



## Case Report

# Symptomatic lumbar Tarlov cyst resolution after computed tomography-guided percutaneous trans-sacral fibrin glue intracystic injection: A case report and literature review

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## ABSTRACT

**Background:** Perineural Tarlov cysts are extrathecal cerebrospinal fluid-filled cavities in the perineural recesses around dorsal spinal nerve roots. They are mostly asymptomatic but may occasionally cause back pain, radiculopathy, neurological deficits, and idiopathic intracranial hypotension.

**Case Description:** A 40-year-old female presented with a partial left foot drop attributed to a symptomatic L5 Tarlov cyst with an extension anterior to the sacrum. Following a computed tomography (CT)-guided percutaneous trans-sacral fibrin glue intracystic injection, the cyst was markedly reduced in size, and the patient's symptoms resolved.

**Conclusion:** Rarely, patients may present with symptomatic lumbar Tarlov cysts located anterior to the sacrum. Here, we present a patient whose left-sided foot drop resolved following the percutaneous trans-sacral CT-guided L5 intracyst injection of fibrin glue.

**Keywords:** Computed tomography-guided (CT-guided), Percutaneous, Tarlov cyst, Radicular pain, Fibrin glue

## INTRODUCTION

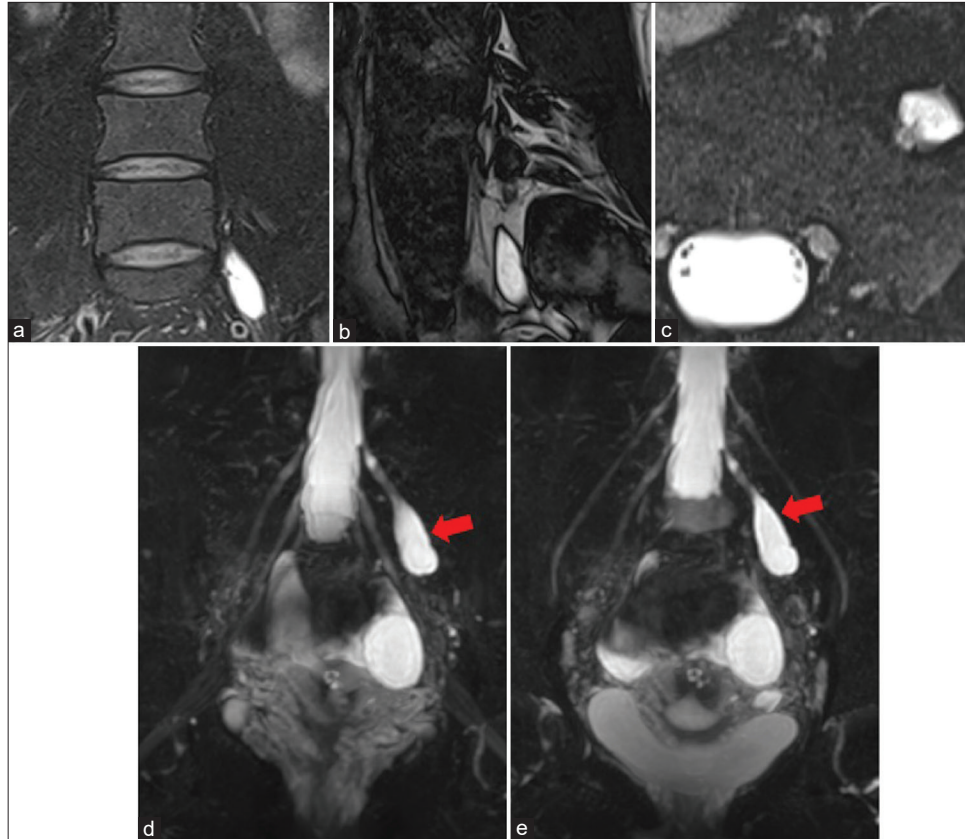
A 40-year-old female presented with a left L5 partial foot drop attributed to a L5 Tarlov cyst extending anterior to the sacrum. Following computed tomography (CT)-guided percutaneous trans-sacral fibrin glue intracystic injection, the cyst was markedly reduced in size, and the patient's symptoms resolved.

