

spinal fluid was observed at the needle hub in all. The injection of local anesthetics was followed by adequate spinal anesthesia. At 24-hour follow-up none of our patients complained about headache or back pain.

Only a few studies are available pertaining to this new spinal needle. Yamazaki et al.<sup>1</sup> compared the penetration characteristics of the ball-pen needle with both a pencil point and a Quincke needle in vitro. They analyzed the pressure necessary to penetrate a standardized polyethylene membrane. The puncture with the Quincke needle required a maximum pressure of 35 g, which decreased after the penetration of the membrane to 20 g. The pencil-point needle required 60 g and 40 g, respectively, whereas the ball-pen needle required 80 g to penetrate followed by an immediate decrease to 25 g. Yamazaki et al.<sup>2</sup> hypothesized that this sudden decrease of pressure after penetration in vitro would likely lead to an easier perception of dural puncture in vivo. This assumption is consistent with our clinical experiences with the ball-pen needle.

In obese patients, the use of the ball-pen in 25- and 27-gauges, respectively, is limited due to the need for a relatively long introducer. The company is addressing this by changing the length of the introducer.

In conclusion, the ball-pen needle seems to be an interesting and promising needle for spinal anesthesia. Further controlled studies are needed to demonstrate the potential benefit of this open-end pencil-point needle.

Peter Lierz, M.D.

*Department of Anaesthesiology and Intensive Care  
Marienkrankenhaus Soest  
Soest, Germany*

Burkhard Gustorff, M.D., D.E.A.A.

*Department of Anaesthesia and Intensive Care (B)  
University of Vienna  
Vienna, Austria*

Peter Felleiter, M.D.

*Department of Anesthesiology and Intensive Care  
Swiss Paraplegic Center  
Nottwil, Switzerland*

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## Eldor Spinal Needle Versus Pencan Spinal Needle

### To the Editor:

Puolakka et al.<sup>1</sup> compared the 26-gauge Eldor spinal needle (DHPP)<sup>2</sup> (Fig 1) with the 27-gauge Pencan (Sprotte type) spinal needle (Braun, Melsungen, Germany). The difference between these two needles is that the Eldor spinal needle has two opposite round holes at its pencil-

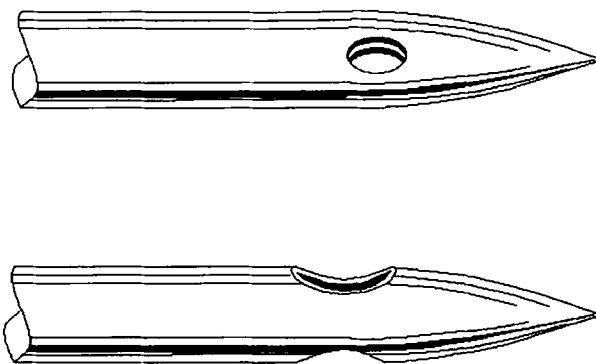


Fig 1. Eldor spinal needle tip.

point tip, whereas the Pencan has only one elongated hole.

The only statistical significant difference was that the backflow time of cerebrospinal fluid (CSF) with the Eldor spinal needle was  $2.4 \pm 1.1$  seconds, whereas that of the Pencan spinal needle was  $3.5 \pm 1.2$  seconds. In other words, the Eldor spinal needle's backflow was faster in 31% than that of the Pencan CSF backflow. The other clinical measurements were nonsignificant, because the study group was very small to evaluate it: 23 patients in the Pencan group and 21 patients in the Eldor group. However, despite of the small study size, there was one case of obvious postdural puncture headache in the Pencan group, and none in the Eldor group. This clinical study was extended to involve also an electron microscopy study of the two kinds of spinal needle tips.

Puolakka et al. found that "the DHPP needle tips seemed to be blunted in most cases (Fig. 4). Under light microscope, even 64% of the latter ones were shown to be distorted. There was no relationship between the appearance of tip damage and the occurrence of bone contact during puncture. Examination of the tips of seven unused DHPP needles under a light microscope showed that five had a malformed tip. Two of these needles taken directly from the sterile package were also inspected under scanning electron microscopy (SEM), and minor longitudinal fractures on their tips were observed (Figs. 5, 6)."

I think it is inappropriate to mix clinical study results with a quality control study. However, despite the poor quality control shown with these needles, they performed better than the Pencan needles from the clinical point of view! Now, imagine how they would perform if manufactured by another manufacturer.

Garcia<sup>3</sup> examined by SEM 80 pencil-point spinal needles from various manufacturers. He found important differences in their polish and finish: "Some needles show pieces of metal on their surface. Other needles presented other kinds of impurities that we couldn't identify. The study of the needle points magnified  $\times 2000$  let us see serious defects in some of them. There were broken needle points and others were totally blunt."

