Needle tip and peripheral nerve blocks

Complications of peripheral nerve blocks, although rare, can be devastating for both the patient and anesthesiologist. Needle type, that is, long bevel (14° angle) versus short bevel (45° angle), is a contributor to the peripheral nerve injury.[1] Selander *et al.*[2] demonstrated in a rabbit sciatic nerve model that though the overall frequency of nerve injury was less with short bevelled needles, the severity of the injury was greater. Cadaveric studies suggest that the intrafascicular injection is rare and difficult to accomplish with blunt-tipped block needles even with an intraneural injection.[3] In cryopreserved human sciatic nerves, the microscopic examination of 520 stained fascicles demonstrated that no fascicles were damaged by the blunt needles and 3.2% were damaged by the sharp needles.[4] Heavner *et al.*[5] demonstrated that the blunt needles (short bevel) are less likely than sharp needles (long bevel) to enter vital structures and/or produce hemorrhage in dogs, and they suggest that the blunt needles may be preferable to sharp ones for performing the interventional pain procedures.

In the landmark technique of peripheral nerve blocks, the needle tip also influences the ability of the operator to perceive the tissue planes. The short bevel noncutting needles provide greater resistance, and therefore, enhance the feel of the needle traversing different tissues [Figure 1].[6] The long bevel cutting needles that are commonly available in the operating room do not provide as much tactile information while traversing different tissues.[6] Singh and Kuruba[7] advocate "scraping" the needle tip "against the inner wall of a sterile glass ampoule till the tip bends toward the bevel." It is not uncommon for the anesthesiologists to "blunt" the needle tip of a long bevel cutting needle by rubbing it against

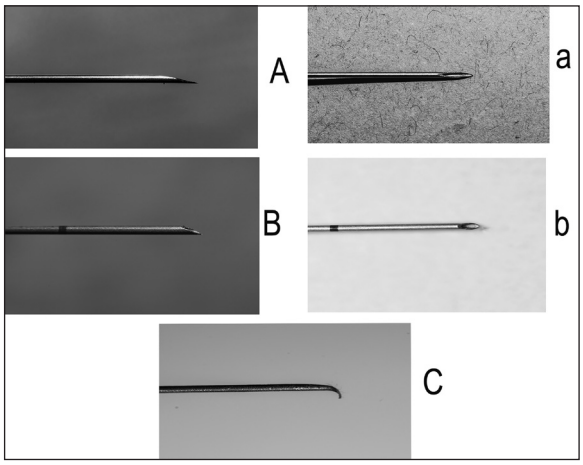

Figure 1: Long bevel (A, a), short bevel (B, b) needle tips and "blunted" tip of hypodermic needle prepared for an axillary block in a child (C). Its use was stopped in time by a vigilant senior anesthesiologist

the plastic needle sheath. This practice can severely distort the needle tip [Figure 1c] and its use can result in serious trauma, should an artery or nerve be impaled by the distorted needle tip. The injury produced by such a needle will be irregular and noncongruent. This practice should be discouraged. The short bevel needles that are commercially available should be used for performing peripheral nerve blocks.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Smita Prakash, Amitabh Kumar

Department of Anaesthesia and Intensive Care,
Vardhman Mahavir Medical College and Safdarjang Hospital,
New Delhi, India

Address for correspondence: Dr. Smita Prakash,
C 17 HUDCO Place,
New Delhi - 110 049, India.
E-mail: drsunilprakash@gmail.com

References

1. Neal JM, Gerancher JC, Hebl JR, Ilfeld BM, McCartney CJ, Franco CD, *et al.* Upper extremity regional anesthesia: Essentials of our current understanding, 2008. Reg Anesth Pain Med 2009;34:134-70.
2. Selander D, Dhunér KG, Lundborg G. Peripheral nerve injury due to injection needles used for regional anesthesia. An experimental study of the acute effects of needle point trauma. Acta Anaesthesiol Scand 1977;21:182-8.
3. Liu SS, Ya Deau JT, Shaw PM, Wilfred S, Shetty T, Gordon M. Incidence of unintentional intraneural injection and postoperative neurological complications with ultrasound-guided interscalene and supraclavicular nerve blocks. Anaesthesia 2011;66:168-74.
4. Sala-Blanch X, Ribalta T, Rivas E, Carrera A, Gaspa A, Reina MA, *et al.* Structural injury to the human sciatic nerve after intraneural needle insertion. Reg Anesth Pain Med 2009; 34:201-5.
5. Heavner JE, Racz GB, Jenigiri B, Lehman T, Day MR. Sharp versus blunt needle: A comparative study of penetration of internal structures and bleeding in dogs. Pain Pract 2003;3: 226-31.
6. Shariat AN, Horan PM, Gratenstein K, McCally C, Frulla AP. Equipment for Peripheral Nerve Blocks. Available from: http://www.nysora.com/mobile/regional-anesthesia/foundations-of-ra/3009-equipment-for-peripheral-nerve-block.html [Last accessed on 2015 Apr 29].
7. Singh SK, Kuruba SM. The loss of resistance nerve blocks. ISRN Anesthesiol 2011;2011:10.

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/0970-9185.227375

How to cite this article: Prakash S, Kumar A. Needle tip and peripheral nerve blocks. J Anaesthesiol Clin Pharmacol 2018;34:129-30.