Perirectal epidermoid cyst in a patient with sacrococcygeal scoliosis and anal sinus: A case report

Ji ZX et al. Perirectal epidermoid cyst with sacrococcygeal scoliosis

Zhou-Xin Ji, Song Yan, Xu-Can Gao, Li-Fen Lin, Qiang Li, Qi Yao, Dong Wang

Abstract

BACKGROUND
Perirectal epidermoid cysts are rare masses arising from the ectodermal germ cell layer of the hindgut and are predominantly found in middle-aged women. It is often difficult to make an accurate diagnosis of these cysts, and it is equally a challenge to distinguish it from other developmental cysts.

CASE SUMMARY
We report the case of an 18-year-old female patient with a perirectal mass who presented to the hospital with constipation. The patient experienced sacrococcygeal falls and burns on the left buttocks during growth. Three-dimensional computed tomography scans indicated abnormal sacral vertebrae, with the sacral canal partially enlarged and opened. Pelvic magnetic resonance imaging showed a 55 mm × 40 mm × 35 mm unilocular cystic mass in the perirectal space and a solitary sinus in the left ischiorectal fossa. The cyst was completely resected posteriorly using the sacrococcygeal approach. The pathology was verified to be an epidermoid cyst. The patient remained recurrence-free after 6 mo of follow-up.
CONCLUSION
Successful treatment of perirectal epidermoid cysts depends on comprehensive evaluation. This is significant for the surgical approach and prognosis.

**Key Words:** Perirectal mass; Epidermoid cyst; Surgery; Anal sinus; Case report


**Core Tip:** Perirectal cystic mass is a rare congenital developmental abnormality. An 18-year-old female was found with a perirectal mass due to defecation difficulties. She had suffered from sacrococcygeal falls and burns on the left buttocks in the growth experience. We performed a complete preoperative evaluation of this patient. Three-dimensional computed tomography scans showed that there was no damage to the sacral surface bone. Pelvic magnetic resonance imaging showed that the perirectal mass had a complete membrane without enhancement signs and no potential connection with the perianal sinus and sacral canal. Finally, the mass was completely removed through the sacrococcygeal approach and verified as an epidermoid cyst in histology. This case highlights the need to improve evaluation in the differential diagnosis of perirectal mass.

INTRODUCTION
Epidermoid cysts are commonly found in different parts of the body; however, perirectal epidermoid cysts are extremely rare. Perirectal cysts are congenital abnormalities considered to originate from caudal embryonic vestiges[1]. Perirectal epidermoid cysts occur mostly in middle-aged women; however, they are rare in younger women[2]. An abnormal mass in the pelvic floor space is often incidentally discovered during routine examinations. Most patients with perirectal cysts do not
exhibit clinical symptoms. However, some patients may present with non-specific symptoms resulting from the compression of adjacent tissues, including urinary retention, constipation, and a palpable mass near the anus\textsuperscript{[5]}. To help improve clinical diagnostic strategies and prevent misdiagnoses of the condition, we report a rare case of a perirectal epidermoid cyst occurring in a younger female.

**CASE PRESENTATION**

**Chief complaints**

An 18-year-old female patient presented to the clinic with a complaint of constipation.

**History of present illness**

The patient had difficulty in evacuating her bowels for 2 mo.

**History of past illness**

Three months after birth, the patient suffered from sacrococcygeal deformity due to an accidental fall and underwent an imaging examination at the local hospital without any therapy. At age five, her left buttock was scalded with boiling water.

**Personal and family history**

The patient had no family history of inflammatory bowel disease or hereditary tumors.

**Physical examination**

No abnormalities were found upon abdominal examination. Her buttocks were asymmetrical, and irregular scar hyperplasia and shrinkage were observed at the four o’clock position, which was approximately 3 cm away from the anal opening. Physical examination revealed a soft, mobile, and poorly circumscribed mass without tenderness in the right perirectal region. The sacrum and coccyx were displaced to the right. Digital rectal examination revealed a bulge in the retrorectal area, resulting in mild stenosis of the lumen (Figure 1).
**Laboratory examinations**

Laboratory test results were normal.

