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POSTOPERATIVE NEURALGIA;

ROUTINE ILIOINGUINAL NERVE EXCISION IN INGUINAL HERNIA REPAIRS: A SAFE ADJUNCT

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ABSTRACT ...Objective: To evaluate paresthesia following routine ilioinguinal nerve excision compared to nerve preservation in patients undergoing anterior inguinal hernioraphy. **Design:** prospective experimental study. **Place and duration of study:** The study was conducted at Madina Teaching hospital, University Medical & Dental College, Faisalabad from July 01, 2005 to June 30, 2007. **Patients and methods:** Two hundred and eighteen patients were operated for their inguinal hernias. Ilio-inguinal nerve preservation (n=96) and nerve excision (n=122) was performed on alternative operation days. All patients were contacted and data was collected on incidence and duration of postoperative paresthesia. Comparison was made by χ^2 analysis. **Results:** The patients with routine neurectomy were similar to the group without neurectomy based on mean age (68 ± 14 vs. 58 ± 18 years). The incidence of postoperative paresthesia was not significantly higher in the neurectomy group versus the nerve preservation group at 1 month: 15% versus 4% (P = 0.078); 6 months: 11% versus 5% (P = 0.107); 1 year: 09% versus 05% (P = 0.303); (Table 2). In patients with postoperative paresthesia, mean severity scores on a visual analog scale (0–10) were lower in the neurectomy group versus nerve preservation group at 1 month (2.6 ± 2.0 vs. 5.2 ± 0.0) and at 6 month (2.4 ± 2.0 vs. 5.2 ± 0.0) but similar in the neurectomy and nerve preservation patients at 1 year (2.2 ± 1.8 vs. 3.8 ± 0.0) (Table 3). **Conclusion:** There is a trend towards increased incidence of subjective paresthesia in patients undergoing routine neurectomy at 1 month, but there is no significant increase at any other end point in time. When performing anterior inguinal hernia repair, routine ilioinguinal neurectomy is a reasonable option.

Key words: Hernia, ilio-inguinal nerve, paresthesia

INTRODUCTION

Incidences of long-term (≥1 year) postoperative neuralgia reported for Lichtenstein repairs of inguinal hernias range from 6% to 29%[1, 2, 3]. Subsequent patient disability is usually severe. Management options may include local anesthetics injections, physical therapy, multiple pain medications, and additional surgery. Litigation risk for the surgeon is always there[4]. Routine ilioinguinal nerve excision has been proposed as a means to avoid the troubling complication of long-term, postherniorraphy neuralgia. Theoretically, excision of the ilioinguinal nerve would eliminate the possibility of postoperative neuralgia arising from entrapment, inflammation, neuroma, or fibrotic reactions.

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Routine neurectomy is also performed during axillary and neck dissections. Intercostobrachial and greater auricular nerves, respectively, are excised. A prospective, randomized study has supported the practice of routine intercostobrachial nerve excision during axillary dissections[5].

METHODS / MATERIALS

The study was conducted at Madina Teaching hospital, University Medical & Dental College, Faisalabad from July 1, 2005 to June 30, 2007. It is a prospective experimental study. Two hundred and eighteen patients were operated. Informed consent was obtained before performing the procedure routinely in all patients. It included consent for ilioinguinal nerve excision. Routine ilioinguinal nerve excision and nerve preservation was performed on alternative operation days. Operative technique was identical. Patients were divided into two groups based on nerve preservation or excision. Comparison of the two groups was made in regard to patient age and postoperative paresthesia. Confounding factors were eliminated by excluding patients with stroke, neuromuscular disease, diabetes with peripheral neuropathy, etc.

Ilioinguinal nerve was identified and excised with scissors proximally. Bleeding was stopped by local pressure. Only the male patients were included in this study. Female patients were excluded because of problems regarding examination in the distribution of ilioinguinal nerve. Children below 12 years were also excluded from the study because of their lack of co-operation and poor response regarding postoperative examination.

Data were collected through telephone and personal patient interviews. Outcomes evaluated were the presence and severity of paresthesia postoperatively in the distribution of the ilioinguinal nerve. End points were assessed at 1 month, 6 months, and 1 year postoperatively. Severity scores were rated on a visual analog scale of 1–10 and statistical significance was calculated using χ^2 analysis.

RESULTS

The patients with routine neurectomy were similar to the group without neurectomy based on mean age (66 ± 17 versus 62 ± 15years). (Table I).

Table-I. Patient demographics

	Nerve excision	Nerve Preservation
N	122	96
Male	122 (100%)	96(100%)
Female	0 (0%)	0 (0%)
Mean age(y)	66 ± 17	62 ±15

The incidence of postoperative paresthesia was not significantly higher in the neurectomy group versus the nerve preservation group at 1 month: 15% versus 4% (P = 0.078); 6 months: 11% versus 5% (P = 0.107); 1 year: 09% versus 05% (P = 0.303); (Table II).

