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Original research

The impact of preemptive ropivacaine in inguinal hernioplasty – A randomized controlled trial



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HIGHLIGHTS

- Inhibition of the pain cycle through pre-emptive analgesia is under review now a days.
- Pre-emptive versus orthodox analgesia for postoperative pain control is still ambivalent.
- This study validates the effectiveness of pre-emptive analgesics.
- It considerably reduces postoperative pain.
- It is cost effective by decreasing the analgesic demand and shortening the hospital stay.

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ABSTRACT

Introduction: This study was aimed to assess the outcome of Ilioinguinal, Iliohypogastric block and wound infiltration with 0.75% ropivacaine on pain perception, first analgesic request and hospital stay following inguinal Lichtenstein mesh repair. **Method:** This was a prospective, randomized, double-blind study with 60 patients undergoing inguinal hernioplasty under general anesthesia. Patients were randomly allocated to one of the two groups by the sealed envelope method. Group 1 ($n = 30$) received nerve blocks and incision infiltration with 0.75% ropivacaine while group 2 ($n = 30$) received isotonic saline. Postoperatively pain intensity, time of demand for the first analgesic and duration of hospital stay were assessed. **Results:** Median Visual Analog Scale (VAS) score of group 1 was 4 (high = 6, low = 3) while for group 2 was 5.50 (high = 8, low = 4) and the p value was <0.001 . Mean time for the demand of the first analgesic was prolonged from 1.19 ± 1.05 h to 5.31 ± 1.14 h with the p value of <0.0005 , while the mean time of hospital stay was reduced from 22.5 ± 3.30 h to 14.1 ± 2.99 h with the p value of <0.0005 . **Conclusion:** Preemptive analgesia with 0.75% ropivacaine causes significant reduction in pain perception, request for an analgesic and hospital stay. Therefore it is advisable before inguinal hernioplasty.

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1. Introduction

Inguinal hernioplasty is one of the most common procedures performed in general surgery [1]. Effective pain management following surgery has a significant influence on postoperative recovery and hospital stay of the patients [2].

A wide variety of analgesics is available for postoperative pain management. Commonly used analgesics include NSAIDs, opioids etc. The use of these conventional analgesics is associated with

their accompanying side effects and secondly their efficacy in relieving pain is also questionable [3].

To counter this aforementioned observation regional anesthesia has come into vogue. It has been claimed to be an effective alternative in postoperative pain management [4] and in fact is considered to be as good as caudal block [5]. Preemptive analgesic administration reduces postoperative pain intensity [6] and current evidence shows that it reduces hospital stay and overall costs [7,8].

The objective of our study is to substantiate the effectiveness of Ilioinguinal and Iliohypogastric blocks and wound infiltration with ropivacaine in reducing the postoperative pain, time elapsed for first analgesic dose demand and hospital stay following groin Lichtenstein tension-free repair.

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Fig. 1. Surface landmarks for Ilioinguinal and Iliohypogastric nerve blocks. The point of needle insertion is marked 2 cm medial and 2 cm superior from the anterior superior iliac spine.

2. Methods

After obtaining approval from the research and ethics committee the study was conducted between June 2011 to Oct 2014 at Department of Surgery, Ghurki Trust Teaching Hospital, Jallo Mor, Lahore, Pakistan from. This study included 60 male patients of ages between 20 and 70. All of the patients in the study belonged to the physical category of ASA 1 and 2 of American Society of Anesthesiologists.

All the patients having recurrent, bilateral, irreducible hernias and a BMI >30 were excluded from the study.

All the patients were subjected to general anesthesia and underwent an inguinal Lichtenstein mesh repair.

All operations were performed by experienced Consultant Surgeons. The nerve block was administered by blinded Surgeons. Selected patients were randomly assigned to one of the two groups. Group 1 ($n = 30$) patients received incision infiltration and Ilioinguinal, Iliohypogastric block while patients of Group 2 ($n = 30$) received isotonic saline infiltration.

