

Epidural steroid injection warning & safety recommendations

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Editorial

A recent rapid increase in the utilization of epidural steroid injection (ESI) for the treatment of spine pain lead to many negligence claims. This procedure nearly doubled since 2000. In 2012, more than one million claims reported.¹ In the 2000s, chronic pain management involved 18%, acute pain management 9% and obstetric anaesthesia formed 8% of claims, while epidural injections were the most common chronic pain injection.² The Food and Drug Administration (FDA) issued a warning letter in 2014, that ESIs is dangerous and may lead to spinal cord infarction, paralysis, quadriplegia, paraparesis/paraplegia, stroke, bowel/bladder dysfunction, cauda equina syndrome, thrombosis/thromboembolism, sensory disturbances, blindness (transient and possible permanent), seizures, psychological/behavioral changes, sever disability and death.^{3,4} While the FDA does not control medicine but announce warn issues that can affect medicine. In 2009 Rathmell reported complication of ESIs to FDA. According to this report, FDA safety review begun. Issues that have been studied since that time include: label kelong not approval for epidural use, injection is not safe in arachnoiditis, survey of meningitis outbreak due to ESIs, classes and communication about the dangers of injection and ADDPAC (anesthetic and analgesic drug products Advisory Committee) meeting 2014.⁵

With the advancement of pain education, it seems necessary to warn about the use of epidural corticosteroid more and more. We should educate our patients about side effects of the injections at discharge time that in the case of complication refer to emergency department as soon as possible to prevent irreversible neurologic events. Following are safety recommendation that may reduce risks to patients and should facilitate defend physicians from claims:- Remember, this injection is a procedure that must follow the general rules of all procedures. Provide detailed informed consent. Take a careful history. Inform diabetic patients concerning augmented risk of infection in addition the likelihood of hyperglycemia. Raise concerning the utilization of antiplatelet medicine and anticoagulants. Be familiar with contraindications to corticosteroids. Perform physical examination and document preexistent neurologic abnormalities and search for any skin bruising or anatomic variation.⁶

- Algorithmic approach to interventional pain management limited use of ESI to special cases.⁷ So perform the procedure for proper indications. It's typically ineffective for axial or nonspecific low back or neck pain.⁵
- Avoid deep sedation. The deeply insensible patient could become agitated and will move unexpectedly and could not alert us to the fact that we've got the nerve root or cord.⁸⁻¹⁰
- Consider a local anesthetic test dose before steroid injection. Limit the entire local anesthetic to a quantity that's safe if delivered intrathecally.

- Obtain and view MRI scans before the procedure. If there's pre existing canal stenosis and spinal cord compression, the extra pressure created by the volume of drug injected, might end in neurologic injury, considerably if there's some loss of performance.⁶
- Inject contrast under live fluoroscopy after aspiration, then obtain an image to ensure that the dye pattern has not changed. If obtainable, use digital subtraction.¹¹⁻¹³ Inject dye through tiny extension conduit to reduce needle tip movement between dye and steroid injection.⁶
- Check magnetic resonance imaging for the presence of arachnoiditis before the procedure, although it is controversial.^{14,15}
- Consider interlaminar approach, significantly for cervical injections. Epidural needle placement above C6-7 is not suggested.⁶
- There is an increased chance of neurologic injury with transforaminal epidural approach compared to the interlaminar approach.

Use of image-guidance is necessary for performing transforaminal injections. Do not inject through postoperative scar tissue.¹⁵ Transforaminal injections with blunt needles decrease complications.¹⁶⁻¹⁸ In lumbar (L) region use transforaminal injection only under L3. Even under L3 take the needle far from anterior epidural space. In upper L3 prefer to use diagnostic selective nerve root block and radiofrequency of dorsal root ganglion (DRG). Perform intercostals nerve injection instead of selective nerve root injection in thorax. It is not recommended in cervical zone anymore and selective nerve root block and radiofrequency of DRG are substituted,¹⁶⁻²⁰ Pulse radiofrequency and its antiinflammatory impact may be a substitute for steroid.^{21,22}

There is an increased probability of neurologic injury once particulate steroids are used for transforaminal injections. Minimize the number of steroid injections, considering a repeat injection of steroids after minimum of two weeks. Take under consideration use of non-particulate steroids. Although, there's very little proof that soluble steroids have equivalent effectiveness, and early studies indicated that soluble steroid preparations stay within in the spinal canal just for transient periods.^{4,5,15,23–25} Local anesthetic could also be as effective as either particulate or non-particulate steroids.¹⁵ Particles larger than twenty microns in a solution additionally will increase the probability of vascular occlusion, mix steroids with caution, particularly with lidocaine. If the drug combination is necessary, be injected immediately.²⁶

What is clear is that if complications occur it would be devastating. Doctors skills is important, especially because many of these doctors have not completed the pain fellowship training. Physician may be a candidate for the injections should be approved by the Medical Council for scientific and practical qualifications. Epidural and transforaminal steroid injections is in the scope of pain specialists, and should be complete by the people who are active (not essentially exclusively) in the field of pain.

