

Fluoroscopy-Guided Aspiration Due to Facet Joint Fluid Collection after Transforaminal Epidural Steroid Injection

Jaewang Choi¹, Minkyung Lee¹, Sungjun Hong^{1*}

¹Department of Anesthesiology and Pain Medicine, Kangdong Sacred Heart Hospital, 150 Seongan-ro, Gangdong-gu, Seoul 05355

DOI: [10.36347/sjmcr.2023.v1i103.027](https://doi.org/10.36347/sjmcr.2023.v1i103.027)

| Received: 08.02.2023 | Accepted: 15.03.2023 | Published: 21.03.2023

*Corresponding author: Sungjun Hong (MD, PhD, South Korea)

Department of Anesthesiology and Pain Medicine, Kangdong Sacred Heart Hospital, 150 Seongan-ro, Gangdong-gu, Seoul 05355

Abstract

Case Report

We describe the case of a 67-year-old woman who experienced lower back pain and radiating pain caused by lumbar spine treated with a transforaminal epidural steroid injection under fluoroscopic guidance. This report describes the complications and treatment of this condition.

Keywords: Lower back pain, Transforaminal epidural steroid injection, Complications, Facet joint, Okada space, spondylosis.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Low back pain (LBP) occurs in up to 70% of adults aged > 60 years (Wong *et al.*, 2017). Many studies have shown that transforaminal epidural steroid injection (TFESI) can relieve LBP and radicular pain. Significant complications after TFESI are uncommon, but alertness is required because of their seriousness (Kim *et al.*, 2019). Furthermore, uncommon minor complications that are confused with majors due to similar symptoms should not be overlooked.

Here, we report a case of lumbar spinal pain in a patient. Aggravated LBP and radicular pain in the new part occurred after TFESI. The pain was considered to be caused by significant amounts of facet joint fluid. A fluoroscopy-guided aspiration of the facet joint was performed, which resulted in back pain that changed from severe to mild.

CASE REPORT

A 67-year-old female had a history of chronic LBP for > 7 years, for which she took medicine. She was diagnosed with lumbar spinal stenosis with bulging of the L3-L5 intervertebral discs and L3-L4 anterolisthesis with both facet joint osteoarthritis (OA) (Fig. 1). Her medical history included hypertension and liver cirrhosis. She recently complained of deteriorating LBP with right-sided radiating pain on the anterior side of the thigh. The patient was treated pharmacologically with nonsteroidal anti-inflammatory drugs. Routine

laboratory tests, including platelet count, activated partial thromboplastin time, prothrombin time, C-reactive protein level, and other liver function tests, were all within normal ranges.

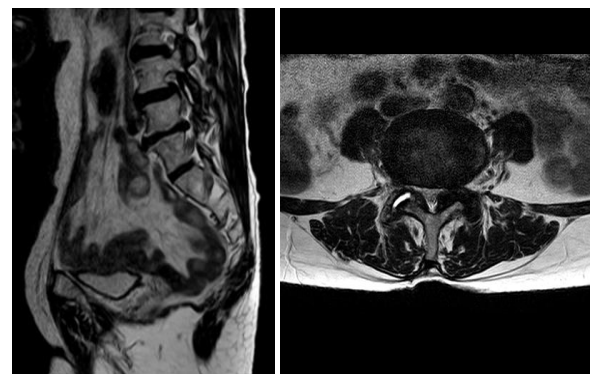


Fig. 1: T2-weighted sagittal and axial MRI images show central spinal stenosis, lateral recess stenosis, compression of L4 nerve root and L3-4 anterolisthesis with facet OA. MRI: magnetic resonance imaging

The TFESI was performed under fluoroscopic guidance using a 22-G Tuohy epidural needle at the right intervertebral foramen between the L4 and L5 levels in the prone position. First, 1 ml of contrast medium was injected to ensure that the needle tip was properly positioned. Then, we injected 3 ml of the contrast medium. The spread of the contrast media clearly showed the patient's anterior epidural space in

the lateral view. The patient had no particular abnormality (Fig. 2). After confirming that the needle tip was positioned correctly, a combination of 1 ml of 2% lidocaine with 1 mg of dexamethasone in a total volume of 8 ml was injected into the epidural space.

Washout of the contrast media was confirmed by fluoroscopy. Blood aspiration was not performed during the entire procedure. And the patient was sent to the recovery room.

