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# Symptomatic Tarlov Cyst: A Rare Case Report and Its Management

**Peer review status:**

Yes

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# Symptomatic Tarlov Cyst: A Rare Case Report and Its Management

**Author(s):** Salgotra, Kishore, Calcuttawala MA, Kania H

## Abstract

Perineural (Tarlov) cysts are meningeal dilatations of the posterior spinal nerve root sheath that most often affect sacral roots and can cause a progressive painful radiculopathy. Tarlov cysts are most commonly diagnosed by lumbosacral magnetic resonance imaging and can often be demonstrated by computerized tomography to communicate with the spinal subarachnoid space. The cyst can enlarge via a net inflow of cerebrospinal fluid, eventually causing symptoms by distorting, compressing, or stretching adjacent nerve roots. It is generally agreed that asymptomatic Tarlov cysts do not require treatment. When symptomatic, the potential surgery-related benefit and the specific surgical intervention remain controversial. We report a case of symptomatic Tarlov cyst, its clinical presentation, treatment, and results of surgical cyst fenestration, partial cyst wall resection, and closure in a case of a symptomatic sacral Tarlov cyst.

## Introduction

Tarlov cysts were first described in 1938 as an incidental finding at autopsy<sup>1</sup> Tarlov described a case of symptomatic perineural cyst and recommended its removal. Since then a few cases have been reported in the literature.<sup>2-4</sup>

Paulsen reported the incidence of Tarlov cysts as 4.6% in back pain patients (n=500). Only 1% of back pain patients (n=500) were symptomatic<sup>4</sup> The patient may present as low back pain, sciatica, coccydynia or cauda equina syndrome. The cysts are usually diagnosed on MRI, which reveals the lesion arising from the sacral nerve root near the dorsal root ganglion<sup>5</sup>

Tarlov advised extensive surgery with sacral laminectomy and excision of the cyst along with the nerve root<sup>6</sup> Paulsen reported CT-guided percutaneous aspiration of these perineural cysts for relief of sciatica<sup>4</sup> Recently, microsurgical excision of the cyst has been advocated, combined with duroplasty or plication of the cyst wall<sup>7</sup>

We report a case of symptomatic Tarlov cyst presenting as back pain, to increase the awareness of this rare entity in the neurosurgical and orthopedic community

## Case Report

A 47-year-old man presented with a 1-year history of progressive, intractable pain and numbness as well as dysesthesias of left leg. Pain aggravated on walking. At the time, he was becoming increasingly incapacitated, although he was still able to work. He rated his pain as 8 of 10 possible points on a visual analog scale. Pain was rapidly relieved in recumbent position. He had no bowel or bladder dysfunction, and sensation for urination and defecation was normal. The pain was not associated with specific time, posture and it used to get relieved by non steroidal antiinflammatory drugs (NSAID). For last three months, the intensity and duration of pain had increased, which was now unrelieved by taking NSAID. The pain had progressed to the lower back and bilateral upper thigh up to the ankle. The pain was aggravated by activity and prolonged standing and was more bothersome in the evening. On physical examination, a grade of 4/5 strength was demonstrated in left lower limb. Other all limbs had 5/5 strength. Heel and toe walking and knee bends were well performed. Sensory examination showed diminished sensory perception to pinprick on the soles of his feet and in S1 distribution. There was no sensory deficit over the perineum. Anal sphincter tone and constriction were normal. Knee jerks were normal. Left ankle jerk was grade +.

Examination showed no spinal tenderness. Straight leg raising was 30° on the left side and normal on the right side. There was mild blunting of sensations along the S1 dermatome on the left side, no motor deficit in both lower limbs.

Preoperative MR imaging (Fig 1) demonstrated a large sacral cyst arising within the thecal sac at S-1, of around 3\*2\*2cm with expansion of the osseous sacral central canal and enlargement of L-5 and S-1 neural foramina causing compression of all adjacent nerve roots. The cyst did not fill with contrast material and appeared to have no communication with the spinal subarachnoid space. X-ray of the lumbosacral spine did not reveal any abnormality

Fig 1: MRI Lumbosacral Spine shows Tarlov's Cyst at T5-S1 level.

## OPERATION:

To relieve progressively incapacitating symptoms, surgery was recommended. After sacral laminectomy, microsurgical cyst fenestration was performed. Briefly, after exposure of the L5-S1 sacral nerve roots, a large cyst was identified at S1 level of cord. The thin transparent cyst wall membrane was widely fenestrated with a scalpel and microscissors. Clear fluid contents of the cyst drained spontaneously. The posterolateral wall of the cyst was resected after electrical stimulation verified that no motor nerve fibers were present. Fibrin glue was then applied to fill the cyst cavity. To prevent cyst recurrence or CSF leakage, Although the cyst wall specimen was sent to the laboratory for pathological examination, its volume was inadequate to determine whether nerve root fibers were present.

Fig 2 A,B- Intraoperative photograph of excision of Tarlov's cyst.

