

What is the Best Needle for Spinal Thoracic Anesthesia: Pencil Point Needle or Cut Point Needle? Letter to Editor

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We recently demonstrated the safety of thoracic spinal anesthesia by the study with MRI in 50 patients [1]. In order to verify the incidence of neurological complications in spinal thoracic anesthesia, a study was carried out comparing the two most frequently used needles (Cut vs Point Pencil) in 300 patients divided into two groups of 150 patients, puncture success was observed in all patients with 20 (6.6%) paresthesia with no significant difference between the needles [2]. All paresthesia were transient and no neurologic complications were observed. In 2012, we conducted a study of 636 patients undergoing spinal thoracic anesthesia in different types of surgery (laparoscopic cholecystectomy, herniorrhaphy, urologic, gynecologic and orthopedic surgeries) with hyperbaric or isobaric bupivacaine, showing that low doses of local anesthetics (5 to 10 mg) and thoracic puncture reduce the latency time, the degree of motor block and cardiocirculatory changes, without neurological complications [3].

Despite the anatomical evidence obtained with MRI [1] and the clinical application of thoracic spinal anesthesia [2,3], the vast majority of anesthesiologists remain reluctant to perform thoracic puncture, despite systematically performing thoracic epidural surgery for plastic surgery (1,240 patients) with accidental perforation in 4 patients (0.3%), however without direct injury to the spinal cord [4].

In 1909, Thomas Jonnesco carried out a study in proposed the use of general spinal block for surgeries of the skull, head, neck, and thorax [5]. He performed punctures between the 1st and 2nd thoracic vertebrae (103 patients), which produced perfect and deep analgesia for the body segment including the head, neck, and upper limbs. Since middle thoracic puncture, between the 7th and 8th vertebrae, was more difficult to accomplish and unnecessary for surgeries of the lower thoracic segment, he performed the puncture between the 12th thoracic vertebra and the 1st lumbar vertebra (295 patients), which was easily accomplished and pro-

duced anesthesia for the lower portion of the body. The segmental spinal anesthesia of the lower thoracic was introduced in 1954 [6].

Studying 20 patients who underwent laparoscopic cholecystectomy through the combined spinal epidural block using the 27G pencil point, despite I use both needles (cut point or pencil point) [2,3] I prefer to use the cutting point needle because it has its terminal hole.

The 25G new pencil-point needle has an internal diameter of 0.32 mm which can provide a quick appearance of CSF flow [8]. The lateral orifice of this needle starts at 0.8 mm and ends only at 1.7 mm, so there is a need to penetrate into the subarachnoid space 2 mm for the CSF to appear. Due to this penetration of more than 2 mm, the authors described a high incidence of paresthesia [9]. Because the cutting needles have their terminal hole (and not lateral like the atraumatic needles), the appearance of the CSF is immediately after the puncture of the subarachnoid space. This way makes it safer to risk the insertion of the needle without damage to the cord.

In seven women (6 obstetric and 1 surgical) submitted to combined spinal-epidural block with pencil point needles (25G and 27G) all experienced pain during insertion of the needle, which at the L2-L3 interspace, was followed by neurological symptoms involving more than one segmental nerve root diagnosed by MRI [10].

The spinal needles used during puncture for spinal anesthesia produced lesions in the dura with different morphology and characteristics. Studying with scanning electron microscopy *in vitro* the lesions produced by 25G needles cut point and pencil point showed that the lesions produced by the cut needle resulting in a clean-cut opening in the dural membrane while the Whitacre needle produced a more traumatic opening with tearing and severe disruption of the collagen fibers [11].

The hole left in the dura mater by the pencil point needle can probably cause less leakage of CSF, but giving it in direct contact with the spinal cord can generate more damage. In Brazil, due to the price, the cutting needle is more used than the pencil tip, which does not happen in obstetrics. Without good comparative data it is impossible to say whether one type of needle is more likely to be associated with spinal cord problems.

In 1909 Jonnesco write [4]: “The needle I prefer has a point cut rather squarely, for since the arachnoid space is relatively small, if the point of the needle be oblique, it is possible that part of the opening might go through the dura mater while part remained outside it”. What a look! He not only used a thoracic spinal anesthesia and the cut needle. The various reports described of spinal cord injury with pencil point needles, suggest that due to the need to penetrate more than 2 mm into the subarachnoid space, it can result in conus damage. This is one more reason to prefer the cutting bevel of the Quincke needle for low thoracic spinal anesthesia.

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