**Imaging examinations**

Colonoscopy revealed a slight stenosis of the area between the rectum and anal canal without erosion, ulceration, or tumor formation. Three-dimensional (3D) computed tomography (CT) revealed abnormal sacral vertebrae, with the sacral canal partially enlarged and opened. No destruction of the local sacral bone was observed (Figure 2). Magnetic resonance imaging (MRI) revealed a 55 mm × 40 mm × 35 mm well-circumscribed unicameral cystic mass in the pelvis that adhered to the left rectal wall posteriorly to the sacrum, resulting in right anterior displacement of the rectum. The vaginal wall was compressed and wrinkled (Figure 3). Enhanced strips in the scan extended from the levator ani muscle to the skin of the left buttock (Figure 4). Based on the MRI findings, preoperative diagnoses included a presacral epidermoid cyst, anal sinus, and sacroccocygeal scoliosis.

**FINAL DIAGNOSIS**

The cystic mass was identified to be an epidermoid cyst.

**TREATMENT**

The cystic mass did not affect the patient’s spine, and the sinus in her left buttock showed no signs of infection. Complete surgical excision was performed using the posterior transsacroccocygeal approach. The patient was placed in the jackknife position after spinal anesthesia. A longitudinal median incision was made over the mass of the body surface on the left side of the coccyx. The skin, subcutaneous tissue, fat layer, and levator ani muscle were cut layer by layer to reveal the space of pelvic floor. The cystic mass was firmly attached to the puborectalis and left posterior wall of the lower rectum. Using both blunt and sharp dissection to carefully dissect the
surrounding anatomical structures, the cyst was completely excised. The cyst measured 55 mm × 40 mm × 35 mm and was filled with a soybean curd residue-like material. The rectum was confirmed to be intact by using an intraoperative anoscope. The space of pelvic floor was stitched into layers with a drainage tube left in situ. Histologically, the cystic cavity was covered with squamous epithelium and composed of gray and white cheese-like layered keratinocytes mixed with exfoliated broken epidermal cells, keratin, and cholesterol.

After surgery, the patient was hospitalized for purgative and preventive antibacterial treatment. We changed the dressing after defecation twice daily. The patient was discharged 2 wk after the surgery with a drain and the stitches were removed.

OUTCOME AND FOLLOW-UP
Six months after surgery, the patient remained recurrence-free.

DISCUSSION
The presacral space is a triangular space between the posterior sacrum and anterior rectum that is bounded by the peritoneal reflection superiorly and levator ani muscles inferiorly[4]. Developmental cystic masses arising from the presacral space include several kinds of tumors, including dermoid cysts, epidermoid cysts, chordomas, adrenal rest tumors, anterior sacral meningoceles, cystic hamartomas, tailgut, and rectal duplication cysts[5]. Epidermoid cysts in the presacral space are uncommon, with an incidence of 1 in 40000-63000 hospital admissions, and 60% of perirectal epidermoid cysts are congenital developmental cysts[6].

Perirectal epidermoid cysts are typically slow-growing; approximately 26%-50% of patients are asymptomatic, and they are usually incidentally discovered during imaging[7]. Compression of pelvic structures by an enlarging cyst may present with urinary complaints, constipation, perianal pain, or a palpable mass in the presacccygeal region. When there is an infection, these masses may result in perianal discharge,
fistulous opening, and bleeding in the rectum. Although epidermoid cysts are common skin lesions, they rarely develop into squamous cell carcinomas. Malignant tumors arising from epidermoid cysts are reported to appear at a rate of 0.011%-2.2%[8,9]. The exact pathogenesis of epidermoid cysts becoming malignant tumors remains unclear. However, the disease progression may be attributed to chronic inflammatory responses to repeated cyst ruptures and a subtotal resection of the cyst wall[10].