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Conflicts of interest

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References

- Bateman BT, Brenner GJ. Important Step Forward in the Safe Use of Epidural Steroid Injections. *Anesthesiology*. 2015;122(5):964–966.
- Metzner J, Posner KL, Lam MS, et al. Closed claims' analysis. *Best Pract Res Clin Anaesthesiol*. 2011;25(2):263–276.
- Manchikanti L, Candido KD, Singh V, et al. Epidural steroid warning controversy still dogging FDA. *Pain Physician*. 2014;17(4):E451–E474.
- Rathmell JP, Benzon HT, Dreyfuss P, et al. Safeguards to prevent neurologic complications after epidural steroid injections: Consensus opinions from a multidisciplinary working group and national organizations. *Anesthesiology*. 2015;122(5):974–984.
- Food and Drug Administration, Drug Safety Communications: FDA Drug Safety Communication: FDA requires label changes to warn of rare but serious neurologic problems after epidural corticosteroid injections for pain.
- Abram S. The Safe Use Of Epidural Steroid Injections, American Patient Safety Foundation Newsletter, Spring Edition. 2004.
- Boswell MV, Trescot AM, Datta S, et al. Interventional Techniques: Evidence-based Practice Guidelines in the Management of Chronic Spinal Pain. *Pain Physician*. 2007;10(1):117–111.
- Hodges SD, Castleberg RL, Miller T, et al. Cervical epidural steroid injection with intrinsic spinal cord damage. Two case reports. *Spine (Phila Pa 1976)*. 1998;23(19):2137–2142.
- Tripathi M, Nath SS, Gupta RK. Paraplegia after intracord injection during attempted epidural steroid injection in an awake-patient. *Anesth Analg*. 2005;101(4):1209–1211.
- Simon SL, Abrahams JM, Sean Grady M, et al. Intramedullary injection of contrast into the cervical spinal cord during cervical myelography: a case report. *Spine (Phila Pa 1976)*. 2002;27(10):E274–E277.
- McLean JP, Sigler JD, Plastaras CT, et al. The rate of detection of intravascular injection in cervical transforaminal epidural steroid injections with and without digital subtraction angiography. *PMR*. 2009;1(7):636–642.
- Hong JH, Kim SY, Huh B, et al. Analysis of inadvertent intradiscal and intravascular injection during lumbar transforaminal epidural steroid injections: A prospective study. *Reg Anesth Pain Med*. 2013;38(6):520–525.
- Lee MH, Yang KS, Kim YH, et al. Accuracy of live fluoroscopy to detect intravascular injection during lumbar transforaminal epidural injections. *Korean J Pain*. 2010;23(1):18–23.
- Na EH, Han SJ, Kim MH. Delayed occurrence of spinal arachnoiditis following a caudal block. *J Spinal Cord Med*. 2011;34(6):616–619.
- Manchikanti L, Falco FJ. Safeguards to Prevent Neurologic Complications after Epidural Steroid Injections: Analysis of Evidence and Lack of Applicability of Controversial Policies. *Pain Physician*. 2015;18(2):E129–E138.
- Van Boxem K, Cheng J, Patijn J, et al. Lumbosacral Radicular Pain. *Pain Practice*. 2010;10(4):339–358.
- Van Zundert J, Huntoon M, Patijn J, et al. Cervical Radicular Pain. *Pain Practice*. 2010;10(1):1–17.
- van Kleef M, Stolker RJ, Lataster A, et al. Thoracic Pain. *Pain Practice*. 2010;10(4):327–338.
- Gharaei H, Whizar lugo V. Perineural Interventional Pain Management Techniques for Chronic Thoracic Pain Syndrome. *J Anesth Crit Care: Open Access*. 2015;2 (2):1–9.
- Gharaei H. Transforaminal epidural block. *Anaesth Pain & Intensive Care*. 2013;17(3):223–224.
- Imani F, Gharaei H, Rezvani M. Pulsed Radiofrequency of Lumbar Dorsal Root Ganglion for Chronic Postamputation Phantom Pain. *Anesth Pain Med*. 2012;1(3):194–197.
- Rosenthal RM. Use of Pulsed Radiofrequency in Clinical Practice. 2009.
- Park CH, Lee SH, Kim BI. Comparison of the effectiveness of lumbar transforaminal epidural injection with particulate and nonparticulate corticosteroids in lumbar radiating pain. *Pain Med*. 2010;11(11):1654–1658.
- El-Yahchouchi C, Geske JR, Carter RE, et al. The noninferiority of the nonparticulate steroid dexamethasone and triamcinolone in lumbar transforaminal epidural steroid injections. *Pain Med*. 2013;14(11):1650–1657.
- Kennedy DJ, Plastaras C, Casey E, et al. Comparative effectiveness of lumbar transforaminal epidural steroid injections with particulate versus nonparticulate corticosteroids for lumbar radicular pain due to intervertebral disc herniation: A prospective, randomized, double-blind trial. *Pain Med*. 2014;15(4):548–555.
- Francis BA, Chang EL, Haik BG. Particle size and drug interactions of injectable corticosteroids used in ophthalmic practice. *Ophthalmology*. 1996;103(11):1884–1888.