

Hybrid Technique for Caudal Epidural Steroid Injection in Morbid Obese Patient

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Abstract

Incidence of back pain related to disc prolapse is higher in morbid obese patients. Treatment options including epidural injections and surgery is difficult in such patients. Here we are discussing a case of successful Hybrid technique for caudal epidural steroid injection in a morbidly obese patient.

Keywords: Lumbar radiculopathy; Obesity; Fluoroscopy; Ultrasonography; Caudal; Epidural steroid injection.

Key message: Epidural steroid injections are a frequently employed method to treat backpain after conservative approaches are exhausted; however, in obese patients typically requires longer fluoroscopy times and is more technically challenging. Hybrid imaging technique using fluoroscopy and ultrasonography concomitantly help to reduce the difficulties to visualise anatomical structures.

This is a case report in our pain clinic, where we have done a successful caudal epidural steroid injection using combined fluoroscopy and ultrasound hybrid technique in a male patient suffering from lumbosacral radiculopathy pain having a Body mass index of 52, weight 154 kg height 172 cm.

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INTRODUCTION

Low back pain is currently the leading cause of disability worldwide.¹ An increase in pro-inflammatory cytokines produced by hypertrophied adipose tissue is theorized to be partially responsible for the increased prevalence of low back pain in obese patients in addition to increase mechanical stress caused by excess



weight.² Epidural steroid injections are a frequently employed method to treat back pain after alternative conservative approaches are exhausted. However, in obese patients typically requires longer fluoroscopy times and is more technically challenging. Hybrid imaging technique using fluoroscopy and ultrasonography concomitantly help to reduce the difficulty to obtain anatomical structures.

CASE DESCRIPTION

Here we are discussing a case of morbid obese patient who had posted for transforaminal epidural injection for acute S1 radiculopathy. Patient is 32 year old young male weighing around 152 kg height around 172 cm BMI of 52, complaining of low back pain since 4 weeks which was aggravated by standing and walking relieved by rest. On further examination he had lumbar spine axial tenderness over back and his right sided straight leg testing where positive His motor and sensory functions were intact. Provocative tests for other pain generators were negative. MRI reveals S1 nerve root compression due to prolapsed L5/S1 intervertebral disc. Initial conservative management and physiotherapy didn't relieve the pain as expected. Upon discussion epidural steroid injection was planned and was posted for transforaminal epidural injection under local anaesthesia.

On the day of procedure, after connecting standard monitors patient was positioned in prone and draped with full sterile precautions. Initial fluoroscopic images on anterior-posterior view was satisfactory. In lateral view images were blurred due to inadequate penetration. Increasing C-arm exposure level to maximum did not reveal adequate visualisation of the required bony landmarks. The procedure was decided to convert into hybrid caudal epidural technique with help of 5Hz curvilinear ultrasound probe to visualise caudal hiatus. Under ultrasound guidance identification of caudal hiatus confirmed and epidural needle inserted to caudal epidural space. Further advancing needle to lower border S3 under fluoroscopy view Iohexol non-ionic contrast given using 10 cm extension tubing and Christmas tree pattern dye spread till desired root level were confirmed in real time fluoroscopic view. Pre-loaded local anaesthetic steroid mixture injected to the epidural space. Procedure went uneventful and patient was discharged on medications. On follow up patient had very good pain relief.

DISCUSSION

Epidural injections of local anaesthetic agents and corticosteroids are widely used to provide symptomatic relief in patients with low back pain due to lumbar radiculopathy.³ These injections can be approached by trans laminar, transforaminal, and caudal routes. Caudal epidural injection is considered as semi-invasive procedure and allows sufficient proximal spread of medicine Fluoroscopy is most commonly used in interventional spine procedures and is frequently used in confirming the location of tranforaminal and caudal epidural needle.⁴ It has been advocated that caudal epidural needle placement should be confirmed by fluoroscopy alone or by epidurography.⁵



