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Case Report

# Successful percutaneous management of symptomatic central posterior epidural Baastrup cyst: a potential surgical sparing option?

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**Abstract**

**BACKGROUND CONTEXT:** Neurogenic claudication from posterior epidural extension of a Baastrup interspinous bursal cyst is rare. Surgical decompression is the gold standard of treatment. This case report describes successful percutaneous treatment with good early clinicoradiological outcome.
**PURPOSE:** This study aimed to describe the successful percutaneous treatment of a central posterior epidural Baastrup cyst causing neurogenic claudication.
**STUDY DESIGN:** This is a case report study.
**METHODS:** A 62-year-old man presented with neurogenic claudication on a background of previous lymphoma treated with chemotherapy, chronic obstructive pulmonary disease, chronic venous insufficiency, and obesity. Conservative therapy with narcotic analgesia had failed, with new requirement of a walking aid and marked reduction in walking distance. Magnetic resonance imaging confirmed severe L3–L4 canal stenosis from central posterior epidural extension of a Baastrup interspinous bursal cyst. Under conscious sedation, initial percutaneous computed tomography (CT)-guided interspinous bursography indirectly opacified the cyst and facilitated trans-laminar direct needle access to the epidural cyst. Aspiration was performed before needle fenestration and epidural steroid injection.
**RESULTS:** Six-week review revealed significant improvement in pain and mobility, with no analgesic or walking aid requirement, and restoration of the patient's baseline walking distance. At 3 months, repeat magnetic resonance imaging (MRI) confirmed significant reduction in cyst size as the mediator of the treatment effect. Improvement in back and leg symptoms was durable at 24-month follow-up.
**CONCLUSIONS:** In selected cases, percutaneous treatment of symptomatic central posterior epidural cysts as part of Baastrup phenomena may be feasible. This treatment approach avoided general anesthesia, avoided the procedural risks of surgical decompression, and was performed in the outpatient setting, with good early clinicoradiological outcome. This may emerge to be a surgical sparing option or an alternate to continuing conservative therapy in patients who are poor surgical candidates. 

*Keywords:* Baastrup; spinal cyst; neurogenic claudication; spinal stenosis; epidural mass; epidural injection

FDA device/drug status: Not applicable.

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## Introduction

Baastrup phenomena resulting in sclerosis of adjacent spinous processes are age-related degenerative changes [1]. Interspinous bursal formation is considered less common (<10%) [2] and posterior epidural extension of the interspinous bursal cyst is rare (<1%) [3]. Occasionally, patients present with symptomatic canal stenosis and require surgical decompression [3]. We report successful percutaneous treatment of a symptomatic posterior epidural Baastrup cyst with good early clinicoradiological outcome.

## Case report

A 62-year-old man presented with neurogenic claudication on a background of previous lymphoma treated with chemotherapy, chronic obstructive pulmonary disease, chronic venous insufficiency, and obesity. Magnetic resonance imaging confirmed severe L3–L4 canal stenosis from central posterior epidural extension of an interspinous bursal cyst (Fig. 1, Left). No instability was evident on flexion-extension radiographs. Conservative therapy with narcotic analgesia had failed. His numeric back and leg pain rating score was >5 of 10 with reduction in walking distance to less than one block, and new requirement of a walking aid. Surgery was considered; however, there were factors elevating the surgical risks: American Society of Anesthesiologists Physical Status Class 3 and obesity. We thus performed a minimally invasive image-guided percutaneous procedure with the aim of avoiding or delaying surgical decompression.

## Procedure

The patient was placed prone on the computed tomography (CT) table. The margins of the cyst were not confidently identified on a non-contrast lumbar CT (Fig. 2A). Under conscious sedation, a 22-gauge needle was introduced into the L3–L4 interspinous bursa. Computed tomography interspinous bursography indirectly opacified the epidural cyst (Fig. 2B); there was no connection with the facet joint. Via a trans-laminar approach, a 22-gauge needle was introduced into the cyst (Fig. 2C and D). Initial aspiration yielded little aspirate with no change in cyst size. Thus, multiple needle fenestrations were performed before injection of 1 mL of 1% lidocaine and 5.7 mg of betamethasone into the epidural space. Lower limb neurologic assessment was performed during and after the procedure. No complications occurred.

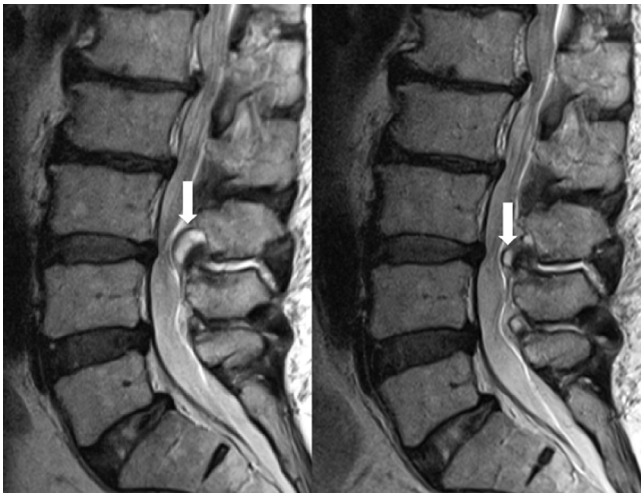

Fig. 1. (Left) T2-weighted sagittal magnetic resonance imaging (MRI) demonstrates the interspinous bursal cyst at L3–L4 and the central posterior epidural cyst (arrow). (Right) T2-weighted sagittal MRI 3 months post treatment shows significant reduction in cyst size (arrow).

