Case Report

Severe constipation due to sacral perineural cysts in a pediatrics patient: A case report

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INTRODUCTION

Perineural cysts, also known as Tarlov cysts, develop between the endoneurium and perineurium of a nerve root. Sacral perineural cysts are usually asymptomatic, but may be detected incidentally by magnetic resonance imaging (MRI). However, the incidence in children is still unknown. These lesions may cause a variety of symptoms, including low back pain, sciatic pain, and bowel and bladder dysfunction. Although meticulous care is needed to clearly illustrate the relationship between the symptoms and radiological findings, several reports suggest that surgery may be effective for these lesions. However, only a few reports in pediatric patients have been published. Moreover, there is uncertainty about the long-term outcome of surgery for these lesions in children. Here, we describe a very rare pediatric case of perineural cysts, originating in the S3 roots that manifested as severe bowel dysfunction in which a good outcome was achieved by microsurgical decompression.

CASE DESCRIPTION

A 13-year-old girl presented with an intractable vomiting and constipation that did not respond to medical treatment. She was referred to our department when MRI revealed cysts.
at the sacral level. She was found to have low back and buttock pain, urinary incontinence, and periproctal sensory disturbance.

The MRI showed intestinal and bladder distension, suggesting severe bowel and bladder dysfunction [Figure 1] with perineural cysts, originating in both the S3 nerve roots at the S2 vertebral level [Figure 2]. The intensity of the cysts was the same as that of cerebrospinal fluid [Figure 2]. Myelography revealed an immediate influx of contrast medium into the cysts, indicating influx of cerebrospinal fluid [Figure 3]. Computed tomography (CT) revealed erosion of the sacral lamina and scalloping of the S2 vertebra. The cysts were considered to be the cause of her symptoms. The decision was made to shrink the cysts by microsurgery.

A bilateral partial laminectomy was performed at S1-2. The cysts, dural tube, and nerve roots were detected [Figure 4a]. The cyst wall was incised and the S3 nerve root was detected inside the cyst [Figure 4b]. The flaccid cyst wall was suitably cut with caution, to prevent S3 nerve root injury. Moreover, then, the autologous fat tissue and fibrin glue were used to seal the proximal end of the S3 nerve root in the cyst [Figure 4c]. The cyst wall was sutured continuously along the S3 nerve root [Figure 4d], and the epidural space was packed with fat tissue and fibrin glue. Finally, the cysts were shrunk on both sides and the epidural space was released from the compression caused by the cysts.

After the surgery, her severe bowel dysfunction was relieved. Although she complained of radicular pain in the left thigh after the surgery, the pain was relieved later. Moreover, there has been no recurrence until 5 years after her surgery [Figure 5]. The histological diagnosis was consistent with that of perineural cyst.

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**Figure 1:** Magnetic resonance image showing intestinal and bladder distension.

**Figure 2:** Findings on preoperative magnetic resonance images. (a) T2-weighted image showing high-intensity cysts (arrows), compressing S2 roots (arrowheads) on both sides. (b) T1-weighted image showing a low-intensity cyst (arrow) with scalloping of the S2 vertebra (arrowheads).

**Figure 3:** Preoperative myelogram and computed tomography myelogram. (a) Myelogram showing bilateral sacral cysts (arrows) with immediate influx of contrast medium. (b) Computed tomography myelogram obtained 3 h after injection shows contrast medium in the cysts that originated from the S3 roots (arrowheads).

**Figure 4:** Intraoperative photographs. (a) Photograph showing the perineural cyst (arrowheads), dural tube, and nerve roots after bilateral S1–2 partial laminectomy. (b) The right S3 root is seen within the cyst after the cyst wall incision. The proximal end of the S3 root in the cyst (arrowhead). (c) Sealing of the proximal end of the S3 root in the cyst using autologous fat tissue (arrowheads) and fibrin glue. (d) Cyst wall was sutured.
We have encountered an exceedingly rare case of perineural cysts originating from the S3 nerve roots of a pediatric patient that manifested as severe bowel dysfunction and was treated successfully by microsurgical decompression. A search of the literature revealed only a few reports on surgical outcome of pediatric perineural cysts. In adults, although sacral perineural cysts are usually asymptomatic, meticulous care is needed to clearly uncover the relationship between the symptoms and radiological findings and to determine the indication of intervention. Minimally invasive nonsurgical procedures, including aspiration and percutaneous injection of fibrin glue, have been reported. Although there was no difference in symptom recurrence between surgical and percutaneous interventions, the incidence of cyst recurrence was reported to be lower after surgical interventions than after percutaneous interventions. Surgical methods are reportedly effective in adults with younger age and a shorter duration of preoperative symptoms being associated with good outcome. Surgery is also effective for associated bladder dysfunction. However, most of the previous reports on surgical treatment of these lesions were in adults, and the long-term outcome of the surgery in pediatric patients remains unclear. A few reports indicate that surgery is an effective treatment for urinary dysfunction caused by this lesion in pediatric patients and one report mentioned a good long-term outcome in a pediatric patient with bowel symptom. This study suggests that early surgical treatment for not only urinary but also bowel dysfunction due to this lesion could also have a satisfactory long-term outcome in pediatric patients.

### CONCLUSION
This case suggests that microsurgery for severe bowel dysfunction due to symptomatic perineural cysts could have a satisfactory long-term outcome in pediatric patients.

### Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent.
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Nil.

Conflicts of interest
There are no conflicts of interest.

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