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OXFORD

Contrast Spread Technique: Evolution

Dear Editor,

The recognition of needle entry into an epidural space is a pivotal moment in cervical, thoracic, or lumbar epidural injections. Its significance cannot be overestimated. Regardless of how experienced you are, realizing that you are approaching an epidural space makes your heart beat faster. The safety of the procedure and its success rate depends upon proper and reliable identification of the needle entering into the epidural space. Recent advances in our understanding of fluoroscopic guidance allow pain practitioners to safely place the needle close to the ventral interlaminar line (VILL) [1–4]. However, recognition of the needle exiting the ligamentum flavum and entering into the epidural space was until now performed with the art of the loss of resistance technique (LORT). To rely upon LORT, a practitioner has to master his tactile sensation of change in resistance to the level of an expert. The contrast spread technique (CST) [5], on the

contrary, depends upon the knowledge and ability to utilize fluoroscopy to recognize needle depth. We use various fluoroscopic views, and our understanding of clinical anatomy, to create a three-dimensional visualization of the needle tip inside the human body, and to answer the following questions: how close is the needle tip to the epidural space, and how far is it from the midline?

Using CST brought me to two paradoxical findings. There may be no need for the LOR syringe, and there may be no need for an epidural needle. My first finding is understandable, as CST does not rely on tactile loss of resistance, but employs visualization of the needle placement. My second finding occurred after I performed many successful procedures over the course of several months at the cervical and thoracic spine. Tuohy, Hustead, Sprotte, and other epidural needles have shorter, more angulated, and less sharp bevels in order to minimize the chance of inadvertent puncture of the dura matter and to facilitate

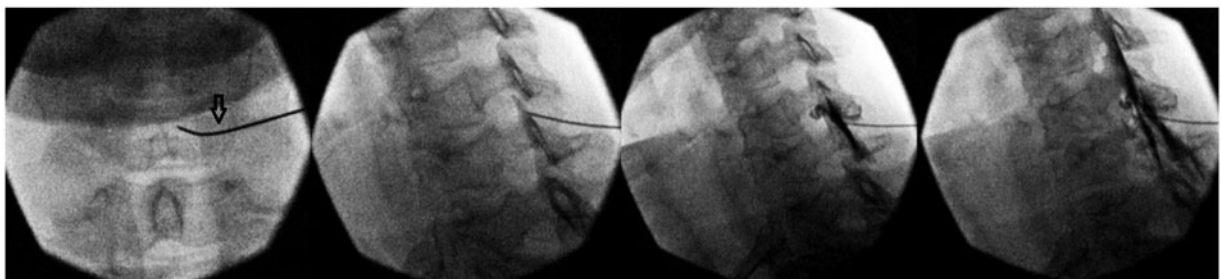


Figure 1 Sequential fluoroscopic images of CST: First, the needle was placed using the right paramedian approach under anterior-posterior view at the C5–C6 level; second, it was advanced under contralateral oblique view close to VILL; third, injection of contrast showing soft tissue spread, lateral to VILL; fourth, injection of contrast showing epidural spread, medial to VILL. All pictures are done with pulsed fluoroscopy. Arrow indicates the bent-tip Quincke needle.

Letters to the Editor

LORT. I found that the 22g Quincke needle works better with CST than the 20g Tuohy epidural needle. A Quincke needle with a bent tip is much easier to maneuver and navigate toward the desired spot under fluoroscopy than a thicker, straight epidural needle. This is important at the cervical spine, where spaces are small and accuracy of needle placement is critical (Figure 1). The bent-tip Quincke needle makes a challenging procedure possible when attempting to place the needle between angulated spinal processes at the thoracic spine. I found that my success rate with thoracic epidurals became higher after I substituted the Tuohy needle with the Quincke. With CST, one may see the spread of the contrast into an epidural space, as well as into soft tissue when only the very edge of the needle's bevel is inside the epidural space and the rest is in soft tissue. This would follow with classic contrast spread into an epidural space with minimal needle advancement. In my view, the short-beveled sharp cutting needle would be more advantageous than the Quincke needle for the purpose of CST.

It is not a goal of this letter to change common practices in epidural injections. LORT is safe and reliable in experienced hands and one cannot consider himself a pain practitioner until he masters it. There is no substitute for LORT with spinal cord stimulator trials or when epidural injection has to be done blindly, as, for example, in labor epidurals. However, it is my belief that CST could be an alternative to LORT in challenging cervical

and thoracic procedures. With advances in fluoroscopy and in our understanding of imaging of the spine, it may become a helpful tool for pain practitioners to recognize epidural space while performing spinal injections.

YAKOV PERPER, MD
Private Practice, New York

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OXFORD

Epiduroscopic Laser Neural Decompression for Removal of L2–3 Disc Herniation in a Patient with Symptoms Suggestive of L5 Nerve Root Involvement

Dear Editor,

Epiduroscopy has previously been used for epidural adhesiolysis [1,2]. Recently, epiduroscopy with laser ablation has also been used for low back and radicular pain due to disc herniation, spinal stenosis, and failed low back surgery syndrome [3,4]. Epiduroscopic laser neural decompression (ELND) has become a useful tool for diagnostic purposes as well as the treatment for low back pain and/or radicular pain. With this technique (ELND), it is possible to remove disc fragments and adhesion bands, to confirm the epidural and nerve root pathology, to irrigate the epidural space, and to administer specific drugs close to the sites of pathology, all during one intervention. We wish to report a patient with symptoms of low back and radicular pain referable to the L5 dermatome but originating from a herniated disc at the L2–3 spinal segment, which was detected and promptly relieved by ELND.

A 51-year-old woman sought treatment for her low back pain and radicular pain presenting in the right L5 dermatome. Her symptoms had abruptly commenced after playing golf. She was treated with medications and physical therapy for 15 days but experienced no change in her symptoms. The straight-leg raising test was positive at 30 degrees in the right lower limb, and she had reduced lumbar spine flexion. Her symptoms were aggravated by walking, and she had tender points in the right ilio-lumbar area. Her MRI finding showed mildly bulging discs at L2–3, L3–4 and L4–5 (Figure 1). After obtaining informed consent, she was treated with a transforaminal injection of epidural steroid at the L4–5 level. Her symptoms were slightly improved after the transforaminal injection; however, she still complained of low back and radicular pain. She was treated with prolotherapy to the right ilio-lumbar area, and her low back pain was again somewhat improved. However, she still complained of radicular pain in the right L5 dermatome. Then, we planned to perform ELND for her radicular pain.