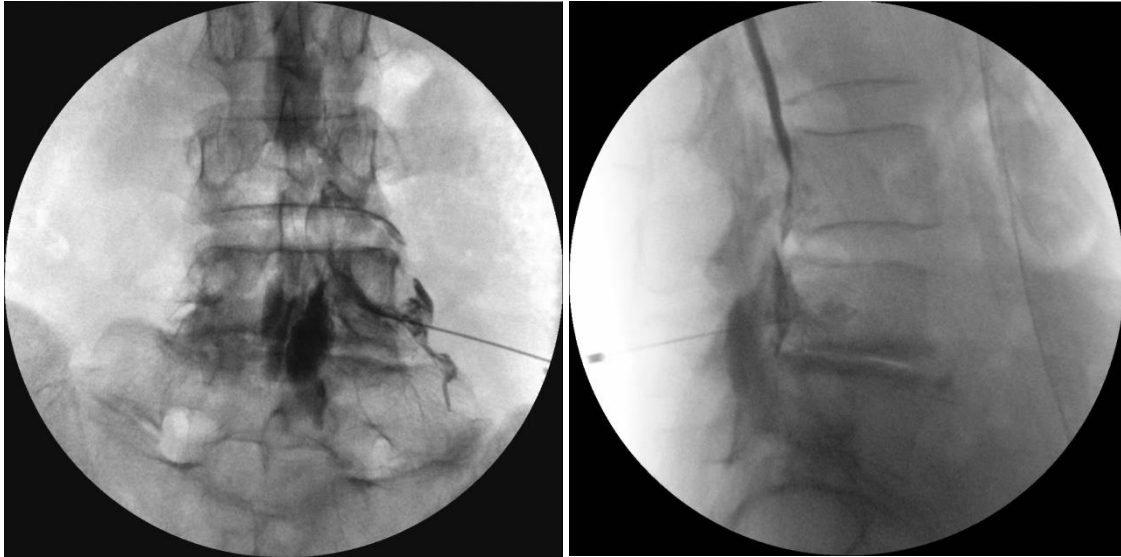


Fig. 2: The contrast was injected and spread well in the anterior epidural space

After one hour, she abruptly experienced right-sided sharp leg pain especially on buttock and posterior thigh, when bending her back to get up. Physical examination showed that the lower extremity motor function grade was normal and the anal sphincter tone was intact. However, the pain aggravated after the procedure and a radiating pain appeared in the new area. Therefore we suspected spinal epidural hematoma and injected 5 mg of dexamethasone via intramuscular.

And the patient went down to the MRI suite for emergency imaging.

However, there was no spinal epidural hematoma on lumbar spine MRI. But we found both sides L3-L4 facet joint space widening and filled with fluids compared with the previous lumbar spine MRI, which was recorded three months ago (Fig. 3). The patient was admitted for pain control and further observation.

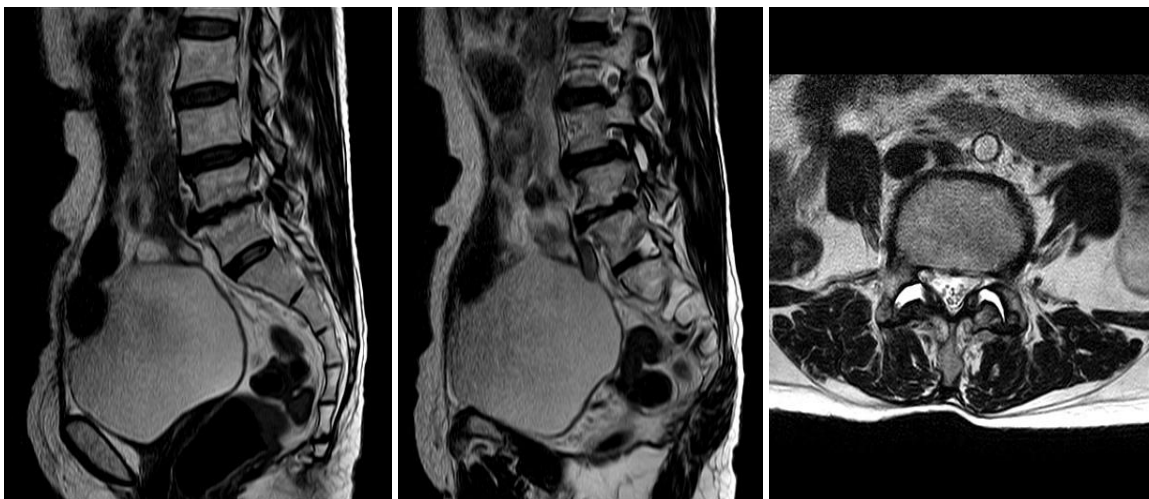


Fig. 3: T2-weighted left, right sagittal and axial MRI images show both L3/4 facet joint widening and fluid collection

The next day, we checked her motor function and planned facet joint aspiration for pain relief by reducing pressure. Under fluoroscopic guidance, the right facet joint was localized at the L3-L4 level using a

24-G needle in the prone position. A contrast medium (0.5 ml contrast) was injected into the joint to confirm the joint capsule. After the needle was inserted into the facet joint, approximately 0.5 ml of thin pinkish-red

fluid was aspirated from the joint space (Fig. 4). After the aspiration, the patient's back pain significantly

decreased. The patient was discharged without surgical evacuation or other symptoms on post procedure day 4.

