ULTRASOUND GUIDED SUPRA-INGUINAL FEMORAL NERVE BLOCK FOR TOTAL HIP ARTHROPLASTY

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BACKGROUND AND AIMS

Total hip arthroplasty can lead to severe postoperative (po) pain. Effective po pain management, using multimodal analgesia techniques which minimises opioid use and enable patients to participate in rehabilitation are essential to improve short and long-term outcomes.

The anterior capsule of the hip concentrates the greatest amount of sensory nerve endings and it is mainly supplied by Femoral nerve (FN) branches given off proximal to the inguinal ligament (IL). Femoral nerve block (FNB) and fascia iliaca block (FIB) performed at the level of the inguinal crease (below the IL) has demonstrated no benefit in po pain after THA.

The importance of the FN in hip pain is highlighted by studies showing pain relief when FN but not the Obturator nerve is blocked. In addition, it is uncertain whether a Obturator nerve block is achieved after FIB.

The purpose of this study is to analyse the contribution of ultrasound guided (USG) supra-inguinal FNB (SIFNB) to po analgesia after THA.

METHODS

After local institutional approval, a retrospective case study was conducted from April 2018 to January 2019.

Inclusion criteria were patients aged >18 years old, who underwent primary THA and had an USG SIFNB. Exclusion criteria were patients on chronic opioid treatment or chronic pain clinic follow up before the operation and on treatment for depression or anxiety.

All blocks were performed by the same anaesthetist before knife to skin. The intraoperative anaesthesia and postoperative pain management was carried out at the discretion of the anaesthetist in charge of the list.

Primary outcome was numerical pain rating scale scores (NPSS) in recovery, at ward admission, 12h, 24h and 48h after surgery.

Secondary outcomes included ease in identifying SIFN, mobility within 24h and opioid consumption.

SUPRA-INGUINAL FEMORAL NERVE BLOCK (SIFNB) TECHNIQUE

With the patient in the supine position, lying flat and the hip extended, a high frequency linear transducer is placed transversally at the level of the ASIS to identify the iliacus muscle in the iliac fossa.

The probe is moved medially and caudally along the iliacus muscle to find the FN emerging from the lateral border of psoas major muscle, between it and the iliacus muscle and covered by the iliac fascia (FI).

To help identifying the FN, this is traced distally until the external iliac artery approaches the FN from the medial side and both pass through the IL.

Beyond this point, the typical image of femoral vessels medially and FN laterally can be seen in the thigh.

The FN is scanned in a cranial direction as proximally as it is possible for it to be seen. The deep circumflex iliac artery (DCIA) is also a useful landmark to find the FN as it lies above the FI and should be identified to decrease risk of puncture.

The needle is introduced through the skin, parallel to the probe using an in-plane technique from lateral to medial. To surround the FN, 10 to 20 ml of Levobupivacaine 0,25-0,35% were used.

RESULTS

Twelve patients were included in the analysis. Eight patients had general anaesthesia and four had spinal anaesthesia. All patient had surgical LA infiltration of the posterior capsule. In five patients the SIFNB was combined with a LFCN block using 5ml of Levobupivacaine 0,25%.

NPSS were as follows:

Median NPSS (Range)	Recovery	Ward arrival	12h	24h	48h
Rest	0 (0-10)	0 (0-8)	1 (1-3)	0 (0-5)	0 (0-4)
Dynamic		0 (0-8)	2 (0-5)	1.5 (0-5)	0 (0-6)

SIFN was identified in all patients and all were able to mobilise within 24h. Median IV milligram morphine equivalents (MME) intraoperatively was 10 (0-24) and 10,5 (6-20) in the first 24h.

CONCLUSIONS

We describe a novel technique to approach the FN above the inguinal ligament. The SIFNB, as part of multimodal analgesia, provided good pain relief and early mobilisation in our patients.

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