## Discussion

Tarlov cysts are rare causes of low back pain. They are more common in females<sup>4,7</sup> Clinical presentation of Tarlov cysts is variable. The cysts may cause local and/or radicular pain. The dominant syndrome is referable to the caudal nerve roots, either sciatica, sacral or buttocks pain, vaginal or penile paraesthesia or sensory changes over the buttocks, perineal area and lower extremity. Depending on their location, size and relationship to the nerve roots, they may cause sensory disturbances or motor deficits to the point of bladder dysfunction. Tenderness on firm pressure over the sacrum may be present. Commonly, the symptomatology is intermittent at its onset and is most frequently exacerbated by standing, walking and coughing. Bed rest alleviates the discomfort<sup>8</sup>

Plain X-rays are usually normal. However, they may reveal characteristic bone erosion of the spinal canal or anterior or posterior neural foramina<sup>9</sup> A CT scan can demonstrate cystic masses isodense with CSF located at the foramina. Bony changes may also be present<sup>10</sup> An MRI gives a much better soft tissue contrast and is currently the investigation of choice for perineural cysts. The cysts demonstrate low signal on T-1 weighted images and high signal on T-2 weighted images, similar to CSF<sup>5</sup> Myelography showing the filling of the meningocele sac 1h after injection of

contrast medium is highly suggestive of a perineural cyst<sup>11</sup>

Microscopic features of the cyst were described by Tarlov. The early stage in cyst formation is that of a space between the arachnoid which covers the root or the perineurium and the outer layer of the pia cover of the root or the endoneurium. It usually begins in one portion of the circumference of the perineural space, the larger cysts compressing the nerve root to one side. The cyst occupies the posterior root abutting the proximal portion of the dorsal ganglion. Its main part is bordered by reticulum or by nerve fibers<sup>1</sup>

The pathogenesis of perineural cysts is uncertain. Tarlov felt that hemorrhage into the subarachnoid space caused accumulations of red cells which impeded the drainage of the veins in the perineurium and epineurium, leading to rupture with subsequent cyst formation. Four out of the seven patients in Tarlov's 1970 article had a history of trauma<sup>8</sup> Schreiber and Haddad also supported this posttraumatic cause of cyst formation<sup>12</sup> Because many of the patients with perineural cyst in their series did not have histories of trauma, Fortuna et al. believed that the perineural cysts were congenital, caused by arachnoidal proliferations within the root sleeve<sup>13</sup>

There is no consensus on a single method of treatment. Various methods have been advocated. Tarlov advised that symptomatic, single perineural cysts should be completely excised together with the posterior root and ganglion from which they arise<sup>8</sup> Paulsen reported CT-guided percutaneous aspiration of these perineural cysts in two patients for the relief of sciatica caused by compression<sup>4</sup> According to Caspar microsurgical excision of the cyst combined with duroplasty or plication of the cyst wall is an effective and safe treatment of symptomatic sacral cysts. The parent nerve root is always left intact<sup>7</sup>

Tarlov cysts are a documented cause of sacral radiculopathy and other radicular pain syndromes. They must be considered in the differential diagnosis of patients presenting with these clinical presentations and appropriately treated by cyst excision

## Conclusion

Patient appreciated relief of pain immediately after the surgery. Postoperative period was uneventful and the patient made prompt recovery. On nine months followup, the patient had no pain in lower limbs and back. The patient is back at his job and is asymptomatic. Postoperative MRI taken at nine month

did not show any evidence of recurrence of the cyst. Tarlov cyst are well treatable entity and significant symptomatic relief is achievable

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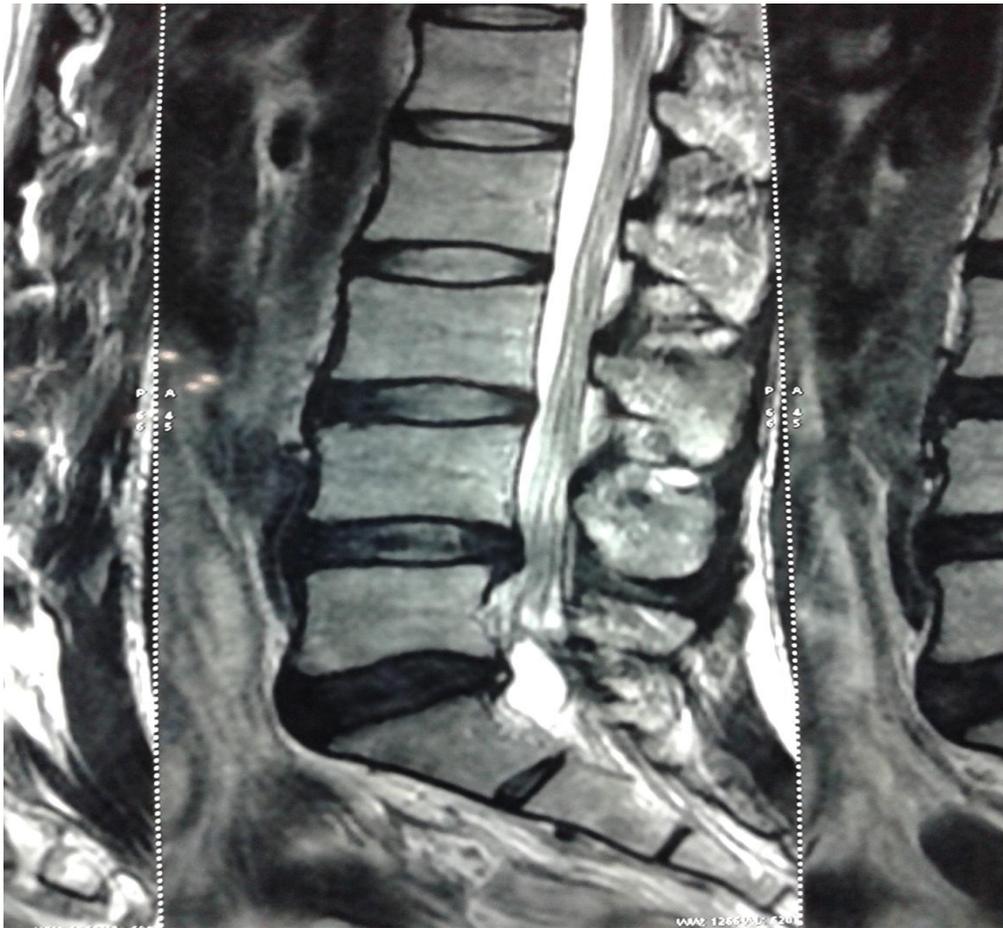
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## Illustrations

