A Method for Subcutaneous Tunneling of Epidural Catheters using Readily Available Equipment

To the Editor—Several methods have been described for the subcutaneous placement of epidural catheters for chronic use.* Malleable metal tunneling tools have been devised, as have tunneling devices that have a plastic sheath surrounding a trocar. The drawbacks to these types of devices are that they must be purchased, resterilized after use, and usually have a large outer diameter. An alternative device readily available for subcutaneous tunneling is the “catheter over needle”-type iv catheter. They are prepackaged in sterile containers, inexpensive, and disposable. The current technique is to enter the skin with the iv catheter and needle from a skin site distal to the epidural site. The needle is advanced subcutaneously until it exits the skin through the same skin hole as the epidural needle. I have found it to be technically difficult to make the iv catheter exit through the same hole as the epidural needle without making a large incision. I therefore devised a new technique that is quick and easy to perform using a 16-G iv catheter.

A 16-G 2-inch or 5.25-inch iv catheter (Angiocath,* Deseret Medical, Inc.) and a number 11 scalpel blade are the only equipment required. After the epidural catheter is inserted through the epidural needle, the needle is withdrawn so that it is no longer in the epidural space but is fixed in the interspinous ligament so that it serves as protection for the catheter during the tunneling. Local anesthesia is provided by infiltration (for short tunnels) or by injection of local anesthetic into the epidural catheter (long tunnels for permanent placement). The scalpel blade is used to make a nick in the skin by inserting it alongside the epidural needle exactly as one makes a skin nick along a wire during central venous catheterization. The iv catheter is removed from its obturator needle and the bare obturator needle is then inserted through the skin nick alongside the epidural needle (fig. 1–A). The obturator needle is turned parallel to the skin and advanced subcutaneously along the local anesthetic track previously placed. After the needle has been advanced subcutaneously for the desired distance, the tip is allowed to exit the skin leaving at least 1 cm of the needle exposed at the exit site (fig. 1–B). A very small skin nick is made at the exit site with the scalpel blade.

The 16-G iv catheter is then placed on the distal end of the obturator needle and advanced retrograde as far as possible over the needle. This is easily accomplished, although the needle tip must be observed


Fig. 1. After making a skin nick along the epidural needle with a scalpel blade, an obturator needle from an iv catheter is inserted through the skin (A). Note the wheel of local anesthetic at the anticipated exit site. The needle is redirected parallel to the skin and advanced subcutaneously to exit the skin 3 cm from the midline (B). After making a small nick at the exit site of the needle, the iv catheter is advanced in a retrograde fashion over the needle. The obturator needle is then removed (C). The epidural needle is removed and the epidural catheter is inserted through the iv catheter (D). The iv catheter will be removed and the epidural catheter slowly withdrawn until the exposed loop of catheter lies within the subcutaneous tunnel.
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To prevent puncture of the iv catheter. The obturator needle is withdrawn with the catheter held in position over the distal end. When the obturator needle is completely removed, the catheter will be subcutaneously tunneled with its tip exiting at the epidural entrance site (fig. 1-C). The epidural needle is then removed and the epidural catheter is passed through the 16-G iv catheter (fig. 1-D). The iv catheter is removed and the epidural catheter is pulled until the catheter lies completely within the subcutaneous tunnel. A Steri-strip® may be required to close the site of the first skin nick.

This technique is useful for subcutaneous placement of epidural catheters for chronic use. In two steps, with a 5.25-inch iv catheter, an epidural catheter can be brought subcutaneously from the midline posteriorly to the anterior abdomen where the site can be more easily cared for in debilitated cancer patients. The risk of epidural infection from the skin is minimal since the skin exit site of the catheter is far removed from the epidural space.

The technique is also useful for situations where an epidural catheter for postoperative pain management might be in or near the surgical field. If a thoracic epidural catheter is placed preoperatively for management of pain following a thoracotomy, then a dressing over the epidural site may be within the surgical field if the incision is brought close to the midline posteriorly. I, therefore, routinely tunnel the epidural catheter 3-4 cm away from the operative side using a 2-inch iv catheter. This allows secure attachment of the epidural catheter to the skin with Steri-strips and a sterile dressing without encroaching on the surgical field.

The method described can be accomplished in less than 30 s and requires equipment already available in a clinic or operating room. For these reasons, I believe that it is a method of subcutaneous tunneling that is superior to those currently in use and is especially suitable for routine tunneling of catheters for treatment of postoperative pain.


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Airway Fires during Surgery with the Carbon Dioxide Laser

To the Editor—We have successfully completed approximately 1,000 cases using the helium protocol1 for airway CO2-laser operations. In two cases, we experienced airway fires; in both cases a leak around the endotracheal tube necessitated an increased fresh gas flow. This resulted in an inadvertent increase in the F2O2, and a violation of the protocol. In order to prevent such mishaps, we are now using a premixed helium/oxygen gas (Heliox), containing 50% oxygen and 70% helium. When a leak makes a higher fresh gas flow necessary, it can be accomplished with Heliox, without affecting the 30% oxygen in helium mixture.

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Cerebral Venous Thrombosis Versus Postlumbar Puncture Headache

To the Editor—In a recent report, Bolton et al.1 describe a seizure following epidural blood patch (EBP) and caffeine sodium benzoate (CSB) in a postpartum patient thought to have a postlumbar puncture headache. We feel that their patient had classic signs, symptoms, and clinical course of postpartum cerebral venous thrombosis (CVT) and that it was coincidental that a seizure followed the EBP and CSB.

We describe a very similar case in which the patient developed seizures following an EBP. The diagnosis of CVT was later established.

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