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CASE REPORT

Rectal Duplication Cyst: An Eye Opener

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Abstract

Rectal duplication cysts are rare congenital malformations, accounting for approximately 4% of all gastrointestinal duplication cysts. While these anomalies often remain asymptomatic or present with vague gastrointestinal symptoms, acute urinary retention is an exceptionally rare manifestation. We report the case of a 3-year-old male child with recurrent episodes of acute urinary retention and constipation for three months, ultimately diagnosed as having a rectal duplication cyst. The child presented with a grossly distended urinary bladder and failed trials of catheter removal. Detailed clinical evaluation, imaging with contrast-enhanced CT scan, and per rectal examination led to the diagnosis. Laparotomy revealed a thick-walled retrorectal cyst without communication to the rectum. Complete surgical excision was performed, followed by a protective colostomy. Histopathological examination confirmed a rectal duplication cyst lined by preserved colonic mucosa. This case adds to the sparse literature of this rare entity presenting with bladder outlet obstruction symptoms and emphasizes the importance of thorough clinical and radiological evaluation in pediatric patients with recurrent urinary retention.

Keywords: Rectal duplication cysts, pediatric urinary retention, retrorectal cyst, congenital malformation, case report

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Introduction

Intestinal duplication cysts are rare congenital anomalies of the gastrointestinal tract that may occur anywhere from the esophagus to the anus [1]. These developmental malformations are characterized by the presence of a well-formed smooth muscle wall and a mucosal lining similar to the adjacent gastrointestinal segment. While their exact embryological origin remains uncertain, they are believed to arise from aberrant recanalization or partial twinning of the primitive gut during early fetal life. These cysts are typically located on the mesenteric side of the bowel and may be cystic or tubular in shape. Among all gastrointestinal duplications, rectal duplication cysts are the least common, accounting for only about 4% of cases [2]. They usually present in childhood with nonspecific symptoms like constipation, a palpable rectal mass, tenesmus, and in rare cases rectal bleeding may occur, because of their deep pelvic location, rectal duplication cysts can cause mass effect on adjacent pelvic organs, including the bladder and urethra, potentially leading to obstructive urinary symptoms [3]. However, presentation with acute urinary retention is extremely uncommon and can often mislead clinicians toward a primary urological diagnosis such as posterior urethral valves or neurogenic bladder. Due to their rarity and nonspecific presentation, these lesions are often under-diagnosed or misdiagnosed, especially in resource-limited settings. Radiological imaging, particularly ultrasonography and contrast-enhanced computed tomography (CECT), plays a crucial role in their identification, while definitive diagnosis is established intraoperatively and confirmed through histopathology [4]. In this report, we present an unusual case of a rectal duplication cyst in a 3-year-old male child who presented with recurrent episodes of acute urinary retention and constipation, initially suspected to have a urological etiology. This case highlights the importance of clinical suspicion, thorough examination, diagnostic value of per rectal examination and targeted imaging for guiding early intervention and management of rectal duplication cyst.

The Case

A 3-year-old male child presented with acute urinary retention and constipation with a history of similar episodes over the last 1 year. The child had undergone three failed attempts of catheter removal and trial of voiding at a rural healthcare facility over the last 3 months. On referral to our center, clinical examination revealed a massively distended, tender abdomen from the suprapubic region to the epigastrium, suggesting severe bladder fullness. Per rectal examination demonstrated a tense cystic lesion extending lateral and anterior to the rectum, with the upper limit not palpable, approximately 6 cm from the anal verge. No other mass was appreciated following bladder decompression via catheterization. CECT abdomen revealed a well-defined thick-walled hypodense cystic lesion 6.7x4.8x6.3cm in retro rectal region with mild bilateral (HDUN) hydroureteronephrosis and cystitis (Figure 1).

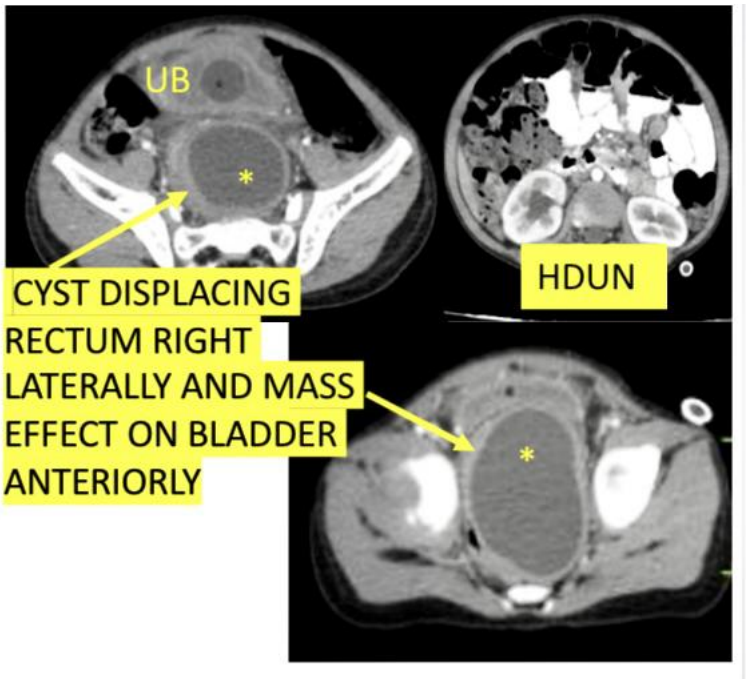

Figure 1. Axial CECT showing a thick-walled hypodense retrorectal cyst with its anatomical relation to surrounding structures

