

Letters to the Editor

Time to Understand “Safe Triangle Technique” for Transforaminal Epidural Steroid Injections

TO THE EDITOR:

We read with great interest the article by Zhu et al (1) regarding an alternative approach for transforaminal epidural steroid injections (TESI). We would like to commend the authors for mainly “thinking outside the box” and deviating from the traditional “safe triangle technique” (STT) in order to prevent spinal cord infarcts caused by injuring the radicular artery in the foramen. Although rare, this complication has been reported 17 times since 2002. It is plausible that many more of these complications have occurred that have not been reported. Dr. Glaser and Dr. Falco (2) brought attention to the issue in 2005. But to date, it appears to be the most common technique for the performance of TESI. Many practitioners are reluctant to give up the STT as they have done thousands of these cases without any problem. Some take comfort by injecting “nonparticulate” steroids without realizing that apart from embolization, the artery can also be compromised by direct trauma (the average size of the artery is similar to the diameter of a 22-gauge needle), spasm or by creation of an intimal flap obstructing blood flow (2). Recent evidence (3,4) reveals that the radicular artery resides in the superior part of the foramen and the STT requires placement of the needle precisely where the artery dwells. This makes us and others (2,3,5) question the rationale for continued use of STT. Clarification of the STT by major societies like the American Society of Interventional Pain Physicians and the International Spine Intervention Society will encourage physicians to understand the nature of the problem and prevent future catastrophes.

We appreciate the presentation of the alternative procedure by the authors and hope it will be embraced by many. However, we would like to report 2 observations. Firstly, instead of targeting the upper lateral part

of the superior articular processs (SAP), the lower lateral part of the SAP should be contacted by the needle prior to walking off into the foramen. This will ensure placement of the needle in the inferior part of the foramen away from the radicular artery. Conversely, if the upper part is targeted, the needle will most likely be placed in the midzone (in the superoinferior plane), with the risk of encountering the artery. Kroszczynski (4) and Murthy (3) have shown that the radicular artery resides in the midzone in 23% and 9% of the time respectively, whereas only 3% and 2% of the time inferiorly. Secondly, instead of squaring off the vertebral endplates, we prefer to adjust the C-arm (craniocaudally) to best visualize the lateral border of the SAP which is the target. Techniques different from STT have been described before (4,5-7) and practitioners should adopt any of these. Most importantly, they should avoid the STT in light of the clinical, radiological (5) and anatomical (3) evidence.

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