

Eldor Spinal Needle – A new frontier in Regional Anesthesia (Video script)
([http://www.youtube.com/watch?v= sjZalNdILc](http://www.youtube.com/watch?v=sjZalNdILc))

Dr. August Bier, (1) on August 24, 1898, asked his assistant, Dr. Hilderbrandt, "to perform a lumbar puncture on me", 8 days after he first performed it on a 34-year-old patient for excision of a tuberculous capsule at the ankle joint. Bier wrote that he did not feel any discomfort "except for a quick flash of pain in one leg at the moment that the needle penetrated the meninges". Unfortunately, the experiment was not successful because of an error (the syringe did not fit the needle tightly... and consequently some CSF ran out and most of the cocaine was lost). No sensory loss ensued. Dr. Hilderbrandt immediately offered to submit himself to the experiment, which was successful. Both of them "went to eat after the experiments were performed on our bodies. We had no physical discomfort, we ate, drank wine, and smoked several cigars". However, next morning, after a one hour morning stroll Bier felt slight headache which increased in intensity during the course of the day. Nine days after the puncture, all the symptoms disappeared. After 3 more days, "I was able to go on a train trip without discomfort and was fit enough to participate in a strenuous 8 day hunting trip in the mountains".

This was the beginning of spinal anesthesia . Today many millions of patients worldwide are anesthetized each by spinal anesthesia for Cesarean sections as well as for orthopedic, urologic, gynecologic and other general surgeries.

The problem with the spinal needles used by Dr. Bier and afterwards was that it caused severe post dural puncture.

James R Hart and Rolland John Whitacre (2) published in 1951, a study describing a conical tip and sided orifice spinal needle (3). Whitacre was a famous anesthesiologist at this time and became president of the American Society of Anesthesiologists (ASA). Unfortunately, he had an early death in 1956, at age 46. So, the first pencil point spinal needle is named Whitacre needle.

The next big advent in the design of spinal needles was performed by the German physician Jürgen Sprotte (4) in 1987. Nearly 37 years after the Whitacre proposed needle, Sprotte suggested some modifications to it: an elongated tip in an attempt to promote a more gradual separation of the dural fibers, and in particular, a lateral orifice larger and oval (5). This larger orifice intended to facilitate the flow of cerebrospinal fluid and allow a better dispersion of the anesthetic solution administered. Some of the criticisms of these changes were based on the fact that the long end was more susceptible to trauma and subsequent breaks, and the side orifice too long could lead to an incomplete insertion into the subarachnoid space with loss of part of the anesthetic to the epidural space. In the early 1990's the orifice was slightly reduced in the models produced as a way to minimize these inconveniences.

Dr. Joseph Eldor (6), Israeli anesthesiologist, is a contemporary researcher and a strong promoter of regional anesthesia techniques. In 1996, Eldor described a conical tip needle for use in spinal anesthesia. It is a needle with a tip similar to Whitacre but with a twist: instead of a single lateral orifice, it has two contra-lateral openings (7).

Each of these holes in the Eldor needle is smaller than that described in the Sprotte needle, but the sum of its areas equals the size of its oval orifice. The idea behind this double hole is to allow a better dispersion of the anesthetic in the CSF (8), minimizing failures and neurological complications arising from the bad distribution of the anesthetic reported with small-bore needles. It also allows a faster flow of CSF when compared to the single orifice needle.

In that regards the Eldor spinal needle (Double Hole Pencil Point spinal needle) is a real breakthrough in spinal anesthesia and opens a new frontier for regional anesthesia.

Its main benefits are :

- 3.5 times better CSF backflow than any other pencil point spinal needle (9)
- Faster onset of spinal anesthesia than any other pencil point spinal needle (10)
- 5 fold increase in the immediate dispersal area compared to any other pencil point spinal needle (11)
- Stronger than any other pencil point spinal needle (12)
- 1.8 times less backache than any other pencil point spinal needle (10)
- Less transient neurological symptoms than any other pencil point spinal needle (13)
 - Much less post dural puncture headache than any other spinal needle (14)
 - (15)
 - (16)
 - (17)
 - (18)

References :

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