

[2003 Fall A3] The distribution characteristics of fluoroscopically guided epidural steroid injections: a comparison of transforaminal and interlaminar approaches and two different volumes.

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Transforaminal (TF) epidural steroid injections have gained favor as a more effective way to inject epidural steroids. In this study we tested the hypothesis that a TF injection of medication would be more likely to enter the anterior and lateral aspects of the epidural space when compared to an interlaminar (IL) injection of epidural steroid.

87 patients suffering from chronic low back and/or radiculopathy were randomized into four groups prior to epidural steroid injection. Two groups received TF epidural injections of 2 or 5cc (TF2, TF5) and the other two groups received IL epidural injections (IL2, IL5). The injectate mixture included methylprednisolone and iohexol (plus saline in the 5cc groups). An anterior-posterior and a lateral X-ray were saved after injection. A radiologist blinded to type of injection interpreted the X-rays. The injections were graded on the spread of dye laterally (Y=1, N=0) and anteriorly (Y=1, N=0) in the epidural space. The highest score possible was a 2 for spread of dye laterally and anteriorly. Any failures were discounted and the injection was then performed on a subsequent patient.

There were 55 males and 32 females. The average age was 52 +/- 12 years. 78 patients had a lumbar radiculopathy and 9 suffered from low back pain. The average score for group TF2 was 1.82 and 1.05 for group IL2 (P<0.03). The average score for group TF5 was 1.95 and 1.58 for group IL5

(not significant)(Table 1). When comparing for anterior spread, group TF2 reached the anterior space in 18 of 22 injections (82%) vs group IL2 which reached the anterior space in 7 of 20 injections (35%, P=0.024). With regards to lateral spread, group TF2 reached the lateral space in 22 of 22 injections (100%) and group IL2 reached it in 14 of 20 (70%, P=0.042). There were three failures in the TF injections and none in the IL injections.

The TF epidural steroid injection groups, when combined together, reached the anterior epidural space more frequently (91%) than the combined IL groups (55%). The TF approach is also technically more difficult as there was a higher failure rate, 3 in 46 injections (6.5%), vs. none in the IL groups. A TF injection of less than 3cc results in a selective epidural injection with a relatively concentrated amount of medication reaching the anterolateral epidural space at the desired disc and nerve root interface.

References:

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Table 1. Spread Characteristics and Scoring of Injections

Study Groups	TF2cc (n=22)	TF5cc (n=21)	IL2cc (n=20)	IL5cc (n=24)
# Injections with Anterior Spread	18	21	7	17
# Injections with Lateral Spread	22	20	14	21
Total Score for Group (row1 + row2)	40	41	21	38
Average Score (Total Score / n)	1.818	1.952	1.05	1.583

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