### Illustration 1

MRI lumbosacral spine



## Illustration 2

Operative photographs





## Reviews

### Review 1

#### Review Title: **Critical Appraisal of a Case of Sacral Nerve Root Sheath Cyst**

Posted by Dr. Sanjoy Sanyal on 17 Mar 2014 04:43:47 AM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

**Rating:** 8

**Comment:**

Well done, authors!! Quite a good paper, especially after the revision

The following points were noted

1. Typos: "Ganeral Surgery"
2. Punctuation Errors: No space between comma and the next word in numerous places; Space before a comma in several places - Both sets of errors should be rectified
3. Grammatical Errors: "**These cyst communicate...**"; "**These cyst can enlarge...**"; "**Knee jerks was normal**" (Plurality Errors)
4. Sentence Construction: "We report a case of symptomatic Tarlov cyst, its clinical presentation, treatment, and results of surgical cyst wall resection in a case of a symptomatic sacral Tarlov cyst" (Repetition of phrase)
5. Word Usage: "The pain had progressed to the lower back and bilateral upper thigh up to the ankle"
6. Illustrations: Appropriate areas should be labeled and arrows should be inserted, pointing to the object of interest.

**Competing interests:** None

**Invited by the author to make a review on this article? :** Yes

**Experience and credentials in the specific area of science:**

1. This reviewer has operated on cystic spinal lesions on patients in the past
2. This reviewer is a Professor and Course Director of Neuroscience and FCM-III Clinical Neurology
3. This reviewer takes regular lectures and gives practical demonstrations to Med 3 Neuroscience Medical Students in a medical university in the Caribbean

**Publications in the same or a related area of science:** No

**References:**

None

**How to cite:** Sanyal S.Critical Appraisal of a Case of Sacral Nerve Root Sheath Cyst[Review of the article 'Symptomatic Tarlov Cyst: A Rare Case Report and Its Management ' by Calcuttawala M].WebmedCentral Neurosurgery 1970;5(3):WMCRW003018

## Review 2

### Review Title: Symptomatic Tarlov cyst: case report and management

Posted by Prof. Angelo Lavano on 19 Feb 2014 07:19:50 PM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

**Rating:** 7

**Comment:**

For completeness it would be good to mention in the bibliography the article of Giampaolo Cantore Sacral Tarlov Cyst: surgical treatment by clipping published in World Neurosurgery 79 (2): 381-389, February 2013. This article reports the largest series in the literature of Sacral Tarlov Cyst.

**Competing interests:** None

**Invited by the author to make a review on this article? :** Yes

**Experience and credentials in the specific area of science:**

Professor of Neurosurgery

**Publications in the same or a related area of science:** No

**References:**

None

**How to cite:** Lavano A.Symptomatic Tarlov cyst: case report and management[Review of the article 'Symptomatic Tarlov Cyst: A Rare Case Report and Its Management ' by Calcuttawala M].WebmedCentral Neurosurgery 1970;5(2):WMCRW003007

## Review 3

### Review Title: Tarlov Cyst

Posted by Dr. William J Maloney on 13 Feb 2014 05:22:05 PM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

**Rating:** 7

**Comment:**

Tarlov cysts are meningeal dilatations of the posterior spinal nerve root sheath that most often affect sacral roots. The authors present the case of a 47 year-old man with a Tarlov cyst. After surgery the patient experienced an immediate relief of pain.

**Invited by the author to make a review on this article? :** No

**Experience and credentials in the specific area of science:**

Clinical associate professor

**Publications in the same or a related area of science:** No

**How to cite:** Maloney W.Tarlov Cyst[Review of the article 'Symptomatic Tarlov Cyst: A Rare Case Report and Its Management ' by Calcuttawala M].WebmedCentral Neurosurgery 1970;5(2):WMCRW002976