Laboratory investigations showed leukocytosis, and urinalysis revealed numerous pus cells and red blood cells. Serum HCG and AFP levels were within normal limits. Ultrasonography demonstrated a cyst with a gut signature that could not be clearly differentiated from the rectal wall. A contrast-enhanced CT (CECT) scan of the abdomen and pelvis identified a well-defined, thick-walled hypodense cystic lesion measuring 6.7 × 4.8 × 6.3 cm in the retrorectal region. The lesion displaced the rectum laterally and exerted anterior mass effect on the bladder, resulting in mild bilateral hydroureteronephrosis and features of cystitis.

A working diagnosis of rectal duplication cyst was made. Urinary retention was relieved immediately with per urethral Foley catheterization. Definitive management involved laparotomy and total excision of the cyst. Intraoperatively, the duplication cyst was found to be adherent but not communicating with the rectum. The common wall between the cyst and the rectum was carefully dissected without breaching the rectal mucosa. The seromuscular defect was closed meticulously, and a protective sigmoid colostomy was created to prevent postoperative complications (Figure 2).

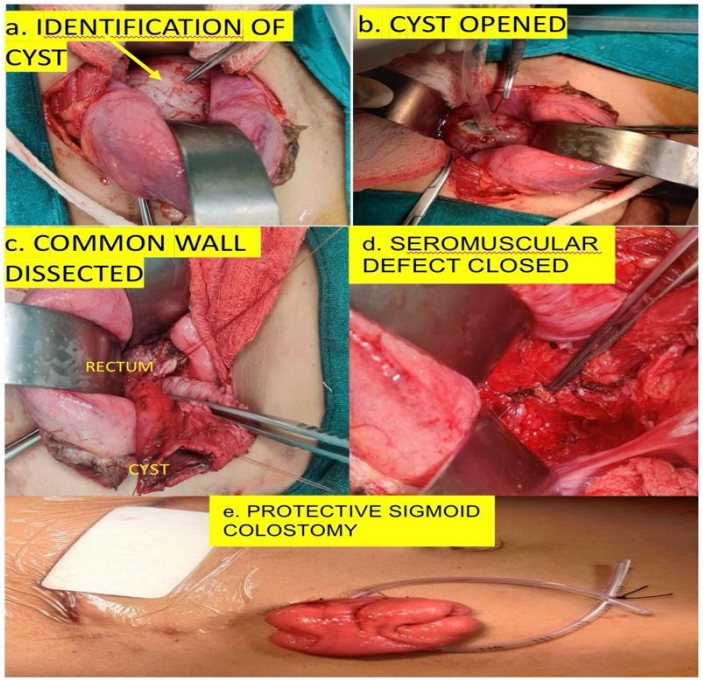

Figure 2. Intraoperative clinical images demonstrating the surgical management of rectal duplication cyst.

(a) Identification of the cyst in the presacral space. (b) Cyst opened to reveal mucinous contents. (c) Dissection of the common wall between the cyst and rectum without breaching the rectal mucosa. (d) Closure of the seromuscular defect following cyst excision. (e) Protective sigmoid colostomy to prevent postoperative complications.

The postoperative course was uneventful. The urinary catheter was removed after monitoring for signs of neurogenic bladder or retention. Histopathological examination confirmed the diagnosis of a rectal duplication cyst, revealing preserved colonic mucosa with crypts, submucosa, and muscularis propria, without evidence of heterotopic tissue (Figures 3 and 4).

Stoma reversal was done within 2 months and the child was discharged in 5 days with normal bowel movements. On regular follow-ups till 1 year, there has been no late complications.