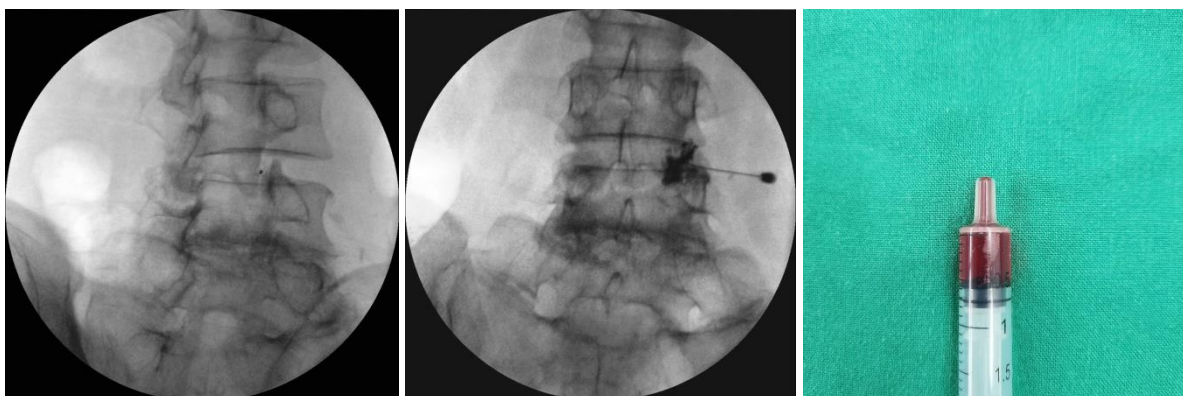


Fig. 4: Right oblique fluoroscopy view shows a wide L3/4 facet joint. Contrast media was injected into the right L3/4 facet joint in the anteroposterior view. A 0.5 ml of pinkish-red thin fluid was aspirated

DISCUSSION

Most complications associated with TFESI are light, and their incidence is low. Therefore, lumbar TFESI can be considered safe. However, proceduralists should be aware of the potentially vicious major complications that may occur. Early recognition and treatment of major complications are crucial for improving the outcomes (Andrew *et al.*, 2020). Proceduralists should also be aware of minor complications for an exact differential diagnosis and proper examination with treatment.

Manchikanti *et al.*, conducted a prospective study of 1,310 TFESI cases to investigate the incidence and characteristics of adverse effects and complications. Complications included intravascular penetration (7.9%), return of blood (3.7%), transient nerve root irritation (4.6%), facial flushing (0.15%), facet joint entry (0.61%), profuse bleeding (0.2%), local hematoma (0.2%), vasovagal reaction (0.08%), and disc entry (0.08%) (Manchikanti *et al.*, 2012). From the list, transient nerve root irritation and facet joint entry can also be considered as TFESI complications. Botwin *et al.*, conducted a retrospective cohort study to investigate the incidence of fluoroscopy-guided lumbar TFESI in 322 patients. The most common complication was the transient headaches (3.1%) which resolved within 24 h, followed by increased back pain (2.4%), facial flushing (1.2%), and increased leg pain with radicular symptoms (0.6%) (Botwin *et al.*, 2000). This means that patients can experience increased back pain with radicular symptoms that are not accompanied by hematoma. This means that proceduralists should be able to distinguish the origin of the pain.

LBP is a complex condition that is difficult to define. Pain originating from various spinal structures constitutes the majority of chronic pain disease. These pluralism further enhances uncertainty in spinal pain management (Won HS *et al.*, 2020). Among the various structures of the spine, facet joints are considered one of

the most common causes of LBP (Manchikanti *et al.*, 2021). Facet joint pain (FJP) is more common in the older population owing to degeneration, inflammation, and repetitive injury, causing pain with joint movement (Schwarzer *et al.*, 1995). Previous studies regarding pain distribution have shown that the pain originating from the lumbar facet joints is predominantly present in the lower back, buttocks, and thighs. Typically, pain predominantly involves the proximal lower extremities (Sehgal N *et al.*, 2007). However, none of these abnormalities were observed on plain radiographs. The possibility of the meniscus or synovial entrapments causing LBP appears to be hypothetical, as it is challenging to visualize them radiologically (Twomey LT *et al.*, 2007). This means that recognizing complications during procedures is a difficult task.

