

ORIGINAL ARTICLE**Efficacy of fascia iliaca compartment nerve block as part of multimodal analgesia after surgery for femoral bone fracture**

Amit Kumar

Assistant Professor, Department of Anaesthesia, Saraswathi Institute of medical sciences, Hapur, Uttar Pradesh, India

ABSTRACT:

Background: To study the efficacy of fascia iliaca nerve block compartment after surgery for femoral bone fracture. **Materials & methods:** A total of 20 subjects with femoral bone fracture underwent operation under spinal anesthesia were included. The age ≥ 18 years old, who had ASA physical status I–III, femoral bone fracture surgery under subarachnoid block anesthesia were included. The subjects were divided into a FICNB group (n=10) and a control group (n=10). The results were analysed using SPSS software. A P value < 0.05 was considered statistically significant. **Results:** A total of 20 subjects were enrolled. Out of the total, 10 were case groups and 10 were control groups. There was no difference in VAS scores at 15 minutes after operation, which were equal to zero between the FICNB and control groups. **Conclusion:** A single injection for FICNB could lead to postoperative pain relief.

Keywords: Femoral bone fracture, fascia iliaca, surgery.

Corresponding Author: Amit Kumar, Assistant Professor, Department of Anaesthesia, Saraswathi Institute of medical sciences, Hapur, Uttar Pradesh, India

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INTRODUCTION

To avoid the complications and adverse effects of spinal anesthesia and intravenous opioid analgesia, multimodal analgesia with nerve block has been recommended in the perioperative period of lower extremity joint arthroplasty. Among the various nerve block techniques available, 3-in-1 femoral nerve block (FNB) and fascia iliaca compartment block (FICB) are commonly used for anesthesia and analgesia in hip replacement. 3-in-1 FNB was first proposed by Winnie et al who considered that the femoral, lateral femoral cutaneous, and obturator nerves could be blocked at the same time based on the theory of fascial sheath which extends up to the lumbar plexus. Although the existence of the fascial sheath has since been disproved. One study, using a nerve stimulator, showed that 30 mL of local anesthetic could block the femoral nerve, the lateral femoral cutaneous nerve, and the anterior branch of the obturator nerve.¹⁻³ When performed by anesthesiologists, fascia iliaca compartment block (FIB) is reported to effectively block cutaneous lateral femoral and femoral nerves in adults. The innervations of the cutaneous lateral femoral nerve and femoral nerves cover the area involved in the hip fracture surgery. Continuous FIB with 0.2% bupivacaine over 48 h reduces opioid requirement in the postoperative period.⁴⁻⁶ Hence, this study was conducted to study the efficacy of fascia iliaca nerve

block compartment after surgery for femoral bone fracture.

MATERIALS & METHODS

A total of 20 subjects with femoral bone fracture underwent operation under spinal anesthesia were included. The age ≥ 18 years old, who had ASA physical status I–III, femoral bone fracture surgery under subarachnoid block anesthesia were included. The subjects were divided into a FICNB group (n=10) and a control group (n=10). The FICNB group was given 30 mL of 0.25% bupivacaine at the end of the operation. Postoperative pain was assessed within the first 24 hours, i.e. 15 minutes, 6 hours, 12 hours and 24 hours using 100 mm visual analogue scale (VAS). The results were analysed using SPSS software. A P value < 0.05 was considered statistically significant.

RESULTS

A total of 20 subjects were enrolled. Out of the total, 10 were case groups and 10 were control groups. There was no difference in VAS scores at 15 minutes after operation, which were equal to zero between the FICNB and control groups. The mean VAS score after 12 hours in cases were 2.5 and in controls were 5.5. The P – value was significant at 12 hours. At 24 hours, the mean vas score for both the groups was 2 and 7.5 respectively.

Table 1: VAS scores of the patients who underwent femoral bone fracture surgery in the first 24 postoperative hours

Variables	Mean VAS score Cases	Mean VAS score Controls	P-value
VAS scores at 6 hours	0	8.5	0.001
VAS scores at 12 hours	2.5	5.5	0.007
VAS scores at 24 hours	2	7.5	0.001

DISCUSSION

The incidence of road traffic accidents was close to 50% in one of the largest hospitals in our country. Femoral bone fractures which are too painful can have profound physiological and psychological changes. However, management of pain is associated with good clinical outcomes. Fascia iliaca compartment nerve block (FICNB) was more effective than opioids in the treatment of femoral bone fracture pain. This new technique of regional block was used to block the femoral lateral cutaneous nerve of the thigh and the obturator nerve.⁶⁻⁸ The landmark of this technique was a line drawn between the anterior superior iliac spine and the pubic tubercle along the deep inguinal ligament. By negative aspiration, 30 mL of 0.25% local anesthetics is placed behind the fascia iliaca compartment when the weight of the patient is less than 80 kg, even 40 mL for the patient who is above 80 kg. The two pop techniques are appreciated blindly while passing the fascia lata and fascia iliaca. The FICNB has proved to be an easy and safe technique. It is free from complications because of the major nerves and vessels are far from the site of needle insertion.⁸⁻¹⁰

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In another study conducted by Krych AJ et al, authors evaluated the utility of multimodal analgesia with

fascia iliaca blockade and for acute pain control in patients undergoing hip arthroscopy. Thirty consecutive patients undergoing primary hip arthroscopy were prospectively studied. All patients were treated preoperatively with ultrasound-guided single injection fascia iliaca blockade and multimodal analgesia. Data collected included post-operative nausea, numeric rating scale (NRS) pain scores during rest and activity, opioid consumption during the first five days (recorded as tablets of 5 mg hydrocodone/500 mg acetaminophen) and overall patient satisfaction with analgesia. Their study included 23 female and 7 male patients with a median age of 35 years (range 14-58). No patient required medication for post-operative nausea. The overall NRS scores were an average of 3.9 on day 0, 3.6 on day 1, 3.4 on day 2, 2.9 on day 3, 3.0 on day 4 and 2.7 on day 5. The average tablets of opioid taken were 1.5 on day 0, 1.2 on day 1, 1.3 on day 2, 1.0 on day 3, 1.1 on day 4 and 0.9 on day 5. Overall, 20 patients rated their post-operative pain control as very satisfied (67 %), and 10 patients as satisfied (33 %). There were no complications or side effects from the fascia iliaca blockade.¹²

CONCLUSION

A single injection for FICNB could lead to postoperative pain relief. The VAS score at 24 hours was lower in the FICNB group than in the control group.

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