



Providing Choice & Value
Generic CT and MRI Contrast Agents

**FRESENIUS
KABI**

CONTACT REP

AJNR

CT-Guided Caudal Epidural Infiltrations: A Technical Note

J. Gossner

AJNR Am J Neuroradiol published online 3 June 2021

<http://www.ajnr.org/content/early/2021/06/03/ajnr.A7178>

This information is current as
of July 16, 2025.

CT-Guided Caudal Epidural Infiltrations: A Technical Note

Low back pain is a global health problem, and image-guided spinal injections are a major workload for interventional radiologists and neuroradiologists. Epidural injections are frequently performed for sciatica caused by disc herniations and spinal stenosis. There are 3 major access routes for epidural administration of medication: transforaminal, interlaminar, and caudal. In a study comparing these 3 techniques, similar efficacy was observed from each method.¹ This observation makes sense from an anatomic point of view, because the epidural space is a continuous space with an observable free spread of injected medication.² We usually prefer the intralaminar access for epidural injections in our department; however, there are cases when the intralaminar approach is not feasible, such as in patients who have had extensive spinal surgery, patients who have massive osteophytic changes, or when caudal sacral nerve roots should be infiltrated. In these cases, caudal epidural infiltrations are a possible alternative.

Because the previously described landmarked-based, blind technique in adults results in a high number of incorrect needle placements (more than 25% of cases), image guidance with fluoroscopy or sonography has been advocated.³ Interestingly, to the best of our knowledge, guidance with CT has not been described in the literature. CT guidance for caudal epidural infiltrations is easy to perform and offers the best anatomic overview of needle placement, as well as epidural contrast spread. It may be of value if fluoroscopy or sonography are either unavailable or the performing physician is unfamiliar with these imaging modalities. As with other spinal interventions, the usual precautions regarding anticoagulant treatment should be regarded. For a CT-guided caudal epidural infiltration, the patient is in the prone position. A short scan of the caudal sacral bone is performed. The access to the epidural space is at the sacral hiatus, which is formed by the sacral cornua. At this height, the sacral canal consists of epidural space only,

and the thecal sac ends more cranially.³ After sterile draping and subcutaneous local anesthesia, the puncture needle is placed under the sacrococcygeal ligament into the opening of the sacral channel. A small amount of contrast media is administered to ensure the right needle placement (Figure). After confirmation of the correct spread of the contrast media, the medication (usually a mixture of local anesthetics and a glucocorticoid) is injected. We use a mixture of 8 mL of mepivacaine and 2 mL of dexamethasone. After removal of the needle, the patient is observed for at least 45 minutes and should be discharged with intact motor function only.

Thus, caudal epidural infiltrations can be performed easily with CT guidance and offer an alternative access to the epidural space for the interventional radiologist performing spinal pain management.

REFERENCES

1. Manchikanti L, Singh V, Pampati V, et al. **Comparison of the efficacy of caudal, interlaminar, and transforaminal epidural injections in managing lumbar disc herniation: is one method superior to the other?** *Korean J Pain* 2015;28:11–21 [CrossRef](#) [Medline](#)
2. Paisley K, Jeffries J, Monroe M, et al. **Dispersal patterns of injectate after lumbar interlaminar epidural spinal injections evaluated with computerized tomography.** *Global Spine J* 2012;2:27–32 [CrossRef](#) [Medline](#)
3. Kao SC, Lin CS. **Caudal epidural blocks: an updated review of anatomy and techniques.** *Biomed Res Int* 2017;2017:1–5 [CrossRef](#) [Medline](#)

 J. Gossner

Department of Diagnostic and Interventional Radiology
Evangelisches Krankenhaus Göttingen-Weende
Göttingen, Germany

<http://dx.doi.org/10.3174/ajnr.A7178>



FIGURE. Images of a CT-guided caudal epidural infiltration. The anatomic landmarks of sacral hiatus are shown on sagittal (A) and axial (B) CT images. The needle is placed epidurally at the sacral hiatus (C). After the application of contrast media, the correct epidural spread can be observed (D).