Table-II. Incidence of postoperative paresthesia

	Nerve excision	Nerve Preservation	P value
1 month	18/121 (15%)	22/94 (4%)	0.078
6 months	12/114 (11%)	19/91 (5%)	0.107
1 year	8/104 (9%)	15/86 (5%)	0.303

In patients with postoperative paresthesia, mean severity scores on a visual analog scale (0–10) were lower in the neurectomy group versus nerve preservation group at 1 month (2.6 ± 2.0 vs. 5.2 ± 0.0) and at 6 month (2.4 ± 2.0 vs. 5.2 ± 0.0) but similar in the neurectomy and nerve preservation patients at 1 year (2.2 ± 1.8 vs. 3.8 ± 0.0) (Table III).

Table-III. Mean severity score in patients postoperative paresthesia		
	Nerve excision	Nerve Preservation
1 month	2.6 ± 2.0	5.2 ± 0.0
6 months	2.4 ± 2.0	5.2 ± 0.0
1 year	2.2 ±1.8	3.8 ± 0.0

DISCUSSION

Anterior inguinal herniorraphy is associated with a high incidence of chronic pain postoperatively as high as 29%[1,2,3]. The cause of this neuralgia can be entrapment, fixation, or ligation of the ilioinguinal nerve. Small cutaneous nerves are incised almost always with each surgical incision. Certain major cutaneous nerves can also be excised during neck and axillary dissections without any ill consequences. Excision of these sensory nerves results in abrupt patterns of numbness and paresthesia. However, this is followed by gradual recovery because of collateral nerves.

Ravichandran et al conducted a pilot study comparing preservation or division of the ilioinguinal nerve in inguinal hernia open mesh repairs[5]. Twenty patients with bilateral hernias were operated. Nerve was preserved on one side and neurectomy was done on the other side. At 6 months postoperatively, numbness was present in 0 of 20 (0%) on the nerve-preserved side versus 2 of 20 patients (10%) on the nerve-divided side. These differences were all non-significant. Authors concluded that routine ilioinguinal neurectomy was not associated with a significant increase in postoperative symptoms of numbness and paresthesia in anterior inguinal hernia repairs[5].

George W. Dittrick et al conducted a study in which they divided or preserved the ilioinguinal nerve in 90 patients[6]. They concluded that there is a trend towards increased incidence of subjective paresthesia in patients undergoing routine neurectomy at 1 month, but there is no significant increase at any other end point in time. When performing Lichtenstein inguinal hernia repair, routine ilioinguinal neurectomy is a reasonable option.

Abdullah et al conducted a study in which they preserved or divided the intercostobrachial nerve in 120 patients undergoing axillary node dissections for invasive breast cancer[7]. Numbness was evaluated at 3 months postoperatively. Numbness was present in 17 of 40 patients (43%) in the nerve preservation group versus 45 of 80 patients (56%) in the nerve division group. These differences were non-significant. Authors concluded that preservation or division of the intercostobrachial nerve does not change the incidence of postoperative symptoms of numbness[7].

In our study, there was a consistent decrease in the incidence of postoperative paresthesia at each successive end point in time in the nerve excision group (Table II). We concluded that this is because of progressive compensation from adjacent sensory nerves that could continue to improve over time. Concerns regarding postoperative paresthesia thus become of secondary importance as there seems to be continued resolution of this postoperative symptomatology.

Sakhianas and others from Athens recently reported a series of 191 patients, who underwent anterior herniorrhaphy with elected ilioinguinal and iliohypogastric nerve resections. These patients were evaluated at 1 months, 6 months, and 1 year for numbness and loss of sensation. Numbness was present in 9.4% of the patients at 6 months and 6.3% at 1 year.

Appopalardo and others from Rome reported similar findings in 1999, following 180 anterior repairs in 151 patients with elective ilioinguinal nerve resection. These authors reported no patients complaining of persistent postoperative pain and only 1% reported persistent hypnoanesthesia, which was never described as incapacitating at 2 years of follow-up.

CONCLUSION

There is a trend towards increased incidence of subjective paresthesia in patients undergoing routine neurectomy at 1 month, but there is no significant increase at any other end point in time. When performing anterior inguinal hernia repair, routine ilioinguinal neurectomy is a reasonable option.

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PREVIOUS RELATED STUDIES

- Muhammad Suhail Amer, Muhammad Ashraf. Inguinal hernioplasty; Elective neurectomy for postoperative neuralgias. Professional Med J Sep 2009;16(4):475-480.