Dr. Charles H. Ripp (Springs Pain, Research & Surgery Facility, P.C., Colorado Springs, CO) compared the 26-

gauge Eldor spinal needle (DHPP spinal needle) with the 25-gauge Whitacre needle. The two closed ended spinal injection needles were compared in regard to their ability to have injected solution spread immediately following injection. Each needle was placed in an ice cold water bath with the temperature measuring 32°F. Subsequently, 1 mL of 120°F water was injected through a 1-mL TB syringe rapidly. Baseline and 1 second postinjection infrared images were obtained on an Inframetric System (sensitivity to 0.1°F). The temperature of the water changed as the injected solution dispersed and was graphically depicted. The green temperature was warmer than the surrounding blue.

The Eldor spinal needle showed a 5-fold increase in the immediate dispersal area compared with the Whitacre needle. The Eldor spinal needle showed greater immediate dispersal of injected solution, despite being a smaller gauge. This advantage can improve anesthetic spread, provide optimal anesthesia, and lessen the risk of local anesthetic toxicity.

Gaynes Labs, Inc. (Bridgeview, IL) performed axial compression tests on the 26-gauge Eldor spinal needle and the 26-gauge Gertie Marx spinal needle. An individual needle (with its stylet in place) was clamped in a holding fixture (two metal plates with an alignment groove). Three millimeters, as measured from the tip of the needle, was exposed outside of the clamp. The end opposite the tip was bent at a 90° angle over the end of the fixture so that the stylet would remain in place. The needle and holding fixture was then mounted vertically in the jaws of the testing machine, with the tip of the needle pointing downward. The jaws were connected to a force measuring device, which was in turn connected to the movable ram of the testing machine. The needle advanced downward at a rate of 0.2 inches per minute, onto a hardened steel block, until the tip of the needle bent to a 90° angle. A data acquisition system recorded the compressive force (in pounds) that was being applied axially to the needle. The maximum compressive force that occurred during the test was recorded.

The maximum force needed to bend the Eldor spinal needle was 9.65 lb. compared with the maximum force of 9.16 lb. needed to bend the Gertie Marx needle. Despite the fact that the Eldor needle has two holes at the tip compared with one hole of the Gertie Marx needle, the Eldor spinal needle is stronger than the Gertie Marx needle of the same gauge.

Dr. Timo A.R. Palas from the department of Anesthesiology, Regionalspital Biel, 2502 Biel, Switzerland (1997 Annual Meeting of the American Society of Regional Anesthesia, Atlanta Hilton Hotel, Atlanta, Georgia, April 10-13, 1997) compared the 27-gauge Eldor spinal needle with the normal one-hole, pencil-point 27-gauge spinal needle (Pencan). Twenty patients were divided into two groups. The lumbar puncture was performed in the sitting position with the holes of the needles pointing upwards. Either plain 2% prilocaine or plain 0.5% bupivacaine was used. The mean age in both groups was 28 years (4 males and 6 females in each group). The backflow of the CSF could be seen in a mean time of 0.6 seconds in the Eldor spinal needle compared with 2.1 seconds in the Pencan

needle. There were five cases of an anesthetic maldistribution in the Pencan group during the first 5 minutes after injection and none in the Eldor spinal needle group.

Based on these studies and on the study by Puolakka et al., the conclusion reached by Puolakka et al. that "the present study has indicated that most of the DHPP needles are damaged in the manufacturing process thus making them less appealing for clinical use and probably more vulnerable to distortion during lumbar puncture. At the present, therefore, the SHPP needle seems preferable" is unfounded. We have already changed the Eldor spinal needle manufacturer. We didn't change our design.

Joseph Eldor, M.D.  
Department of Anesthesia,  
Misgav Ladach General Hospital  
Jerusalem, Israel

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### Acute Aphasia Following Tourniquet Release in Intravenous Regional Anesthesia With 0.75% Lidocaine

#### To the Editor:

I would like to report a case of acute aphasia following tourniquet release in intravenous regional anesthesia with 0.75% lidocaine.

The patient was a 56-year-old man, weighing 68 kg, who was scheduled for removal of ganglion cyst over left wrist region under i.v. regional anesthesia (IVRA). The patient had no history of any systemic disease. Under the monitoring of electrocardiography, noninvasive blood pressure, and pulse oximetry, a standard procedure of IVRA with double-cuff tourniquet proceeded. Twenty milliliters of 0.75% lidocaine was administered. The operation time was 20 minutes, and no sedative drug was given. Acute aphasia was noted after the release of tourniquet. The vital signs were stable in the posttourniquet release period. There were no symptoms or signs of circumoral numbness, visual or auditory disturbance, or loss of consciousness. He did complain of lightheadness. His brain computed tomography scan revealed negative findings. Fortunately, the patient's speaking ability recovered 20 hours later. No sequela was noted during the 3 days of follow-up.

This is a clinical report of acute aphasia following IVRA lidocaine administration. Aphasia refers to those motor or