## CASE DESCRIPTION

A 40-year-old female presented with a left partial foot drop for a 2-year duration. The contrast-enhanced magnetic resonance imaging (MRI) showed a small left L5 peri-radicular cyst that extended into the extraforaminal space and presacral region [Figure 1]. A posterior extraforaminal

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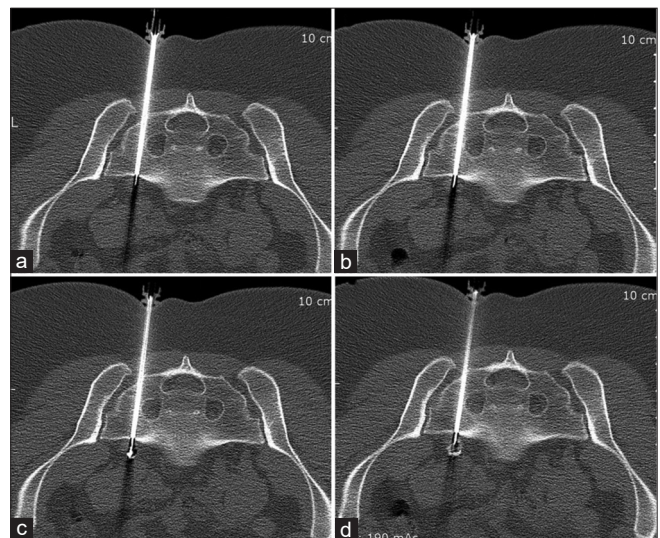


**Figure 1:** Coronal (a), sagittal (b), and axial (c) views showing the perineural cyst and its relationship with the neighboring structures; (d and e) magnetic resonance imaging with fiber-tracking sequences displaying a small left L5 peri-radicular cyst at filled with cerebrospinal fluid and thus in communication with the subarachnoid space (red arrows). This finding confirms the diagnosis of the Tarlov cyst.

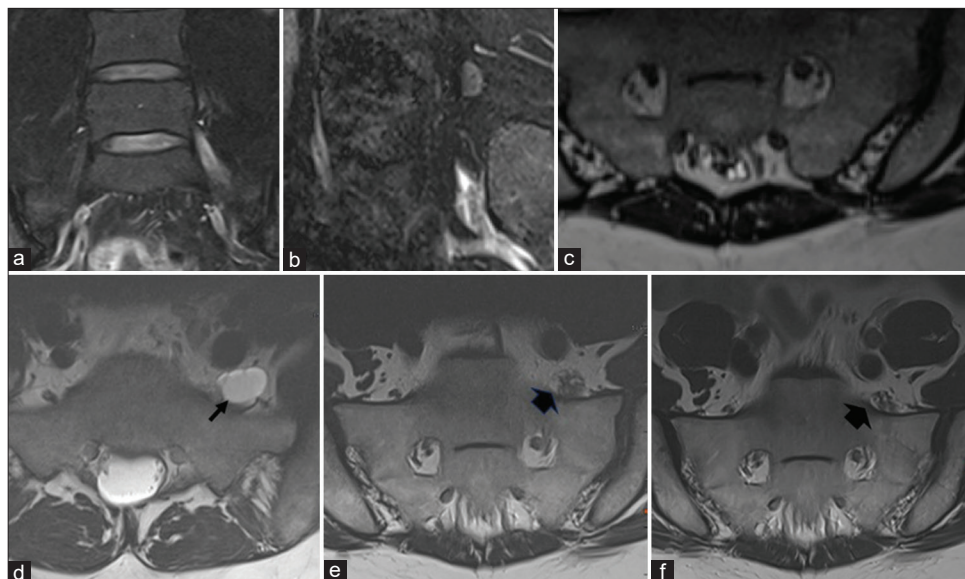
epidural steroid injection afforded pain reduction from 8 to 3 on the visual analog scale (VAS) scale and resulted in a slight restoration of the foot drop. A first attempt at fibrin glue injection through a percutaneous abdominopelvic approach failed. However, the secondary percutaneous CT-guided trans-sacral approach that required drilling of the sacrum under local anesthesia for the placement of fibrin glue into the Tarlov cyst succeeded (i.e., 1.5 mL of fibrin glue injected through a 20-gauge needle) [Figures 2a-d]. Post-procedure, the patient's symptoms resolved (i.e., pain decreased to 0 on the VAS scale and the foot drop resolved). The MRI 2 months later showed complete resolution of the pre-sacral component of the cyst and was accompanied by further reduction of nerve root compression from the cyst (i.e., reduced from 18 to 12 mm) [Figures 3a-c]. After nine months, the patient was asymptomatic, and the MRI showed complete resolution of the Tarlov cyst [Figures 3d-f].

## DISCUSSION

Minimally invasive percutaneous techniques utilized to treat TC may include cyst aspiration or two-needle-aspiration and fibrin glue injection under CT guidance.<sup>[1-3]</sup> Myelography is



**Figure 2:** Percutaneous trans-sacral approach: (a and b) After the drilling of the sacrum, two needles were advanced into the cyst; (c) the edge of the cyst was opacified with iodinated contrast agent until its extravasation; and (d) confirming the lack of significant subarachnoid connectivity.



