ORIGINAL RESEARCH PAPER

General Surgery

A COMPARATIVE STUDY BETWEEN PRESERVATION OF ILIOINGUINAL NERVE VERSUS ILIOINGUINAL NEURECTOMY DURING LICHTENSTEIN HERNIOPLASTY IN PREVENTING INGUINODYNIA AT MADRAS MEDICAL COLLEGE, RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL, CHENNAI

KEY WORDS: Inguinodynia, inguinal neurectomy

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ABSTRACT

Nowadays the recurrence in inguinal hernia repairs have come down. Now the main concern is the inguinodynia with a universally reported rate of 4-8%. Elective neurectomy of ilioinguinal nerve can prevent inguinodynia. Re-exploration for inguinodynia is difficult because of abundant scar. Sensory loss is better tolerated than chronic pain. Objective: To assess efficacy of elective ilioinguinal neurectomy in reducing incidence of inguinodynia.

Methods: 100 patients who underwent inguinal hernioplasty are split into two equal groups, one control group where the nerves were preserved and the second case group undergoing elective ilioinguinal neurectomy, in Institute of General Surgery, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai from January 2019 to December 2019. Pain was assessed using 4-point in verbal scale during 1st week, at 1month, at 3months, 6months follow up.

Results: There was a significant decrease in pain scores with no significant differences in analgesic usage.

Conclusion: A routine ilioinguinal neurectomy during elective hernioplasty can prevent inguinodynia and the cost needed to alleviate the pain.

INTRODUCTION

With decreasing recurrence rates, now the most significant complication is postoperative pain. Post-operative inguinodynia has universally reported rate of 4-8% 1. Nerve entrapment is attributed to be the main cause of pain2. Though the pain is often mild in nature, the quality of life studies has shown that chronic pain, irrespective of severity, can significantly interfere with normal daily activities. Lichtenstein3 recommended preservation of all three nerves, whereas Wantz recommends intentional severance based on the concept of no nerve, no pain. Routine surgical teaching dictates that the nerve has to be preserved during repair because of the supposed morbidity associated with cutaneous sensory loss and chronic groin pain following nerve injury. However, there are reports suggesting that elective ilioinguinal neurectomy causes minimal morbidities and was not significantly incapacitating most patients. Ilioinguinal neurectomy is a well-documented effective treatment for inguinodynia following open hernia repair, achieving more favourable outcomes than nerve block or mesh removal alone. More recently, retrospective studies have shown that ilioinguinal neurectomy during hernioplasty were associated with a lower incidence of chronic groin pain of after the operation. In this study, we have studied the effect of elective ilioinguinal neurectomy on the incidence and the severity of chronic groin pain after the Lichtenstein's mesh repair in a prospective randomized controlled manner.

METHODS

From January 2019 to December 2019, 100 male patients who were of age between 18 to 75 years with primary unilateral uncomplicated inguinal hernia, without pain and without sensory changes / loss in groin and thigh, who presented for operation in the Institute of General surgery, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, were considered eligible for the study. Those patients who were not willing to participate in this study, females, age less than 18 and more than 75, were excluded. After approval by local bioethics committees, informed consent was obtained of preoperatively on hospital admission. Before operation patients were randomly allocated to undergo hernia mesh repair either with ilioinguinal nerve preservation (group A) or neurectomy (group B). Operations were all performed with the patients under spinal anaesthesia by experienced surgeons. All patients received the standard Lichtenstein hernioplasty. In group A, the ilioinguinal nerve was carefully protected throughout the operation. The rest of the procedure was performed in a standardized manner. An Extreme care was used during surgery to avoid inclusion of nerve tissue during suturing and mesh placement. In group B, 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 were left alone of without implantation into muscle or ligation. Histologic examination of the nerve was performed to confirm complete excision. Any small cutaneous nerves that interfere with mesh placement were excised as well. The patients were all managed in a standard clinical pathway postoperatively and were followed up at 1 and 6 months after surgery for pain, groin numbness, postoperative sensory loss or change at the groin region.

Pain assessment: Postoperative pain was assessed using a 4-point in verbal scale (none, mild, moderate, or severe), assigning numerical values of 0, 1, 2, 3. Mild pain was defined as an occasional pain that did not limit normal activities, moderate pain as pain that interfered with normal day life activities, and of severe pain as pain that rendered the patient unable to perform normal activities.

Sensory Assessment: 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- Weinstein6 monofilament test. The non-operative side of the same patient 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.

RESULTS

In our study, the minimum age of the patient presenting with hernia was 18 years in the neurectomy group and 20 years. in the nerve preservation group, while the oldest being 70years in the neurectomy group and 67 years in the nerve preservation group. There were no significant differences in analgesic intake between the two groups. Duration of hospital stay was comparable in both groups. During the immediate postoperative period at 1st week, patients who did not undergo neurectomy (20%) had higher incidence of pain than patients who underwent neurectomy (10%) CHART 1. At end of 1 month 6% of neurectomy group had pain, and 14% of patients in nerve preservation group had pain (CHART 2). After three months none of the patients in neurectomy group had pain but pain in nerve preservation group was 12% (CHART 3). Finally, at 6 months of follow up, only 8% people in nerve preservation group had pain (CHART 4). None of the patients experienced sensory disturbance following neurectomy.