We can find a theoretical background on the relationship between TFESI and FJP in the space of Okada. The retrodural retroligamentous space of Okada is a potential extradural space located dorsal to the ligamentum flavum in the interlaminar space. It allows communication between contralateral facet joints at the same level, as well as the interspinous ligament and/or interspinous bursae. It has been suggested that fluid within a facet joint may result in an enlarged anterior facet joint recess, which could theoretically be accessed during TFESI. Communication from lumbar facet joints to the retrodural space is less commonly observed and can vary according to facet joint configuration (Christian A *et al.*, 2022). Lumbar spondylotic defects have been shown to communicate with adjacent and contralateral facet joints through the retrodural space of Okada (McCormick *et al.*, 1989). And each lumbar facet joint has a distinct space capable of accommodating 1-1.5 ml of fluid (Won HS *et al.*, 2020). Our patient had anterolisthesis and can explain the complication after TFESI as bilateral facet joint fluid collection. Although this is a relatively uncommon occurrence, proceduralists must be familiar with the appearance of the facet joints and retrodural contrast

flow (Christian A *et al.*, 2022). Study shows that high volumes may be more effective than low volumes in the TFESI (Standiford H *et al.*, 2021). From the point of view of this case, the injection volume should be carefully determined in patients with spondylotic disease.

CONCLUSION

After receiving TFESI, Increasing back pain and radiation pain in a new part can be a complication. This may be due to facet joint fluid collection, particularly in patients with spondylosis. Fluoroscopy-guided aspiration of the facet joint can help to relieve the pain. We are able to improve coping with complications by understanding the types of complications and symptoms associated with lumbar spinal anatomy.

ACKNOWLEDGEMENTS

We would like to thank Editage (www.editage.co.kr) for English language editing.

REFERENCES

- Andrew, C., & Andrew, T. (2020). Complications Associated with Lumbar Transforaminal Epidural Steroid Injections. *Current Pain and Headache Reports*, 24, 67.
- Botwin, K. P., Gruber, R. D., Bouchlas, C. G., Torres-Ramos, F. M., Freeman, T. L., & Slaten, W. K. (2000). Complications of fluoroscopically guided transforaminal lumbar epidural injections. *Arch Phys Med Rehabil*, 81(8), 1045–50.
- Christian, A., Ajay, A., & Felix, E. (2022). Injection into the Space of Okada during Transforaminal Epidural Steroid Injections. *Pain Medicine (OXFORD)*, 23(6), 1066-1074
- Kim, S. I., Lee, D. H., Kim, S. H., & Cho, Y. H. (2019). Spinal epidural hematoma occurring at a distance from the transforaminal epidural injection site: a case report. *Medicine (Baltimore)*, 98, e16654.
- Manchikanti L, Malla Y, Wargo BW, Cash KA, Pampati V, Fellows B. (2012). A prospective evaluation of complications of 10,000 fluoroscopically directed epidural injections. *Pain Physician*, 15(2), 131–40
- Manchikanti, L., Singh, V., Pampati, V., Damron, K. S., Barnhill, R. C., Beyer, C., & Cash, K. A. (2001). Evaluation of the relative contributions of various structures in chronic low back pain. *Pain physician*, 4(4), 308-316.
- McCormick, C. C., Taylor, J. R., & Twomey, L. T. (1989). Facet joint arthrography in lumbar spondylosis: Anatomic basis for spread of contrast medium. *Radiology*, 171(1), 193–6.
- Schwarzer, A. C., Wang, S. C., Bogduk, N., McNaught, P. J., & Laurent, R. (1995). Prevalence and clinical features of lumbar zygapophysial joint pain: a study in an Australian population with chronic low back pain. *Ann Rheum Dis*, 54, 100-6.
- Sehgal, N., Dunbar, E. E., Shah, R. V., & Colson, J. (2007). Systematic review of diagnostic utility of facet (zygapophysial) joint injections in chronic spinal pain: an update. *Pain Physician*, 10, 213-28.
- Standiford, H., Preston, C., & Carl, N. (2021). Transforaminal Epidural Steroid Injections: A Systematic Review and Meta-Analysis of Efficacy and Safety. *Pain Physician*, 24, S209-S232.
- Twomey, L. T. (1992). A rationale for the treatment of back pain and joint pain by manual therapy. *Phys Ther*, 72, 885-92.
- Won, H. S., Yang, M. Y., & KIM, Y. D. (2020). Facet joint injections for management of low back pain: a clinically focused review. *Anesth Pain Med*, 15, 8-18.
- Wong, A. Y., Karppinen, J., & Samartzis, D. (2017). Low back pain in older adults: risk factors, management options and future directions. *Scoliosis Spinal Disord*, 12, 14.