**Figure 3:** (a-c) A 2-month post-procedure magnetic resonance imaging (MRI) displaying a complete resolution of the pre-sacral component of the cyst and a size reduction of the nerve root and the cyst passing from 18 to 12 mm. Coronal (a) and sagittal (b) and axial (c) views; (d-f) comparison between T2-weighted MRI, axial sequences, (d) before the procedure, (e) at two months follow-up and (f) at nine months follow-up. (d) The L5 peri-radicular cyst extending from the preforaminal recessal level to the presacral region is shown before the procedure (black arrow); (e) MRI at two months follows, showing the complete resolution of the pre-sacral component of the cyst and a size reduction of the nerve root (black arrowhead); (f) 9 months follow-up: the MRI showed the complete disappearance of Tarlov's cyst with L5 G root remaining thickened without edematous suffering (black arrowhead).

**Table 1:** A literature review of percutaneous management with fibrin glue injection of symptomatic Tarlov cysts.

Author (Ref), year, Journal	No. of patients	Location	Symptoms and neurological deficit	MR findings	Treatment	Conclusion
Patel <i>et al.</i> , <sup>[5]</sup> AJR, 1997	4	-S1-S5: 1 cyst -S1-S2: 1 cysts -S2-S3: 2 cysts	PP VV Discomfort GU-U	PS Perineural Cysts	CT Percut FGI	CT Percut FGI is useful for TC after a failed cyst aspiration
Zhang <i>et al.</i> , <sup>[9]</sup> JNS 2007	31	LSR	infl MA and MW Numb in SR and infls GU-U	PS Perineural cysts	CT Percut aspiration FGI: 15 patients CT Percut FGI: 16 patients	FGI is an effective Trt also without aspiration.
Shao <i>et al.</i> , <sup>[7]</sup> AJNR, 2011	38	L5-S1: 9 cyst S1-S2: 12 cyst S2-S3: 15 cyst L5-S2: 2 cysts	PP VV GU-U BI MA MW	PS Perineural cysts	CT Percut aspiration and FGI	CT Percut FGI is effective for SAC and TC
Jiang <i>et al.</i> , <sup>[11]</sup> Plos one, 2015	42	L5-S1: 5 pt S1-S2: 21 pt S2-S3: 17 pt	infls MA and MW Numb in SR and infls BBD	PS Perineural cysts	C-Arm Percut FGI	C-Arm Percut FGI is effective for Trt of PS TC

(Contd...)

**Table 1:** (Continued).

Author (Ref), year, Journal	No. of patients	Location	Symptoms and neurological deficit	MR findings	Treatment	Conclusion
Murphy <i>et al.</i> , <sup>[4]</sup> AJNR, 2016	213	L4: 1 cyst L5: 1 cyst S1: 16 cysts S2: 142 cysts S3: 120 cysts S4–S5: 9 cysts	VV PP BBD SD PFW PDW RSD	-USR: 113 cysts -BSR: 78 cysts -BRs: 22 cysts	CT Percut aspiration and FGI	AIT is safe and effective for Trt of TC

Pt: Patients, Percut: Percutaneous, FGI: Fibrin glue injection, PP: Pelvic pain, VV: Vesical and vaginal discomfort, GU-U: Urological incontinence/urgency, PS: Posterior sacral, Trt: Treatment, TC: Tarlov cyst, MA: Muscle atrophy, MW: Muscle weakness, LSR: Lumbosacral region, Numb: Numbness, infls: Inferior limbs, SR: Saddle region, BI: Bowel incontinence, SAC: Sacral arachnoid cysts, BBD: Bladder and bowel dysfunction, SD: Sexual dysfunction, PFW: Plantar flexion weakness, PDW: Plantar dorsiflexion weakness, RSD: Rectal sphincter dysfunction, USR: Unilateral single root, BSR: Bilateral single root, BRs: Bilateral roots, AIT: Aspiration-injection technique, CT: Computer tomography

essential to evaluate the subarachnoid connections with TC to distinguish these from intradural ectasias, subarachnoid cysts, and meningeal diverticula; specifically, myelo-CT studies must rule out significant communication between the cyst and the subarachnoid space.<sup>[6,8]</sup> In our case, both the contrast-enhanced MRI and intra-procedural injection of iodinated contrast documented the absence of any wide communication between the cyst and the subarachnoid space. Murphy *et al.*, in the largest cohort study in which fibrin sealant was injected into Tarlov sacral cysts, found a 16.9% incidence of symptom recurrence and fluid re-accumulation on MR within six post-procedural months<sup>[4]</sup> [Table 1]. In our case, the posterior percutaneous trans-sacral approach for fibrin glue intracystic injection under CT guidance was effective.

## CONCLUSION

A 40-year-old female presented with the 2-year onset of a partial left foot drop attributed to an MR-documented L5 Tarlov cyst extending anterior to the sacrum. Following a CT-guided percutaneous trans-sacral fibrin glue intracystic injection, the cyst largely resolved, and the patient became asymptomatic.

## Ethical approval

The Institutional Review Board approval is not required.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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## Conflicts of interest

There are no conflicts of interest.

## Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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