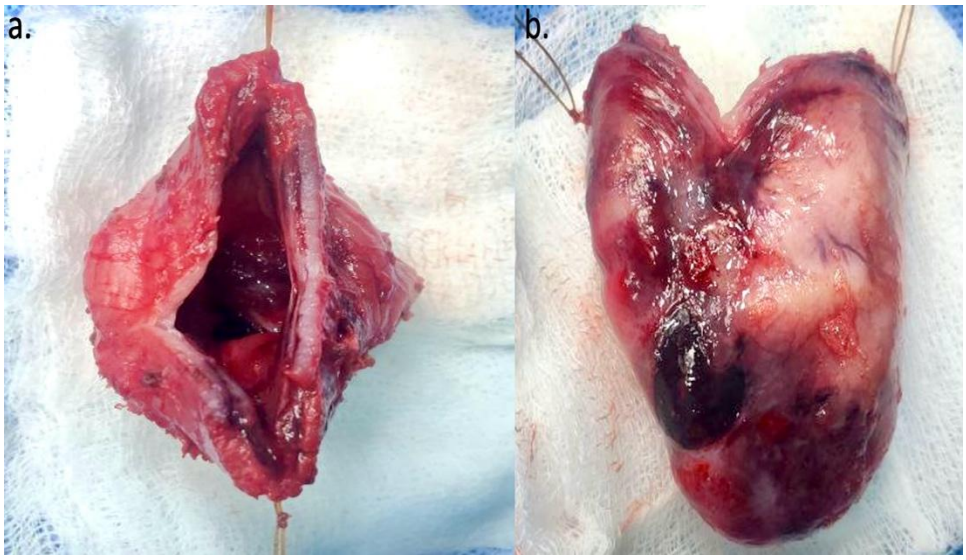

Figure 3. Gross specimen of excised rectal duplication cyst showing mucinous content.

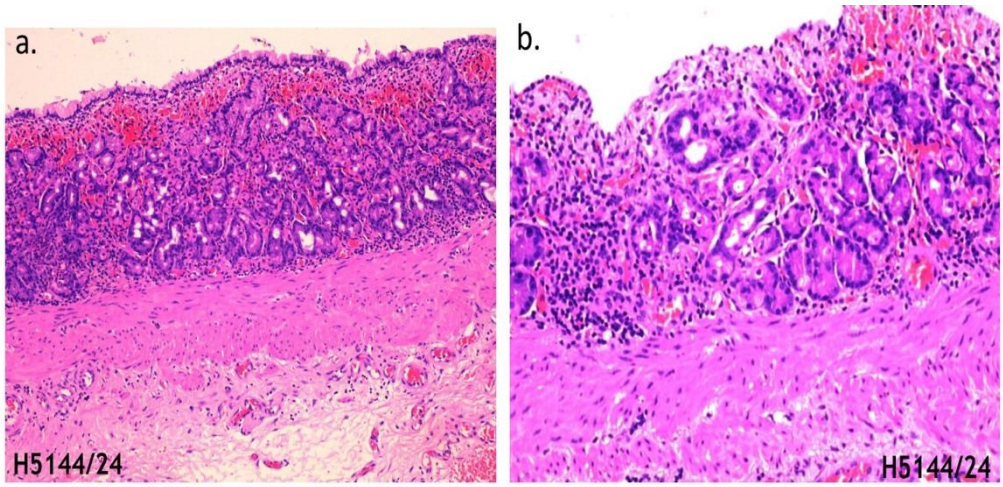

Figure 4. Histopathology showing colonic-type mucosa with well-preserved crypts, submucosa, and muscularis propria. No heterotopic tissue identified.

Discussion

Rectal duplication cysts are rare anomalies that present a diagnostic challenge due to their variable presentation and location. Although most often asymptomatic or detected due to local compressive symptoms in the anorectal region, presentation with acute urinary retention is extremely uncommon and can easily be mistaken for primary urological pathology such as posterior urethral valves or neurogenic bladder. Hence a proper history and thorough clinical examination can pave way to the accurate diagnosis, thereby allowing early definitive treatment reducing morbidity of the patient. This condition can be differentiated from other retrorectal cystic lesions based on age,

digital rectal examination and computed tomography findings with histopathology confirming the diagnosis.

Jackson et al. reported a pediatric case of rectal duplication cyst that presented with urinary retention and was initially suspected to be of urologic origin [5]. Similarly, Anastasiadou et al reported a case where the diagnosis was delayed due to non-specific obstructive symptoms [6]. In our patient, the initial presentation involved recurrent urinary retention, failed catheter removal, and progressive abdominal distension findings that mimicked lower urinary tract obstruction. A key turning point was the digital rectal examination, which revealed a tense cystic mass, and radiological imaging, particularly contrast-enhanced CT, which delineated a retrorectal cyst compressing the bladder. The presence of a gut signature on ultrasonography and the absence of communication with the rectum during surgical exploration confirmed the diagnosis of a rectal duplication cyst.

Management requires prompt bladder decompression and complete surgical excision to prevent recurrence, infection or malignant transformation [7]. The surgical challenge lies in excising the cyst without breaching the rectal mucosa or injuring adjacent pelvic structures [8]. In this case, successful resection was achieved without full-thickness rectal injury, and the protective colostomy helped ensure uneventful healing. Histologically, these cysts are lined by colonic or enteric mucosa and may contain muscular layers. Although rare, these lesions must be considered in the differential diagnosis of recurrent urinary retention in children, especially when accompanied by constipation or a palpable mass [9]. Although rare, rectal duplication cysts should be considered in the differential diagnosis of recurrent urinary retention, especially in children presenting with overlapping gastrointestinal and urinary symptoms. This case adds to the limited literature emphasizing the diagnostic value of per rectal examination and targeted imaging to guide early intervention.

Conflicts of interest

The authors declare that they do not have conflict of interest.

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Consent to participate and publish

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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