various activities(coughing for 10 times, walking up 3 flights of stairs, and cycling for 10 minutes) were assessed by 4-point scale (none, mild, moderate, or severe). Patients were also requested to fill in a questionnaire regarding pain or discomfort encountered during normal daily activities at home.In addition, the groin region was divided into 5 cutaneous areas, namely, outer upper, outer lower, inner upper, inner lower, and scrotal region in relation to the groin incision for sensory assessment. Sensation loss or changes were assessed by the standard Semmes-Weinstein monofilament test performed by the occupational therapist to the 5 regions of each side by the technique described by Bell. The non operative side of each individual acted as the control. Sensation loss or changes were defined as any asymmetry between corresponding regions of the 2 sides demonstrated by the monofilament test. Chronic groin pain was defined as any discomfort or pain elicited on follow-up or encountered during normal daily activities. Severe pain was defined as pain experienced in any aspects graded moderate or severe at follow-up.The calculated sample size was based on the assumption that a minimum difference in incidence of chronic groin pain of 20% would be meaningful and to achieve 80% power with 2-sided *P* value <0.05 as significant, 25 patients per group were required.Statistical analysis was based on intention-to-treat analysis and was performed with statistical software Statistical Package for Social Science (version 11.0 for Windows, SPSS, Inc., Chicago IL.).Comparisons were carried out by the Pearson $\chi 2$ test or Fisher exact test where appropriate for categorical data and Student *t* test for parametric data. A 2-sided *P* value of less than 0.05 was considered significant.

4.RESULTS :

A total of 50 patients were eligible for the study during the 6 month period and randomized with 25 patients in each group. The mean (SD) age of patients in group A and group B were 65.1 (10.1) and 63.0 (16.3) , respectively. The 2 groups were comparable with regard to educational level, method of anesthesia, laterality of hernia, baseline pain measurement during various activities, incidence of groin numbness , and complications.

Table no 1: pain after coughing for 10 min in two groups

Pain after coughing for 10 min	Group A	Group B
Any degree	7	7
None	18	18
Mild	4	5
Moderate	2	2
severe	1	0

Table no 2: pain after cycling for 10 min in two groups

Pain after cycling for 10 min	Group A	Group B
Any degree	3	5
None	22	20
Mild	3	3
Moderate	0	2
severe	0	0

Twenty five patients in group A and twenty five patients in group B (98%) were available for assessment at the 6-month follow-up. The incidence of chronic groin pain at 6 months was significantly lower in group A compared with group B (4 [8%] vs. 14 [28.6%]; P = 0.008, Fisher oo exact test). The incidence of pain experienced after walking 3 flights of stairs and cycling for 10 minutes were significantly lower in group A than group B (1 [2%] vs. 7 [14%]; P = 0.03; 2 [4%] vs. 10 [20.4%]; P = 0.015 Fisher exact test, respectively). The severity of chronic oo pain developed was comparable between the 2 groups. There were no significant differences in the incidence of pain experienced during normal daily activities at home and after coughing for 10 times at 6 months. The incidences of groin numbness and sensation changes or loss at groin region were also similar between the 2 groups at 6 months

5. DISCUSSION:

Postoperative pain is a significant problem oo after open inguinal hernia repair. Moderate or severe pain was still present in 11% of patients during mobilization and in 5% at rest 4 weeks after operation in the study by Callesen et al. In the same group of patients, 19% oo reported some degree of pain at 1-year follow-up; the pain was moderate or severe in 6% oo of cases.4 In a large-scale study, 24 oo chronic pain was present in 28.7% of patients 1 year after hernioplasty, leading to some degree of functional impairment in 11% oo of patients. In another large-scale study,25 chronic pain oo was present in 43% oo of patients, and it was reported as severe or very severe in 3% oo of cases. Chronic pain occurred in 30% of patients in the study by Poobalan et al. Tension-free repair of inguinal hernia with mesh prosthesis should lead to less postoperative pain. However, acute postoperative pain was similar in patients who underwent conventional or mesh hernia repair. In a recent meta-analysis of randomized controlled trials, comparing hernia repair with or without mesh, the results showed a significant reduction in chronic pain when mesh was applied; however, there is still a relevant proportion of patients (10.7%) who complained of persisting pain after hernia repair with mesh In our group of study, globally considered, chronic pain 6 months after operation was present in 9(18%) of 50 patients. No correlation was found between the presence of preoperative pain and the occurrence of postoperative pain. According to other studies, chronic pain was significantly related to the presence and intensity of postoperative pain. Damage to ilio inguinal nerve passing through the surgical field is suspected to be one of the main causes of chronic post herniorrhaphy pain. This theory is supported by the association between chronic pain and sensory disturbances.30 A nerve may be damaged during operation as a result of perineural fibrosis, entrapment by staples, sutures, or prosthetic materials, and direct lesions due to stretching, contusion,electrical injury, and partial or complete division of the nerve.Elective division of the ilioinguinal nerve was proposed by hernia surgeons to reduce the risk of its inadvertent damage and consequent chronic pain. The first randomized trial to address this problem by Ravichandran et al was underpowered and no definite conclusion could be made. The authors found no evidence to support the benefit of ilioinguinal nerve division with respect to postoperative pain within the limitation of a small sample size. Results from subsequent trials regarding chronic groin pain following elective neurectomy have been inconsistent. Interestingly, in a retrospective review of 191 patients who underwent elective excision of the ilioinguinal nerve during open hernia repair showed that none of the patients developed chronic groin pain at months of follow-up. In another retrospective study, Dittrick et al reported a significantly lower incidence of chronic groin pain in patients who had elective neurectomy during open inguinal hernia repair when compared with the control group. However, these results were not confirmed in a recent randomized controlled trial by Picchio oo et al, who found similar incidence of chronic groin pain between ilioinguinal nerve excision group and control.Wantz showed that chronic pain oo was not present in 546 patients who underwent hernia repair with elective division of the ilioinguinal nerve, whereas it was seen in patients with the nerve preserved. No relation between ilioinguinal nerve preservation or elective division and chronic pain was reported in a large study by Cunningham et al According to another study of 172 patients division of cutaneous nerves during inguinal hernia repair has no significant effect on postoperative pain. However, there are very few adverse outcomes, and so, a pragmatic approach of dividing nerves when they would otherwise be damaged may be appropriate.The prophylactic excision of ilioinguinal nerve during Lichtenstein inguinal hernia repair decreases the incidence of exertional chronic groin pain after surgery according to the study by Wilfred Lik-Man Mui et al.Our randomized study revealed that the incidence of chronic groin pain during normal daily activities was similar between the 2 groups which compliment the findings by Picchio oo et al. However, in addition, we found significntly fewer patients in the neurectomy group developed chronic groin pain upon exertion (cycling for 10 minutes and walking up 3 flights of stairs), which has not been previously studied. The other potential disadvantage of ilioinguinal oo nerve excision is the morbidity

