New Product Designed for Easing Spinal Cord Access Touted for Reducing Catheter Shear

VALHALLA, NY—The frequent occurrence of catheter shearing and malposition during epidural anesthetic administration has created great concern, and even fear, among anesthesiologists. Part of this concern stems from the possibility of leaving a portion of the catheter in the epidural space.

Advances in needle design, such as the R-K epidural needle, have attempted to allow safer manipulation of the catheter with the needle tip still in the epidural space. Although such advances reduce the risk of catheter shear and malposition, there is great need for a product that would eliminate these complications.

One such product is the Spinal Cord Access (SCA) System introduced by Custom Medical Concepts at the Society of Obstetric Anesthesia and Perinatology meeting in Philadelphia this spring. The system consists of a catheter introducer that resembles "over-the-counter needle catheters" used for vascular access. However, after the catheter introducer and standard epidural needle are introduced in the epidural space—as it is normally done when just a needle is used—the needle is removed and the catheter introducer remains in place.

According to Custom Medical Concepts (Chelmsford, Mass), the Spinal Cord Access System ensures that their catheter can be safely manipulated without shearing; it also ensures access to the epidural space, a close fit around the needle and smooth introduction. The introducer features a gentle curve for guided access, is made of a semisoft polymer and fits over a 17-G Tuohy needle. The catheter has a double lumen; one extends from tip to tip and is for injecting fluids and the other extends to the balloon near the catheter tip.

The SCA System can be used in various applications. In cases where it is difficult to locate the epidural space, the introducer allows anesthesiologists to reverse the procedure and reinsert the catheter without the fear of shearing it with the needle's sharp edges. Additionally, the SCA system can be used as an injection port—without having to replace the catheter—by closing the catheter on back of the patient and reinjecting though the plastic introducer.

Dr. Lawrence J. Epstein, of New York Medical College here, studied the SCA system to determine if shearing and malposition are eliminated when the system is used in lieu of standard catheter-needle techniques. "Malposition of the catheter is a problem frequently encountered during administration of an epidural anesthetic. Correction of this situation involves removal of both needle and catheter and replacement of same," he said.

In his study, Dr. Epstein evaluated the epidural introducer for the placement of epidural catheters in five healthy patients scheduled for elective cesarean section or requesting labor analgesia. After the epidural space was identified, using a loss of resistance to saline technique, the plastic catheter was advanced over the needle and into the epidural space. A 20-G nylon catheter without a stylet was then passed through the introducer and into the epidural space. The introducer was removed and the epidural catheter tested prior to use.

Studies have found epidural catheter introducers to be an effective means of reducing the risk of catheter shearing and malposition to zero. However, "a larger, controlled study is necessary to evaluate the advantages of this technique over traditional methods of epidural catheter placement," said Dr. Epstein.

The study found that the procedure was well tolerated by all of the patients and there were "no problems identifying the epidural space with the SCA system." Additionally, "the introducer was placed without technical difficulty and it was possible to aspirate and inject freely via the introducer. In all patients the catheter was positioned easily via the introducer."

The SCA device may prove useful for teaching purposes. "Especially in the hands of the beginner or the inexperienced, it removes the hazard of shearing the catheter during the carrying out of a lysis of adhesions procedure," Dr. Gabor Racz told *Anesthesiology News*. The device can therefore be used to assist in placing a cauda-cath for breaking up scars in the epidural space. Without the device, there is an increased hazard of cutting into a catheter during the four months or so that it takes for a resident or fellow to master the technique, according to Dr. Racz, professor and chairman of anesthesiology and director of the pain program at Texas Tech Health Sciences Center, Lubbock.

A future indication for the SCA device in patients is currently being tested in animals in the United States and patients in Helsinki, Finland. The equipment necessary to perform epiduroscopy, which will allow clinicians to look inside the spinal canal through a small-caliber, flexible scope, is not FDA-approved yet. Dr. Racz indicated that the SCA introducer could be used to facilitate epiduroscopy in this country. "I believe it is going to be very useful in patients when epiduroscopy can be used," he said. ❑

—*Tania Edghill*

Developed from interviews with Drs. **Lawrence J. Epstein** *and* **Gabor Racz.**