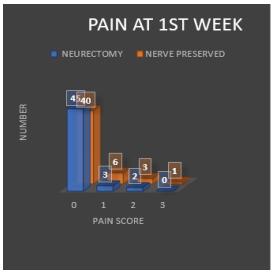

CHART 1

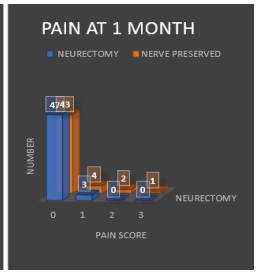

CHART 2

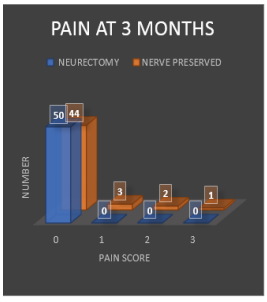

CHART 3

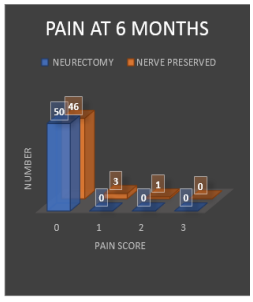

CHART 4

DISCUSSION

The most frequent operation in general surgery is the repair of inguinal Hernias. Recurrence was less common after mesh repair (odds ratio of 0.43). With the decrease in recurrence rate, chronic pain is the most serious long-term complication of hernia repair and may persist for several years. About 25 % patients when asked report long term pain or discomfort at hernia repair site. 10 % say it is usually mild, but may be moderate to severe in 3% interfering in work and leisure activities. Surgical triple neurectomy has afforded 70% relief for patients with inguinodynia5. Difference in pain perception in the immediate postoperative period was statistically significant. We used ilioinguinal neurectomy in which ilioinguinal nerve was identified along its full length within the inguinal canal and cut proximally, at the point of its entry into the inguinal canal and distally at the external inguinal ring. Dittrick et al4 concluded that an elective inguinal neurectomy can completely prevent post-operative inguinodynia. Incidence of chronic groin pain at rest that is severe inguinodynia was similar between the neurectomy and nerve preservation groups (P = 0.153) which complement the findings of Muiet al87. After 6 months, incidence of inguinodynia reduced to 0% in the neurectomy group and 8% in the nerve preservation group. This is similar to 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 12 months of follow-up7-9. No patient had sensory disturbance after neurectomy .The sensory loss caused by neurectomy might be compensated by cross-innervations from contralateral cutaneous nerves In our study, there was no significant difference in the health related quality of life between the two study groups.

CONCLUSION

There was a statistically significant decrease in pain scores in the postoperative period at 1 week, at 1-month, at 3 months and 6months follow up in the neurectomy group. There was no significant difference in analgesic usage during the postoperative period. There was statistically significant decrease in duration of stay both groups. There was no subjective experience of loss of sensation, numbness or paraesthesia. Ilioinguinal neurectomy can be included in routine Lichtenstein inguinal hernia repair to prevent inguinodynia and so the cost needed to alleviate the pain.

REFERENCES

1. Fitzgibbons RJ, Ramanan B, Arya S, et al. Long-term results of a randomized controlled trial of a nonoperative strategy (watchful waiting) for men with minimally symptomatic inguinal hernias. Ann Surg. 2013;258(3):508-515. doi:10.1097/SLA.0b013e3182a19725.
2. Callesen T, Bech K, Kehlet H. Prospective study of chronic pain after groin hernia repair. Br J Surg. 1999;86:1528–1531.
3. Lichtenstein IL, Shulman AG, Amid PK, Montllor MM. The tension-free hernioplasty. Am J Surg. 1989;157(2):188-193. doi:10.1016/0002-9610(89)90526-6.
4. Dittrick GW, Ridl K, Kuhn JA, et al. Routine ilioinguinal nerve excision in inguinal hernia repairs. Am J Surg. 2004;188:736–740.
5. Jeffrey B. Mazin. Postoperative inguinodynia from hernia surgery, Practical pain management volume 10 issue 3.
6. Bell JA. Semmes-Weinstein monofilament testing for determining cutaneous light touch/deep pressure sensation. Star. 1984:44(2).
7. Wantz GE. Testicular atrophy and chronic residual neuralgia as risks of inguinal hernioplasty. Surg Clin North Am 1993;73:571–581
8. DerSimonian R, Laird N (1986) Meta-analysis in clinical trials. Control Clin Trials 7:177–188
9. Amid PK (2004) Causes, prevention, and surgical treatment of postherniorrhaphy neuropathic inguinodynia: triple neurectomy with proximal end implantation. Hernia 8:343–349