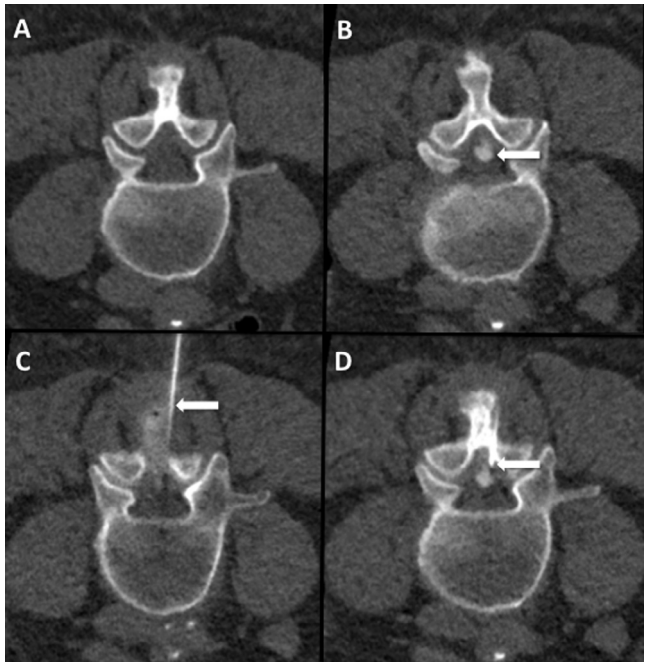


Fig. 2. (A) Non-contrast axial computed tomography (CT) fails to demonstrate the posterior epidural cyst. (B) Intra-procedural axial CT demonstrates indirect opacification of the cyst (arrow) after contrast injection into the interspinous bursa. (C and D) Contiguous intra-procedural axial CT images demonstrate the oblique trans-laminar needle (arrows) approach to the central posterior epidural cyst.

## Results

Six-week review revealed significant improvement in pain and mobility. His pain score was 0 of 10 with no analgesic or walking aid requirement, and his baseline walking distance was restored. At 3 months, magnetic resonance imaging revealed significant reduction in cyst size (Fig. 1, Right) and mild canal stenosis. Improvement in back and leg symptoms was durable at 24-month follow-up.

## Discussion

Symptomatic central posterior epidural cysts as part of Baastrup phenomena are rare and distinct to the common symptomatic juxtafacet joint cyst. Less than 20 cases have been reported [3–5]. All were treated either conservatively

or with surgical decompression; no patients have been treated using percutaneous techniques. We report a case of successful percutaneous treatment with good early clinicoradiological outcome. This is important because in selected cases this may be a surgical sparing option, or an alternate to conservative therapy in patients who are poor surgical candidates.

Surgical decompression is the standard of care and resulted in clinical improvement in four of seven patients with outcome data reported; duration of follow-up or durability in positive treatment response was not reported [3,5]. Because surgery results in removal of the cyst, which is presumably the mediator of the treatment response, our aim was to mechanically reduce cyst size. When needle aspiration yielded little change, we performed multiple needle fenestrations to decompress the cyst into the posterior epidural space. Because this could result in subsequent local pain or inflammatory response, lidocaine and betamethasone were also injected.

Previous descriptions have used contrast bursography to confirm the diagnosis of posterior epidural extension of an interspinous bursal cyst [3]. Such extension through the ligamentum flavum has been confirmed with an operative probe [4]. Using this experience, CT interspinous bursography indirectly opacified the cyst and demarcated anatomical boundaries. This guided needle access and helped avoid inadvertent thecal sac injury and cerebrospinal fluid leak.

Advantages of this percutaneous approach include avoidance of general anesthesia, avoidance of the risks of surgical decompression, reduced procedural time, and ability to treat in the outpatient setting. Intravenous sedation and analgesia was adequate for patient comfort and facilitated lower limb neurologic monitoring. Moreover, procedural time was <45 minutes, and the patient was discharged after 90 minutes. Limitations include the single patient report and limited follow-up with unknown long-term durability. However, our percutaneous treatment has been durable to 24 months to date with satisfactory patient outcome.

## Conclusion

In selected cases, percutaneous treatment of symptomatic central posterior epidural cysts as part of Baastrup phenomena may be feasible. This may avoid general anesthesia, avoid the procedural risks of surgical decompression, and could be performed in the outpatient setting. With increasing experience, this may be a viable cost-effective surgical sparing option or an alternate to continuing conservative therapy in patients who are poor surgical candidates.

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