A huge presacral Tarlov cyst

Case report

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✓Perineural cysts have become a common incidental finding during lumbosacral magnetic resonance (MR) imaging. Only some of the symptomatic cysts warrant treatment. The authors describe the successful operative treatment of a patient with, to the best of their knowledge, the largest perineural cyst reported to date. A 29-year-old woman had been suffering from long-standing constipation and low-back pain. During an obstetric investigation for infertility, the clinician discovered a huge presacral cystic mass. Computed tomography myelography showed the lesion to be a huge Tarlov cyst arising from the left S-3 nerve root and compressing the ipsilateral S-2 nerve. The cyst was successfully treated by ligation of the cyst neck together with sectioning of the S-3 nerve root. Postoperative improvement in symptoms and MR imaging findings were noted. Identification of the nerve root involved by the cyst wall, operative indication, operative procedure, and treatment of multiple cysts are important preoperative considerations. (DOI: 10.3171/SPI-07/08/259)

KEY WORDS • myelography • perineural cyst • presacral mass • sacral radiculopathy • Tarlov cyst

In 1938 Tarlov¹² first described cystic lesions of the spinal nerve root in his autopsy studies of the terminal filum. Tarlov cysts are synonymous with Type II meningeal cysts in a classification of meningeal cysts proposed by Nabors and colleagues.¹⁵ Their prevalence has been estimated to be 4.6% among the general adult population.¹⁹

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In 1938 Tarlov¹² first described cystic lesions of the spinal nerve root in his autopsy studies of the terminal filum. Tarlov cysts are synonymous with Type II meningeal cysts in a classification of meningeal cysts proposed by Nabors and colleagues.¹⁵ Their prevalence has been estimated to be 4.6% among the general adult population.¹⁹

The majority of Tarlov cysts are asymptomatic. Only symptomatic cysts warrant treatment. Treatment options include antiinflammatory medication; external CSF drainage;¹² percutaneous cyst drainage;¹⁸,¹⁹ percutaneous fibrin glue injection;¹⁸ insertion of a cyst–subarachnoid shunt;¹³ cyst–peritoneal shunt, or lumbo-peritoneal shunt; simple decompressive laminectomy;¹²,²⁵ resection of the cyst neck;²,³⁴ cyst wall resection;¹³,¹³,³⁴ cyst imbrication;¹²,¹⁴,²⁸,³⁶ and bipolar cautery to shrink the size of the cyst.²¹ Large Tarlov cysts are very rare.²,⁶,³⁴ We describe a case with a huge 11 × 10 × 9 cm Tarlov cyst treated successfully with ligation of its neck together with the left S3 nerve root.

Case Report

Examination. This 29-year-old woman had been suffering from long-standing constipation and low-back pain. Investigations for infertility and lumbago demonstrated a cystic lesion anterior to the lumbosacral spine. Though the cyst itself did not appear to be the cause of infertility, it was recommended that the lesion be removed to ensure a safe pregnancy in the future. The 11 × 10 × 9-cm cyst had the same signal intensity as the CSF on MR imaging (Fig. 1). The patient’s symptoms were otherwise mild and would warrant no treatment had she not wished to get pregnant. She felt pain that radiated from the left lower back region to the thigh posteriorly, as well as hypesthesia in the left S-2 and S-3 dermatomes, without any evidence of motor weakness or bladder disturbance. Changes in posture did not alter the patient’s symptoms.

The left S-1 and S-2 neural canals were shown to be enlarged on CT scanning (Fig. 2). Myelography revealed a filling defect around the left-sided sacral nerve roots (Fig. 3). Serial CT scanning after myelography demonstrated that the intrathecal dye entered the cyst with a delay of
about 3 hours and with a peak density at 6 hours. The left S-3 nerve root could not be followed throughout its course, raising the possibility that it entered the cyst. The left S-2 nerve root was compressed by the cyst (Fig. 4).

Operation. An S1–4 laminectomy was performed. After careful dissection of the cyst wall, we observed the S-2 nerve root compressing the medial surface of the cyst and the S-3 nerve root entering the cyst. The cyst was opened,
and its content appeared the same as the CSF. The S-3 nerve root ran caudally along the inner surface of the cyst wall. A Valsalva maneuver caused the CSF to flow through the S-3 nerve root sheath into the cyst (Fig. 5). After electrophysiological confirmation that no major motor component of the nerve root entered the cyst, we ligated the neck of the cyst and sectioned the S3 nerve root. After ligation, no further inflow of CSF was seen on a repeated Valsalva maneuver.

