

Medial Epidural Spill: Does It Make A Difference In The Effectiveness of Transforaminal Epidural Steroid Injections

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Introduction:

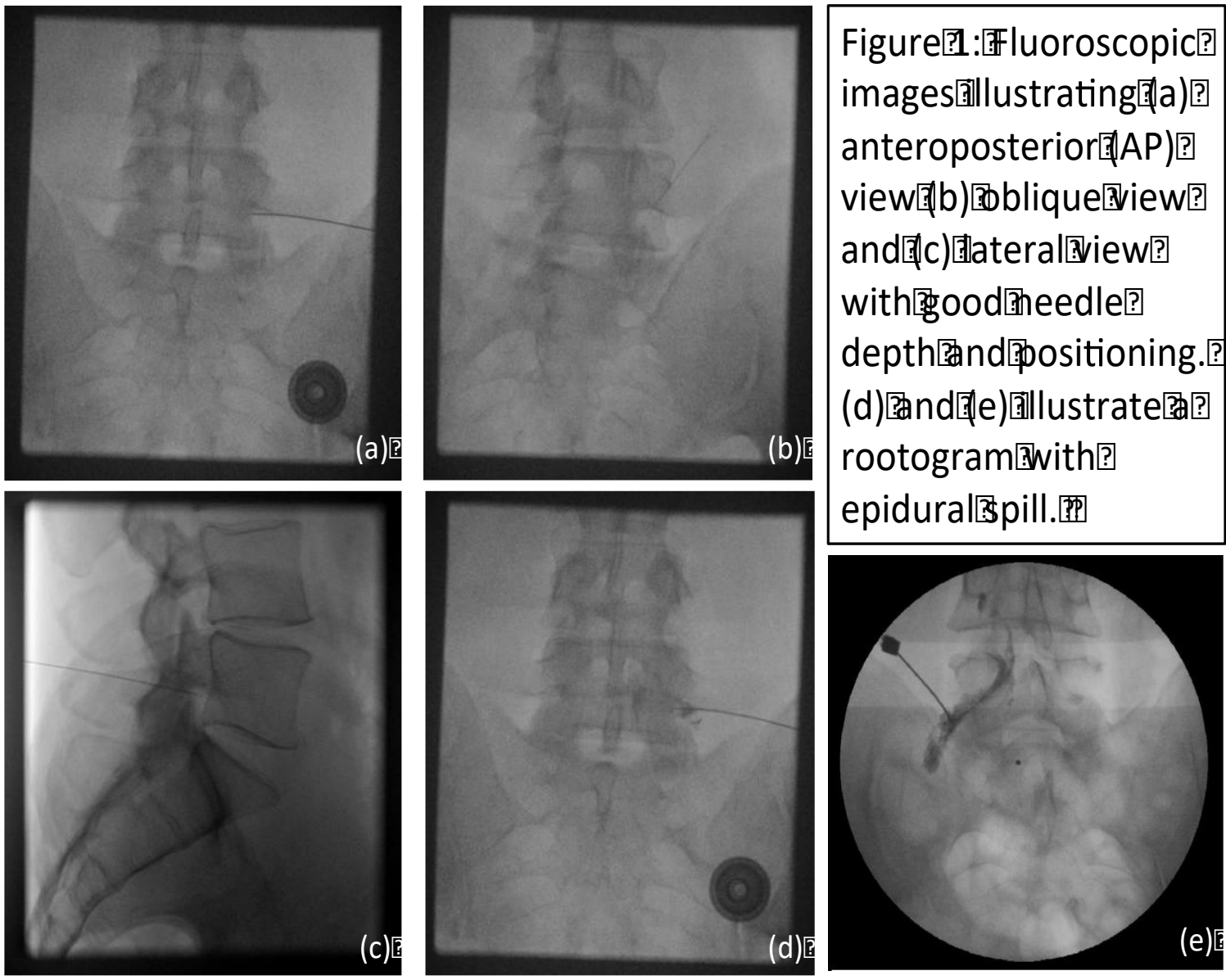
The reported efficacy of transforaminal epidural steroid injections (TFESI) varies widely in the literature. The transforaminal route is deemed the most effective technique. The use of fluoroscopy to aid TFESIs is recommended to increase success rate and reduce risk of complications.

Methods:

Data Collection: Over 300 patients were treated with a TFESI between September 2012 and December 2015. 215 patients met inclusion criteria; 111 males and 104 females with a mean age of 53.3. Inclusion criteria: 1) patients with a confirmed diagnosis of disc herniation, lumbar stenosis (LRS or FS) and/or spondylolisthesis (SPL), 2) patients who had a TFESI performed using fluoroscopy and a contrast medium, and 3) patients who had at least 6 weeks of follow-up. Exclusion criteria: 1) the radiological images were too poor to assess, 2) no contrast was used (e.g. due to allergy), or 3) there was inadequate or lack of follow up. An independent observer collected radiological and clinical data from IMPAX and outpatient clinic notes. Patient Reported Outcome Measures (PROMS) were also collated.

Technique: See figure 1. 0.5ml of Ultravist was used as a contrast medium to visualise a rootogram and medial epidural spill. 0.25ml Marcaine with 40mg Depo-Medrone made up to 4-5ml total was injected as therapeutic agent.

Definitions: rootogram = dye visualised along the path of the nerve root; epidural spill = flow of contrast medium medial to the pedicle.



Results:

Overall, 28% of TFESIs worked without recurrence of pain, 43% of TFESIs worked but then pain recurred and in 29% of cases it did not work at all. In the pain recurrence group, the average time it took for pain to recur after a TFESI was 2.8 months. Visualisation of a rootogram and medial epidural spill were not predictive of patient outcomes.