Fig. 1: Fluoroscopic Position And View Anterior-Posterior

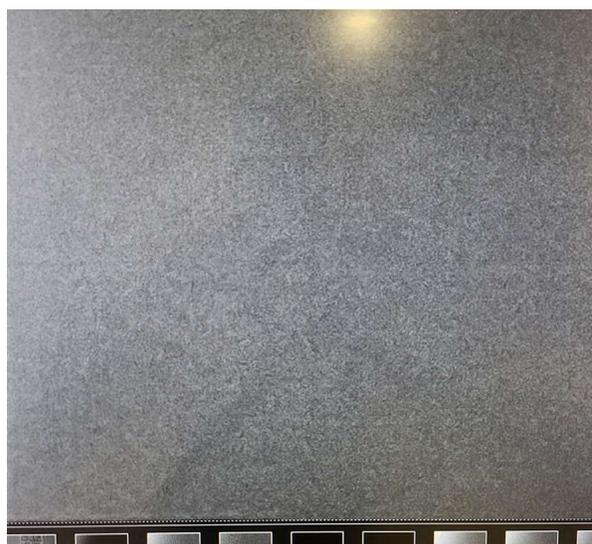


Fig. 2: Fluoroscopic Lateral View - Blurred due to High Body Mass Index

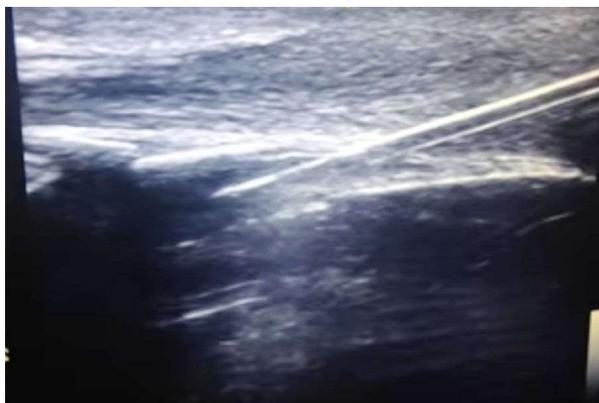


Fig. 3: Ultrasound Guided Epidural Needle Insertion

In this case initial tranforaminal injection attempts were failed because of inadequate visualisation in later view fluoroscopy images because of patient high body mass index. Hence we decided to convert procedure into combined fluoroscopy and ultrasound guided hybrid caudal epidural. With help of high frequency curvilinear ultrasonography probe sacral hiatus was identified and proceeded with caudal epidural.⁶ With fluoroscopy anterior posterior view guidance needle was advanced till lower S3 vertebra and needle position confirmed. Dye spread confirmed and pre made steroid local anaesthetic mixture is given. Perhaps the only disadvantage with ultrasound is the fact that it cannot provide us with the image information as to the depth of the inserted needle. Ultrasound waves cannot penetrate the sacral bone to observe the hyper echoic caudal epidural needle inside the caudal epidural space.⁷



Fig. 4: Fluoroscopy Guided Confirmation of Needle Position and Dye Spread

Therefore, checking for the escape of cerebrospinal fluid for possible Dura tear is critical before steroid injection can be pursued. The combined advantages of the fluoroscopy and ultrasound technique in the hybrid technique is very much useful in morbid obese patients with difficult anatomy for caudal epidural injection.⁸

CONCLUSION

This case report is one of first kind were hybrid technique, combined real time ultrasound and fluoroscopy, method successfully implemented for a morbidly obese patient with difficulty to visualise fluoroscopic images due to high body mass index for performing epidural steroid injection.

REFERENCES

1. Andersson GB. Epidemiological features of chronic low-back pain. *Lancet*. 1999; 354(9178):581-585.
2. Z.L. McCormick, S.C. Choxi, D.T. Lee, *et al*. The impact of body mass index on fluoroscopy time during lumbar epidural steroid; A multicenter cohort study *Pain Med*, 18 (1) (2017), pp. 25-35.
3. Sung MS. Epidural steroid injection for lumbosacral radiculopathy. *Korean J Radiol*. 2006 Apr-Jun; 7(2):77-9. doi: 10.3348/kjr.2006.7.2.77. PMID:16799267; PMCID: PMC2667591.
4. Renfrew DL, Moore TE, Kathol MH, El-Khoury GY, Lemke JH, Walker CW. Correct placement of epidural steroid injections: fluoroscopic guidance and contrast administration. *Am J Neuroradiol*. 1991;12:1003-7.
5. Botwin K, Natalicchio J, Brown LA. Epidurography contrast patterns with fluoroscopic guided lumbar tranforaminal epidural injections: a prospective evaluation. *Pain Physician*. 2004 Apr; 7(2):211-5. PMID: 16868594.
6. Chen CP, Tang SF, Hsu TC, Tsai WC, Liu HP, Chen MJ, *et al*. Ultrasound guidance in caudal epidural needle placement. *Anaesthesiology*. 2004;101:181-4.
7. Huang J. Disadvantages of ultrasound guidance in caudal epidural needle placement. *Anesthesiology*. 2005 Mar; 102(3):693; author reply 693-4. doi: 10.1097/0000542-200503000-00034. PMID: 15731614.
8. Park Y, Lee JH, Park KD, Ahn JK, Park J, Jee H. Ultrasound-guided vs. fluoroscopy-guided caudal epidural steroid injection for the treatment of unilateral lower lumbar radicular pain: a prospective, randomized, single-blind clinical study. *Am J Phys Med Rehabil*. 2013 Jul; 92(7):575-86. doi: 10.1097/PHM.0b013e318292356b. PMID: 23636087.