Postoperative Course. Although the cyst wall was left in place because it adhered to retroperitoneal structures, MR imaging performed 1 week postoperatively revealed that the cyst had collapsed spontaneously. No motor weakness was observed, and hypesthesia in the left S-2 and S-3 dermatomes was improved. Improvement in the hypesthesia of the S-2 dermatome was compatible with that documented on postoperative myelography, which showed less compression of the left S-2 root than that seen on preoperative myelography (Fig. 6). Overlapping innervations of the S-3 dermatome by the decompressed S-2 nerve root led to improved hypesthesia of the S-3 dermatome.

Discussion

Tarlov first described cystic lesions of the spinal nerve root in his autopsy studies of the terminal filum. Tarlov cysts are synonymous with Type II meningeal cysts in a classification of meningeal cysts proposed by Nabors and colleagues. Their prevalence has been estimated to be 4.6% among the general adult population. Langdown and associates reported that 70% of the cysts detected by MR imaging were asymptomatic, 17% had an additive effect on other pathological entities but successful treatment was directed to those other entities, and the remaining 13% were symptomatic. Thus, although the majority of the cysts are asymptomatic, more than 100 cases of symptomatic Tarlov cysts have been reported to date. Symptoms range from local pain, radicular pain, headache, abdominal pain, paresthesia, motor weakness, inter-
mittent claudication, impotence, and bladder or bowel dysfunction to intracranial hypotension if the cyst ruptures. Tarlov noted that these cysts are often multiple, extend around the circumference of nerves, and can enlarge to impinge on neighboring nerve roots and cause significant bone erosion and/or fractures of the sacrum. Only symptomatic cysts warrant treatment. Treatment options include antiinflammatory medication; external CSF drainage; percutaneous fibrin glue injection; insertion of a cyst–subarachnoid shunt; percutaneous cyst drainage; percutaneous fibrin glue injection; insertion of a cyst–peritoneal shunt, or lumbar/peritoneal shunt; simple decompressive laminectomy; resection of the cyst neck; cyst wall resection; cyst imbrication; and bipolar cautery to shrink the size of the cyst. Several characteristics predictive of an effective operative outcome have been proposed. Patients with large cysts greater than 1.5 cm and radicular pain or bowel/bladder dysfunction have been reported to benefit from surgery. Signs suggestive of a ball-valve mechanism, such as symptoms related to postural changes or Valsalva maneuvers, or a filling defect on myelography, are among the outcome factors.

Large Tarlov cysts are very rare. The Tarlov cyst in the present case was huge, measuring 11 × 10 × 9 cm. Hefi and Landolt have reported the case of a 55-year-old man with back pain and stress incontinence in whom they documented a perisacral mass consisting of a meningocele and a nearly 10-cm–diameter Tarlov cyst. The cyst was successfully treated by marsupialization. Slipman et al. have treated a 47-year-old woman who presented with long-standing abdominal pain and left leg pain. Lumbar MR imaging revealed multiple presacral cysts measuring approximately 5 cm. The patient opted to undergo conservative therapy, and at the latest follow-up examination her presenting symptoms remained unrelieved.

A presacral location is also rare. Presacral cysts can be found by gynecological ultrasound, and perineural cysts should be included in the differential diagnosis. Bone erosion is quite common and is a characteristic feature of large Tarlov cysts. Although our case showed enlargement of neural foramina, it was at the ipsilateral S-1 and S-2 levels, which is not concordant with the S-3 nerve root origin of the cyst. Because neck ligation of the cyst and sectioning of the nerve root origin are the preferred modes of treatment if the expected neurological deficit is to be minimal, careful neurological and imaging studies are warranted. A postmyelography CT scan is especially helpful in this regard.

In our case surgery was performed to enable the patient to have a safe pregnancy. Although the patient was not able to become pregnant, the cyst itself did not appear to have caused infertility, and the operation was not expected to improve the chance of fertilization. Tarlov cysts are often multiple, as in our case. Usually only the larger cysts that might account for the radiculopa-
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warrant treatment. In the reported case, all the dilations filled immediately with intrathecal contrast except the largest one at the left S-3 nerve root. Palpation of the cysts intraoperatively showed that these other cysts were readily compressible and thus were considered to cause no further symptoms because they lacked the ball–valve mechanism.

Conclusions

Perineural cysts have become a common incidental finding during lumbosacral MR imaging. Only some of the symptomatic cysts warrant treatment. We have described the successful treatment of a huge presacral perineural cyst by ligation of the cyst neck. Nerve roots involved with the cyst wall, operative indication, operative procedure, and the treatment of multiple cysts were important preoperative considerations.

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References


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