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## **Contrast Spread Technique: Algorithm and Study**

## **Yakov Perper**

Mount Sinai Hospital of Queens, New York

## Abstract

Contrast Spread Technique (CST) [1, 2, and 3] is a new and evolving method for epidural space recognition. It is based on the interpretation of the radiological images and possesses some theoretical and practical 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. Also, by emphasizing the analysis of resulted radiological images instead of relying on the tactile sense of resistance, it may improve the accuracy of the needle placement and enhance the safety of the epidural injections by preventing dural penetration.

I safely performed more than 2000 injections with CST and, together with my coworkers, created an algorithm for performing cervical ESI with this technique [4]. I also conducted 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.

## **Biography**

Yakov Perper was born in Uzbekistan in 1962, graduated from Tashkent Medical School in 1985, immigrated to the United States in 1996, and completed my anesthesia residency at Maimonides Medical Center in 2002. Also, I had a fellowship in Interventional Pain Medicine at Saint Vincent Catholic Medical Center in 2002-2003. Throughout my professional career, I developed a special interest in cervical epidural injections. Besides creating two inventions on assisting in performing cervical injections in the sitting position safely, I also discovered a new way of epidural space identification. I called it the Contrast Spread Technique (CST). He published several articles and presented on CST at different conferences. In addition to my accomplishments in the field I love, one of my biggest joys is my wife, three daughters, and a granddaughter.