

insults. Volatile agents such as sevoflurane and Total Intravenous Anesthesia (TIVA) can be safely used in patients with an MTHFR deficiency.²

We are not advocating the elimination of the nitrous oxide from the operating room. Neither suggesting that all patients should be genetically screened for MTHFR deficiency. This letter's intention is only to remind every single anesthesia provider, including myself, that the most important preoperative assessment will never be an imaging test neither an expansive laboratory result, but a great conversation with the patient aiming for a detailed and always important past medical history.

Conflicts of interest

The authors declare no conflicts of interest.

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Three blocks including Pericapsular Nerve Block (PENG) for a femoral shaft fracture pain



Três bloqueios, incluindo o bloqueio pericapsular (*Pericapsular Nerve Block – PENG*), para dor em fratura da diáfise femoral

Dear Editor,

Most of the femoral fracture patients suffer from extreme pain in preoperative period and are exposed to high doses of opiates which have severe adverse effects. Femoral shaft fractures count 2%–6% of all femoral fractures.¹ PENG (Pericapsular Nerve Group) block is a new published block technique (2018) and mostly used for hip surgery in the literature.² The main neural targets of this block are the articular branches of obturator, accessory obturator and femoral nerves. Herein, we report the successful use of three blocks in the preoperative period for a femoral shaft fracture pain in a post-polio sequelae patient.

A 51 year-old patient (182 cm, 80 kg) with a fracture extending towards to the head of the femur (Fig. 1) had a complain of severe pain (NRS: 10/10). Therefore, a PENG block was performed using 20 mL of 0.25% bupivakain. Local anesthetic was injected into the musculofascial plane between the psoas muscle anteriorly and the pubic ramus posteriorly (Fig. 2). The pain score was decreased to NRS: 7/10 approximately 3 min later than the block performed. Later, fascia iliaca compartment block was performed using 30 mL of 0.25% bupivakain. The pain score was NRS: 5/10 in 5th min after the second block. And the last performed

block was femoral block using 20 mL of 0.25% bupivakain. The pain score was assessed only 4/10 just after the third block and in operation theatre 1 h later. We preferred general anesthesia for the patient because the polio is a relative contraindication for spinal anesthesia.³ Patient had general anesthesia with 100 mg tramadol for postoperative analgesia at the end of the operation. In the 24 h follow-up, there was no pain score more than 3 while sitting and lying position. The patient received only 1 g paracetamol two times and did not need any opiate use.

In the literature, PENG block is mostly recommended for hip fracture pain, however it is also a very effective method for the femoral shaft fracture pain control.



Figure 1 The fracture extending towards to the head of the femur.



Figure 2 Local anesthetic spread on ultrasound.

Conflicts of interest

The authors declare no conflicts of interest.

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Superior gluteal nerve block: a cadaveric study to evaluate the optimal injection site



Bloqueio do nervo glúteo superior: estudo com cadáveres para avaliar o local ideal da injeção

Dear Editor,

We read with interest the report by Sá et al. of an ultrasound-guided gluteal nerve block that involved placement of the ultrasound probe caudal to the iliac crest and cephalical to the greater trochanter.¹ The Superior Gluteal Nerve (SGN) innervates the Gluteus Minimus (GMin), Gluteus Medius (GMed), tensor fascia latae and piriformis muscles. These muscles can be injured during surgical procedures, and pain and/or tension in these muscles occasionally cause extreme distress to patients. Therefore, the SGN block or hydrodissection procedures provide potent analgesic effects in not only surgical anesthesia but also outpatient procedures. However, there are some ambiguities with regard to the orientation of the probe and needling technique; we believe that it is necessary to simplify the procedure in order to make the block a generally useful procedure. The aim of our study was to determine an anatomically optimal injection site for the SGN block and demonstrate the spread of the local anesthetic solution in Thiel-embalmed cadavers.

SGN originates in the sacral plexus and runs through the suprapiriform foramen accompanied by the superior gluteal artery and vein. It runs in the fascial plane between the

GMin and GMed muscles and provides branches to these muscles as well as the tensor fascia latae muscle. Therefore, accurate identification of both the GMin and GMed muscles while performing an ultrasound-guided SGN block is necessary. Accordingly, we proposed a new probe position, which was the midpoint of the line connecting the posterior superior iliac spine and the superior end of the greater trochanter (Fig. 1A), and injected water-based acrylic dye at this point in four Thiel-embalmed cadavers.

Ethical approval for the study was provided by the Institutional Ethics Committee of Okayama University Medical School (Approval number: 1608-004). The cadavers were placed in the prone position and bilateral SGN blocks were performed (total seven blocks; one of eight specimens was excluded because of poor condition). A 6–15 MHz linear probe was placed on the midpoint of the line. The needle was introduced via an in-plane approach (Fig. 1B), and 10 mL of blue dye was injected into the fascial plane between the GMed and GMin muscles (Fig. 1C). Subsequently, the cadavers were dissected.

In all seven procedures, spread of the blue dye was restricted to a small area between the GMed and GMin muscles, although SGN showed blue staining (Fig. 1D and E). In one specimen, the dye spread through the suprapiriform foramen and stained both the sciatic nerve and SGN. The sciatic nerve was not stained in the other six procedures.

Thus, we proposed a new probe position for the SGN block by using the posterior superior iliac spine and greater trochanter as landmarks. Dye injection at this site resulted in staining of SGN in all assessed specimens. In addition, the sciatic nerve was unexpectedly stained in one specimen.