Elevated levels of AFP or HCG may be indicative of germ cell tumors. Colonoscopy may reveal extrinsic rectal compression and exclude intestinal space-occupying lesions. Transrectal ultrasonography may be useful for assessing the location and extent of small cystic masses and their connection with the anal sphincter[11]. CT examination clearly showed bone destruction by malignant presacral masses. MRI is superior to CT in differentiating between any bone, spinal canal, or meningeal involvement and its relationship with surrounding soft tissues and organs to determine the appropriate surgical plan[12]. Although infections, hemorrhages, or calcifications in these lesions may alter the signal intensity, subtle changes in the signal intensity favor epidermoid cysts. However, these findings are not specific. Except for suspicious cancerous lesions, preoperative biopsy should not be performed to prevent tumor dissemination, abscess, fecal fistula, or meningitis[1].

Choosing a surgical plan for presacral tumors largely depends on the tumor’s location, size, and relationship with surrounding tissues and organs. Common surgical approaches are transsacroccocygeal, transabdominal, transsphincter, and combined transabdominal and transsacral approaches[13]. If the mass is small (≤10 cm), located at the caudal level (below S4), and does not invade surrounding structures, the sacral approach is usually adopted[14]. When the mass is located at a high spinal level (above S3), the transabdominal approach is a better option. When the mass is large, its location near surrounding organs such as the ureter and iliac vessels is unclear, and it is difficult to employ a single approach; thus, the combined abdominal sacroccocygeal approach can be selected[A4]. The sphincter approach is an option for patients with small, low-lying lesions[15]. Few gynecologists choose the transvaginal approach because it
provides a sufficient field of vision, shorter operative time, and lower blood loss in low-lying retrorectal lesions[16].

The differential diagnoses of perirectal cystic lesions include tailgut cysts, cystic teratomas, chordomas, and anterior sacral meningoceles[17-20]. In female patients, a high (in terms of location) perirectal mass is misdiagnosed as ovarian cystadenoma[21]. The unique feature of this case is that a perirectal mass with perianal sinus and sacrococcygeal malformation was found in a young female patient. To accurately determine the extent of the mass lesion and rule out other pathologies, the patient underwent several imaging examinations. MRI revealed a solitary abscess in the left ischiorectal fossa, which had no sinus interacting with the presacral mass. Given the patient’s history of scalding, sterile necrotic tissue may have accumulated in the perianal sinus. Three-dimensional CT scans revealed an abnormal sacral vertebra, with the sacral canal partially enlarged and opened; however, there was no damage to the sacral surface bone. The wall of the cyst was remote from the sacral canal, the opened sacral canal was at the S3 Level, and the cyst was below S4. Evidence of an anterior sacral meningocele is insufficient. Although extremely rare, benign cysts can also progress into malignant tumors[22]. In our case, a well-defined smooth margin with an absence of invasion may have helped differentiate it from malignant masses. This case highlights the importance of pre-operative imaging and evaluation to identify the nature of the presacral mass, which is crucial for surgery and prognosis.

Laparoscopic surgery is an option because of its minimal invasiveness, low risk of complications, and complete tumor removal. Considering that the patient was a young female who had not given birth, surgery was performed using the transsacrococcygeal approach to avoid damaging the pelvic organ. During surgery, we cut the cystic mass to reduce its volume for a larger operative space. In cases of suspected malignant tumors, it should be carefully stripped along the capsule to prevent rupture and metastasis. In this regard, the importance of preoperative differential diagnosis is emphasized.

CONCLUSION
Distinguishing an epidermoid cyst from other perirectal cystic masses is a significant diagnostic challenge. The clinical manifestations of presacral masses vary, and once found, colonoscopy, sacrococcygeal CT, and pelvic MRI findings should be further evaluated. Using the tumor’s location, size, and relationship with the surrounding organs, an appropriate surgical plan should be selected.

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