Indian Journal of Clinical Anaesthesia 2023;10(2):208–209

Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Clinical Anaesthesia

Journal homepage: www.ijca.in

Short Communication

Rule of '2' for lower extremity blocks

Tuhin Mistry[1,*], Rinku Prajapati[2], Chetana Vitthal Bhalerao[3], Kartik Bapurao Sonawane[1]

[1]*Dept. of Anaesthesiology, Ganga Medical Centre & Hospitals Pvt Ltd, Coimbatore, Tamil Nadu, India*
[2]*Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai, Maharashtra, India*
[3]*Dr. Shankarrao Chavan Government Medical College and Hospital, Nanded, Maharashtra, India*

ARTICLE INFO

Article history:
Received 05-08-2022
Accepted 09-03-2023
Available online 05-06-2023

Sir,

The peripheral nerve blocks can be used as stand-alone regional anesthesia or analgesia (RA) for various lower limb surgeries. Anatomical landmark-guided or electrostimulation-guided blocks are still widely practiced even in the current era of ultrasound-guided RA. It may be due to inadequacy of required infrastructure, unavailability of ultrasound equipment, and paucity of trained regional anesthesiologists, especially in resource-poor settings. Background knowledge of relevant functional anatomy is essential for the success of any nerve block. It helps to identify the landmarks accurately, improves success rate, and minimizes failure or complication rates.

We compiled a few lower limb blocks based on the easily remembered anatomical landmarks to ease the target nerve location and avoid block failure/complications. We hope readers of this journal will find it helpful to get a quick overview of the important lower extremity blocks.:

1. Rule of '2' for landmarks and block technique

1.1. Femoral nerve block[1] (landmark or nerve stimulation guided)

The needle insertion site lies less than 2 cm lateral to the femoral artery and within 2 cm caudal to the inguinal ligament. An insulated blunt-tip nerve block needle can be inserted at 30-45 degrees angle to the skin in a cephalad direction and advanced through 2 tough fascial layers: fascia lata and fascia iliaca. The performer can feel 2 'bounces' (resistance) and 2 'pops' (loss of resistance). Once the "patellar snap" or quadriceps twitches are obtained at 0.3-0.5 mA, 15-20 ml of local anesthetic (LA) can be administered following negative aspiration for blood.

1.2. Lateral femoral cutaneous nerve (LFCN) block[2] (landmark guided)

LFCN can be blocked at 2 cm medial and 2 cm caudal to the anterior superior iliac spine. A blunt-tipped needle can be inserted perpendicular to the skin and advanced until the first 'pop' of fascia lata is felt. After negative aspiration for blood, 5-10 ml of LA is deposited here.

* *Corresponding author.*
E-mail address: tm.tuhin87@gmail.com (T. Mistry).

https://doi.org/10.18231/j.ijca.2023.041

1.3. Obturator nerve block (Winnie's approach)[3]

A stimulating nerve block needle can be inserted at 2 cm lateral and 2 cm caudal to the pubic tubercle, perpendicular to the skin, to contact the pubic ramus. Then it can be walked off the inferior edge of the ramus to enter the obturator foramen. After confirming adductor twitches, 5-10 ml of LA can be deposited following negative aspiration for blood.

1.4. Saphenous nerve block-transsartorial approach (landmark guided)[4]

The needle entry point for the SN block lies approximately 2 inches above the knee joint on the skin overlying the sartorius muscle. The needle can be advanced slightly posterior to the coronal plane and caudad through the muscle belly of the sartorius until encountering a loss of resistance due to subsartorial adipose tissue. A 10 ml of LA solution can be deposited following negative aspiration for blood. The reported success rate was 94%.

2. Rule of '2' for Depth Test or Safety

2.1. Lumbar plexus block (Capdevilla's approach)[5]

The nerve block needle can be advanced not more than 2 cm after hitting the transverse process, irrespective of gender and body mass index. Beyond this point, the risk of injury to retroperitoneal structures can be increased.

2.2. Sacral plexus block[6]

In Mansour's parasacral approach, the needle can be advanced not more than 2 cm beyond the point of contact with the bone(ilium). Alternatively, the end-point of the neurostimulation-guided sacral plexus block can be obtained at <2 mm beyond the gluteal muscle contractions.

2.3. Popliteal sciatic block (Vloka's supine lateral approach)[7]

The nerve block needle is inserted in the groove between the vastus lateralis and biceps femoris muscles in a horizontal plane to contact the bone. The contact with the femur provides information on the depth of the nerve, i.e., typically not more than 2 cm beyond the skin–femur distance and the angle (30 degrees relative to the horizontal plane) at which the needle needs to be redirected posteriorly to stimulate the nerve and elicit the desired motor response. Since the sciatic nerve is approached from the lateral side, the common peroneal nerve response (most common first response, 72%) may be accepted. LA volume of 20-30 ml can be deposited to cover both components of the sciatic nerve.

References

1. Nakamoto T. Femoral Nerve Block. In: Nerve Blockade and Interventional Therapy. Tokyo, Japan: Springer; 2019. p. 217–9.
2. Vloka JD, Keer LV. Cutaneous nerve blocks of the lower extremity; 2018. [cited 2022 Jun 26]. Available from: https://www.nysora.com/techniques/lower-extremity/saphenous/cutaneous-nerve-blocks-lower-extremity/.
3. Mulroy MF, Bernards CM, Mcdonald SB, Salinas FV. Obturator Nerve Block. In: A practical approach to regional anesthesia. Philadelphia, PA: Lippincott Williams and Wilkins; 2008. p. 233.
4. Wal MVD, Lang SA, Yip RW. Transsartorial approach for saphenous nerve block. *Can J Anaesth*. 1993;40(6):542–6.
5. Buckenmaier CC, Kent M, Brookman JC, Tighe PJ, Mariano ER, Edwards DA. Lumbar Plexus Block. In: Military advanced regional anesthesia and analgesia handbook. New York: Oxford University Press; 2020. p. 113–8.
6. Diwan S, Nair A, Adhye B, Sancheti PK. Gluteal Contractions as a Gateway to Sacral Plexus. *Cureus*. 2022;14(1):e21041.
7. Vloka JD, Hadzic A, Kitain E, Lesser JB, Kuroda MM, April EW, et al. Anatomic considerations for sciatic nerve block in the popliteal fossa through the lateral approach. *Reg Anesth*. 1996;21(5):414–8.

Author biography

Tuhin Mistry, Consultant https://orcid.org/0000-0003-1904-4831

Rinku Prajapati, Consultant

Chetana Vitthal Bhalerao, Registrar

Kartik Bapurao Sonawane, Consultant

Cite this article: Mistry T, Prajapati R, Bhalerao CV, Sonawane KB. Rule of '2' for lower extremity blocks. *Indian J Clin Anaesth* 2023;10(2):208-209.