

Elective Division of Ilioinguinal Nerve in Inguinal Hernioplasty: Remedy for the Morbid Postoperative Inguinal Pain

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ABSTRACT

Objective: To compare the postoperative pain in inguinal hernioplasty, by preserving versus wide elective division of ilioinguinal nerve.

Study Design: Randomized controlled trial.

Place and Duration of Study: Surgical Department, Civil Hospital, Karachi, from January till August 2015.

Methodology: All patients of either gender above 15 years of age, undergoing mesh repair for unilateral, reducible inguinal hernia, were included. Patients with recurrent inguinal hernia, bilateral inguinal hernia, and those who will require emergency hernia surgeries like irreducible, obstructed, and strangulated hernia, were excluded. They were randomly assigned 42 into inguinal nerve preservation group (group A) and 42 in division (group B). Postoperative pain was assessed at first day, at discharge and after one month using visual analogue scale.

Results: There were a total of 84 patients. Group A patients had median (IQR) pain scores of 5 (1) and 3 (2) as compared to group B pain scores of 4 (2) and 2 (1) at 24 hours of surgery and at discharge, respectively ($p < 0.05$). Median (IQR) postoperative pain score one month after inguinal hernioplasty was 2.5 (1) in group A, while 0.5 (1) in group B ($p < 0.05$). A significant decline in the pain scores were observed in group B from the first day of surgery till one month afterwards ($p < 0.05$).

Conclusion: Wide resection of ilioinguinal nerve has a lower frequency of postoperative pain in comparison to the ilioinguinal nerve preservation, in inguinal hernioplasty.

Key Words: Inguinal hernioplasty. Postoperative pain. Elective division. Ilioinguinal nerve.

INTRODUCTION

Inguinal hernia is a common surgical condition requiring operative repair. It is most presenting complication, and a major cause of immobility and departure from work, is postoperative pain.¹ Invalidating pain in hernioplasties can be caused by strangulation of muscle fibres or by the compression of the regional nerves, despite their tension-free nature,² raising the concept of division of ilioinguinal nerve in elective procedure, leading to decreased postoperative pain.³

Initially, it was recommended that nerve preservation helps in minimizing the postoperative pain after inguinal hernioplasty,⁴ while division of ilioinguinal nerve during this procedure, was found to be a factor for altered pain sensations.⁵ Moreover, intraoperative recognition and dissection to preserve inguinal nerve has been found to be a remarkable factor in controlling postoperative inguinal pain.⁶

Conflicts in different studies for the results of postoperative pain after inguinal hernioplasties is a hallmark.

Similarly, marked decrease in inguinoscrotal pain was reported in patients who had elective division of ilioinguinal nerve during inguinal hernia surgery.⁷ The importance of elective nerve division to reduce the postoperative pain was highlighted by several authors, considering the ilioinguinal neurectomy to be a part of regular surgical step.⁸

Proper planning preoperatively for ilioinguinal nerve resection has been observed to lower the incidence of postoperative pain. A major source of morbidity is decreased using this simple procedure.⁹

Still there is no final consensus. An alternative will be decided, to relieve this morbidity after hernioplasty. This study aimed to compare the postoperative pain, using numerical analogue scoring system, between preservation versus wide division of ilioinguinal nerve in inguinal hernioplasty.

METHODOLOGY

A randomized clinical trial was conducted at Department of Surgery, Civil Hospital, Karachi. A total of 84 patients, on the basis of 5% prevalence and bound error 5% with 95% confidence interval, were selected on the basis of pre-determined criteria. All patients of either gender above 15 years of age, undergoing mesh repair for unilateral, reducible inguinal hernia were included. Patients with recurrent inguinal hernia, bilateral inguinal hernia, and those who will require emergency hernia

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surgeries like irreducible, obstructed, and strangulated hernia were excluded.

All patients were evaluated by history and clinical examination. Patients were randomly allocated in two equal groups, A (control group) and B (study group), by random allocation software version 1.0.0. After informed consent and ethical approval, patients in both groups underwent elective hernioplasty.

Both groups underwent surgery using a 6 x 11 cm polypropylene mesh, which was fixed over the posterior wall with prolene sutures. The ilioinguinal nerve in group A patients, was carefully dissected out and preserved *in vivo*, during the procedure. Extraordinarily, it was taken into account to preserve the nerve tissue during placement of mesh and placing sutures in. While in group B, wide resection of ilioinguinal nerve was done, around 4 - 8 cm lateral to the internal ring as far possibly reached.

Postoperatively, parenteral diclofenac sodium were provided to the patients, 12 hourly for first two days, followed by oral tablet diclofenac sodium 50mg BD for three days. Numerical analogue system was used to assess pain, on the morning of first postoperative day, at the time of discharge from hospital, and finally after one month of surgery. Since the variable of interest was postoperative pain score after one month, its value was used to determine the mean postoperative pain scores of both groups for significance.

The numerical analogue scale was ranged from 0 to 10. 'Zero' end of the scale represented "no pain", while 'ten' (10) denote "severe pain". According to the severity of pain perceived by the patients, they were directed to point the value on scale. For confounders, those patients who were lost to follow-up after one month, were excluded from the study and similar number of patients were included.

To minimize bias, all the patients were evaluated for postoperative pain scores by the same senior resident, who was unaware of the study group of the patient.

