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Contrast Spread Technique: Algorithm and study

Contrast Spread Technique (CST) is a new and evolving method for epidural space recognition. It is based on the interpretation of the radiological images and possesses some theoretical advantages over the conventional Loss of Resistance (LOR) technique. Unlike the LOR technique, which relies on the subjective feeling of the performing physician, the CST technique allows for objective verification of the needle tip location inside or outside of the epidural space by visual assessment of the contrast spread that may also be observed and interpreted by the third party. By emphasizing the analysis of resulting radiological images instead of relying on the tactile sense of resistance, it may improve the accuracy of the needle placement and improve the safety of the epidural injections by preventing dural penetration.

I safely performed more than 1500 injections with CST and, together with my coworkers, created an algorithm for performing cervical ESI with this technique. I also performed an IRB-approved study (Canadian SHIELD, 07/18/19) where both techniques were compared. Cervical ESI was performed with either 18G or 25G needle, with 20 patients in each group. In both groups, 95% Confidence Interval for the proportion of epidural space detection was significantly less for LORT. There was also a significant difference between the proportions of detection of epidural space confirmed by LORT using 18G needle and 25G needles: 60% vs. 10%. Epidural space recognition was 100% for CST in both groups.

Discussion & Conclusion: In both groups, CST was superior to LORT in epidural space recognition. Although it is understandable for the 25G group, it is unclear why in the 18G group visual recognition of the contrast spread came before the tactile loss of resistance. Further studies are warranted to explore a new technique.

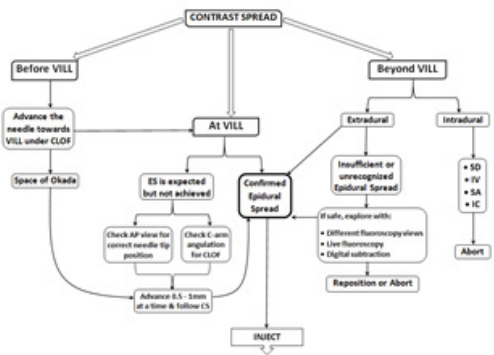

Figure 1. Algorithm for performing Cervical Epidural Steroid Injection with contrast spread technique..

Biography

Yakov Perper is Board Certified Anesthesiologist and Fellowship Trained Pain Management Physician. He earned his Medical Degree with a specialization in Anesthesia at Maimonides Medical Center, Brooklyn. Since graduation from the Pain Management Fellowship at Saint Vincent's Medical Center, NY, He had a successful record of accomplishments in the medical field. Yakov Perper started his career in Croser-Chester Medical Center, PA in 2003. Then moved to New York with the appointment of Attending Anesthesiologist/Pain Management Doctor in Mount Sinai Hospital of Queens. He was promoted in 2004 and served as a Director of Pain Management in 2004-2005. Then he moved into Private Practice. Yakov Perper is an active member of AMA and ISIS, who was awarded by the American Consumer Research Association with the "American Top Anesthesiologists with specialization in Pain Management" Award in 2009 and 2011. His achievements in the Medical field are recognized by the American Anesthesiological Society, as well as his two patented inventions "Device for repairing a Dural Puncture" and "Seated Fluoroscopy Application Device". Yakov Perper attended numerous Pain Management Conferences to continue his medical education. While on the World Pain Management Congress in Germany, in September 2011, he presented his new, innovative approach for the retrograde Spinal Cord Stimulator insertion which revealed a new technique of Spinal Cord Stimulator placement. "He has invented a special chair for doing injections into the neck, thoracic spine, and lumbar spine in the sitting position. This has the advantage of doing procedures safer and more convenient for the patients. Yakov Perper also able to perform joint injections, shoulder joint and knee joint injections using his approach, which is relatively painless and very simple. Anyone in the field would not find such an approach from any other pain management provider and would not learn it from the textbook."

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