Ropivacaine was injected with a blunt tipped needle at a point 2 cm medial and 2 cm superior from anterior superior iliac spine (Fig. 1). A total of 12 ml of the local anesthetic was injected in different planes of the skin and the muscles. The correct procedure

for instilling the local anesthetic was followed as described by New York School of Regional Anesthesia (<http://www.nysora.com/techniques/nerve-stimulator-and-surface-based-ra-techniques/truncal-and-cutaneous-blocks/3027-ilioinguinal-and-iliohypogastric-blocks.html>). This method of block allows accurate placement of local anesthetic both between the transverses abdominus and internal oblique muscles as well as between the internal oblique and external oblique muscles (Fig. 2).

Visual analog scale (0 = no pain, 10 = maximum pain) was used to monitor the pain intensity. Postoperative parameters were assessed by the blinded duty doctor. Analgesia use was triggered on the pain score of ≥ 3 . Intravenous paracetamol (1000 mg) was used as a first line analgesia and supplemented by intramuscular diclofenac sodium (75 mg) if needed. The duration after surgery for the first request of analgesic dose was noted.

3. Statistical analysis

IBM SPSS Statistics version 20 was used to plot data and construct graphs. Study data are presented as mean and median. The p -value was determined using independent-samples T test, Mann–Whitney test. p value of <0.05 was aimed.

4. Results

Sixty patients included in the study were divided into two groups. Group 1 ($n = 30$) patients received incision infiltration and Ilioinguinal and Iliohypogastric blocks while patients of Group 2 ($n = 30$) received isotonic saline as placebo. There was no substantial difference between the age, physical status and duration of surgery of the two groups, Table 1.

Pain intensity was assessed by VAS at the time of request for the first analgesic dose. Median VAS score of group 1 was 4 (high = 6, low = 3) while for group 2 was 5.50 (high = 8, low = 4) with the p value of <0.001 (Fig. 3).

The mean time for the demand of first dose of analgesia for group 1 was 5.31 ± 1.14 h and group 2 was 1.19 ± 1.05 h with the p value of <0.0005. Fig. 3.

Mean hospital stay for group 1 was 14.1 ± 2.99 h while for group 2 was 22.5 ± 3.30 h p value <0.0005. Fig. 4.

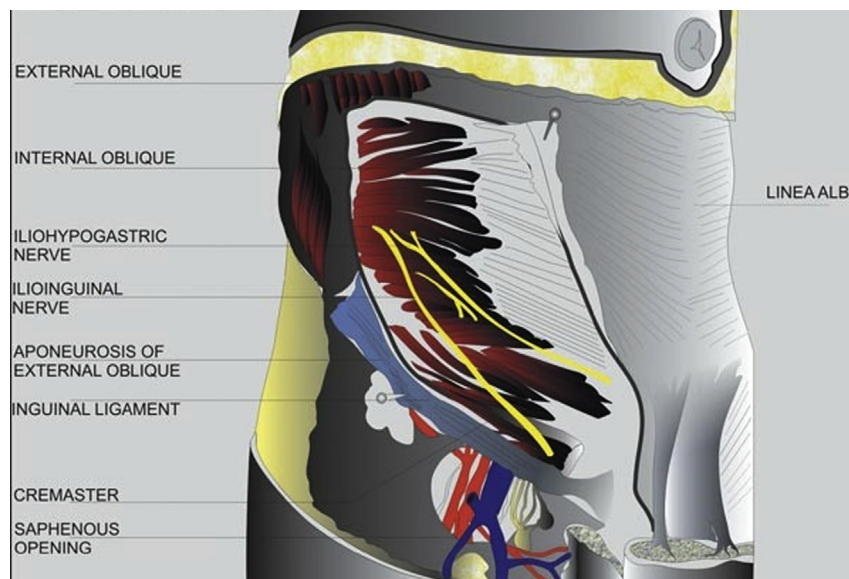


Fig. 2. Anatomic relationship of the Ilioinguinal and Iliohypogastric nerves (courtesy of New York School of Regional Anesthesia).

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