Data were analyzed by using SPSS software on computer. Median and interquartile range were reported for numerical variables, like age and pain scores after checking normality of data; whereas, frequency and percentages were assigned to assess the categorical variables like gender. Mann-Whitney test was employed to compare the median postoperative pain scores between two groups. Friedman test was run to compare the median postoperative pain scores at different postoperative weeks for group B. Statistical significance was taken at p -value < 0.05.

RESULTS

A total of 84 patients were operated, 42 from each group. The age ranged between 17 and 50 years and

Table I: Frequency distribution of type of hernia in group A and group B (n = 84).

Type of hernia	Group A n = 42 n (%)	Group B n = 42 n (%)
Direct	10 (23.8)	10 (23.8)
Indirect	22 (52.4)	17 (40.5)
Both	10 (23.8)	15 (35.7)

Table II: Median pain score comparison between group A and group B for each time point (n = 84).

Time	Group A n = 42 Median (IQR)	Group B n = 42 Median (IQR)	p-value*
At 24 hours	5 (1)	4 (2)	0.029
At discharge	3 (2)	2 (1)	< 0.001
After 1 month	2.5 (1)	0.5 (1)	< 0.001

*p-value has been calculated using Mann-Whitney test.

median (IQR) was 31 (16) years. Gender distribution was 79 males (94%) and 5 females (6%). The side of hernia was on the right in 63 (75%) and left in 21 (25%). The types of hernia are shown in Table I.

In group A (nerve preservation group), median (IQR) pain scores were 5 (1), 3 (2) and 2.5 (1); while comparing group B (nerve division group), median pain scores were 4 (2), 2 (1) and 0.5 (1) on day 1, at discharge and after 1 month of surgery, respectively. Postoperative pain comparison at different postoperative weeks in both the groups was found statistically significantly different ($p < 0.05$, Table II). A significant decline in the pain scores were observed in group B from the first day of surgery till one month afterwards ($p < 0.001$).

DISCUSSION

The result of this study showed a significant reduction in the mean pain scores after one month, in patients with wide ilioinguinal nerve resection as compared to the preservation of nerve.

Presently, tension-free mesh hernioplasty has become a gold standard procedure.¹⁰ Surgical intervention, i.e. neurectomy, is not a new invention to inguinal hernia repair procedures. Randomized studies have supported this evidence, e.g. Intercostobrachial nerve excision during axillary dissection.¹¹ Division and removal of ilioinguinal nerve in the surgical field eliminates the possibility of postoperative neuralgia caused by the entrapment, inflammation, neuroma, or fibrotic reactions, and also avoids the complication of long-term neuralgia.¹¹

A meta-analysis of randomized trial showed that routine inguinal neurectomy is effective in reducing postoperative inguinal pain. Routine inguinal neurectomy is an effective way to reduce pain in short- and mid-term.¹² On the contrary, some studies predict that electively dividing the ilioinguinal nerve does not affect the severity of

inguinal pain,¹³ and the incidence of groin pain is the same between ilioinguinal nerve division group and control group.⁹

In another study, 191 patients underwent ilioinguinal neurectomy during hernia repair, and none of the patients developed groin pain after 12 months of follow-up.¹⁴ Also, elective neurectomy in inguinal hernia repair has a significantly lower incidence of groin pain.⁸

A 7.7% versus 26.9%, postoperative inguinal pain was observed in neurectomy group as compared to preservation group at six months.¹⁵ This is in accordance with most of the previous literatures.¹⁶ The incidence varies from 6 - 8% versus 21 - 28.6% in neurectomy group versus nerve preservation group, respectively.¹⁷ A descriptive study, not including a control group of nerve preservation, showed 6% incidence at six months postoperatively.¹⁸

Prophylactic inguinal nerve excision markedly reduces the incidence of inguinal pain after inguinal hernia repair and should be included as a regular step in the surgical procedure. A lower incidence of groin numbness is found in the ilioinguinal neurectomy group after 6 months' follow-up.¹⁹ Post-surgical inguinal pain is reduced by ilioinguinal nerve excision and can be used as a routine method.²⁰

In a randomized controlled trial, inguinal nerve excision protects from having inguinal pain up to one month follow-up regardless of patients' variables.²¹ Patients receiving inguinal nerve excision described decreased pain sensations on postoperative days 1 and 7 and at one month, and had decreased requirement of analgesic drug at the first postoperative day. In our randomized trial, mean postoperative pain scores of 3.86, 1.79 and 0.52 were observed on the first postoperative day, at discharge and after 1 month respectively, in nerve preservation group.

In this study, pain perception was significantly reduced in patients undergoing inguinal nerve dissection as compared to the inguinal nerve preservation. Average pain scores in inguinal nerve preservation group after one month of surgery was 0.52 as compared to 2.52 in the nerve preservation group.

Studies found inguinal nerve an easy and safe procedure to perform, having the effect of decreased inguinodynia postoperatively, following an early course of normal daily activities.²²

Hence, the authors observed a significant decrease in postoperative pain starting from day one till one month after surgery, in wide ilioinguinal nerve dissection group as compared to nerve preservation group ($p < 0.001$).

CONCLUSION

This randomized trial shows that prophylactically division of ilioinguinal nerve decreases the incidence of

groin pain after inguinal hernia repair. This technique counts to be included in inguinal hernia surgery as a routine surgical step.

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