associated with sensory loss over the groin region as well as its oo impact on quality of life. The previous study by Picchio et al reported increased incidence of sensory loss to pain and touch around the groin region in patients who had nerve excision during open hernia repair.19 However, the current study clearly demonstrated that elective excision of the ilioinguinal nerve was not associated with additional morbidities in neurosensory disturbances, groin oo numbness or quality of life at the 6-month follow-up. We postulated that the sensory loss caused by neurectomy might be compensated by cross-innervations from oo contralateral cutaneous nerves. Furthermore, direct meaningful comparison between Picchio et al and that of our study is not possible because their methodology used for testing skin sensation oo was not described. Semmes-Weinstein monofilament testing was adopted in the present study to provide a more standard and objective method to measure skin sensitivity. We are not able to demonstrate any significant differences in terms of postoperative incidence or severity of chronic groin pain at oo rest, during normal daily activities and after coughing between the 2 groups, which can be due to β errors. In addition, meaningful assessment of chronic pain at 1 month may not be possible in the presence of early postoperative swelling and pain, and we speculate that this may contribute to the no differences in incidence of chronic pain at 1 month in contrast oo to 6 months. Another limitation of the study is that the long-term effect of ilioinguinal neurectomy was not investigated. It is possible that differences in the incidence of chronic pain between the groups, as well as the quality of life measurements will change with longer follow-up duration. Larger clinical trials involving more patients and longer follow-up are warranted to study the long-term effect of prophylactic neurectomy in patients undergoing Lichtenstein oo repair. Lastly, although we are able to show that prophylactic oo neurectomy decreases the incidence of chronic pain, the exact reasoning behind this phenomenon remains unknown. Further histologic or nerve conduction studies are required to deduce the exact mechanism.

6.CONCLUSION:

The results of this prospective randomized trial demonstrate that prophylactic excision of ilioinguinal nerve during Lichtenstein inguinal hernia repair decreases the incidence of exertional chronic groin pain after surgery. Furthermore, the procedure is not associated with additional morbidities in terms of local cutaneous neurosensory disturbances or deterioration in quality of life. Ilioinguinal oo neurectomy should be considered as a routine surgical step during open mesh hernia repair.

7. REFERENCES :

1. Bay-Nielsen M oo, Perkins FM, Kehlet H. Pain and functional impairment 1 year after inguinal herniorrhaphy: a nationwide questionnaire study. Ann Surg. 2001;233:1–7.
2. Cunningham J, Temple WJ, Mitchell P, oo et al. Cooperative hernia study: pain in the postrepair patient. Ann Surg. 1996;224:598–602.
3. Callesen T, Bech K, Kehlet H. Prospective study of chronic pain after groin hernia repair oo. Br J Surg. 1999;86:1528–1531.
4. Poobalan AS, Bruce J, King PM, et al. Chronic pain and quality of life following open inguinal hernia repair. Br J Surg. 2001;88:1122–1126. 5.Courtney CA, Duffy K, Serpell MG, et al. Outcome of patients with severe chronic oo pain following repair of groin hernia. Br J Surg. 2002;89:1310–1314
6. Wantz GE. oo Testicular atrophy and chronic residual neuralgia as risks of inguinal hernioplasty. Surg Clin North Am. 1993;73:571–581.
7. Pappalardo G, Guadalaxara A, Illomei G, et al oo. Prevention of postherniorrhaphy persistent pain: results of a prospective study. Int Surg. 1999;84:350–353.
8. Amid PK. Causes, prevention, and surgical treatment oo of post herniorrhaphy oo neuropathic inguinodynia: triple neurectomy with proximal end implantation. Hernia. 2004;8:343–349.
9. Starling JR, Harms BA. Diagnosis and treatment of oo genitofemoral and ilioinguinal neurectomy. World J Surg. 1989;13:586–591.
10. Madura JA, Madura oo JA 2nd, Copper CM, et al. Inguinal neurectomy for inguinal nerve oo entrapment: an experience with 100 patients. Am J Surg. 2005;189:283–287.
11. Dittrick GW, Ridl K, Kuhn JA, et al. Routine ilioinguinal nerve excision in inguinal hernia oo repairs. Am J Surg. 2004;188:736–740.
12. Tsakayannis DE, Kiriakopoulos AC, Linos DA. Elective neurectomy during open, 'tension free' inguinal hernia repair. Hernia. 2004;8 oo:67–69.