Discussion:

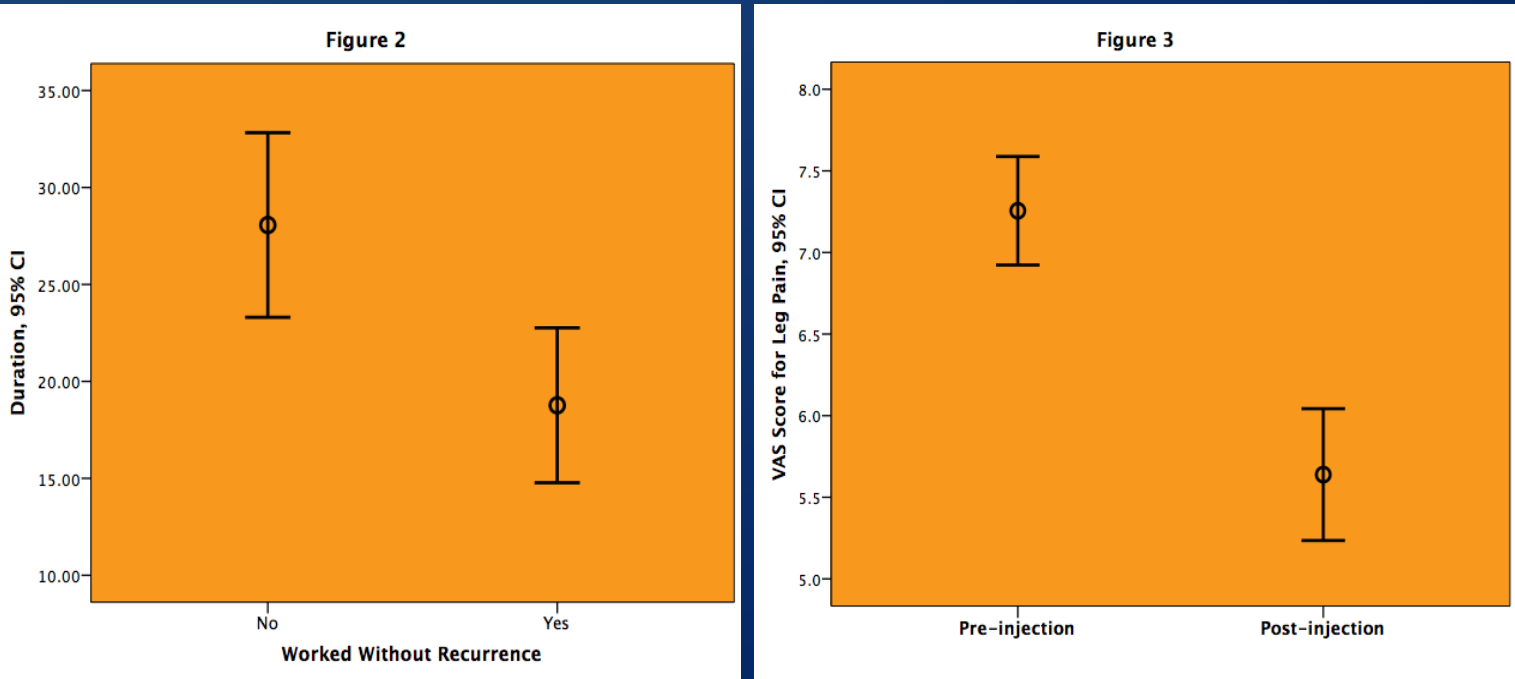
The North American Spine Society (NASS) recommend the use of TFESIs for treating disc herniations but do not recommend their use in patients with LRS, FS or SPL (1). However, our results suggest that TFESIs could be used in these conditions as they showed potential benefit in equal proportion. Shorter DoS and less severe pre-injection PROMs scores were significant factors in predicting successful patient outcome.

Clinical Implications: When advising a patient a rough rule of thirds can be applied to these injections: ~1/3 will work short to medium term, ~1/3 will work temporarily and ~1/3 will not work. Our results showed the mean time it took for pain to recur was 2.8 months. Further investigation into optimal follow up time and use of repeated injections is needed.

Results:

The table summarises outcomes by pathology. There was no statistically significant differences in outcome and whether the TFESI was successful between the 4 groups (Disc/LRS/FS/SPL). The average duration of symptoms (DoS) at presentation was 25.4 months. There was a strong correlation between DoS and patient outcome. In cases where the injection worked without recurrence during the study period, the average DoS was significantly shorter ($p<0.05$) (see Fig. 2). Lower pain intensity / disability scores (PROMs) were associated with more successful outcomes. A rootogram could be visualized in 93% of cases and there was medial epidural spill in 51% of cases. There was a significant difference between pre-injection and post-injection PROMs scores with regards to all different measures ($p<0.05$) (see Fig. 3). There was no correlation between presence of epidural spill and change in PROMs scores. Epidural spill showed no significant correlation with change in VAS leg scores >2 , change in VAS back scores >2 or change in ODI scores >10 .

Pathology	Number	Injection Successful / n (%)	Subsequent Operation / n (%)	Subs. Op. Successful / n (%)
Disc	101	72 (71)	29 (29)	22 (79)
LRS	94	68 (72)	28 (30)	22 (85)
FS	53	39 (74)	10 (19)	8 (80)
SPL	41	27 (67)	13 (32)	11 (85)



Conclusion: There was no correlation between presence of epidural spill and change in PROMs scores