CASE REPORT

A Case of Solitary Rectal Diverticulum Presenting with a Retrorectal Mass

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Colonic diverticula are common whereas but rectal diverticula are very rare, with only sporadic reports in the literature since 1911. Most patients with rectal diverticula are diagnosed incidentally, inflammatory processes may have developed at the time of the diagnosis. We report the case of a 42-year-old woman presenting with a retrorectal mass that was detected incidentally. She was suspected of having a rectal diverticulum by transrectal ultrasonography and magnetic resonance imaging. However, the colonoscopic findings were unremarkable. A rectal diverticulum was confirmed intraoperatively, and a transanal diverticulectomy was performed. (*Gut Liver* 2010;4:394-397)

Key Words: Rectal diverticulum; Retrorectal mass; Transrectal ultrasonography; Magnetic resonance imaging

INTRODUCTION

A diverticulum is the sac of an abnormally protruding bowel wall. Colonic diverticula are very common in the Western world, chiefly diagnosed by colonoscopy or barium enema. Colonic diverticula are mainly acquired herniations of the mucosa and part of the submucosa through the muscularis propria.¹ It is now widely accepted that chronic diverticula formation occurs in Westernized societies due to a lack of fiber in the diet.² However, the pathogenesis associated with colonic diverticula remains poorly understood.

The prevalence of colonic diverticula is largely age-dependent, as it is uncommon in those under 40 years of

age.² Colonic diverticula occur mainly in the distal colon, with 90% of patients have sigmoid colon involvement and only 15% having right-sided diverticula. Rectal involvement, however, is extremely rare. The cause of rectal diverticula is unknown. Diverticula may arise at points of focal weakness of the rectal wall due to congenital or acquired causes.³ Recently, rectal diverticula have been reported as surgical complications after the stapled transanal rectal resection (STARR) procedure.⁴ We report an isolated rectal diverticulum presenting as a retrorectal mass with a review of the literature.

CASE REPORT

A 45-year-old female was referred by a private clinic because of an incidentally detected retrorectal mass. There were no clinical findings, such as hematochezia, an anal discharge, or a protruding anal mass. She had experienced chronic constipation for 10 years without the chronic use of laxatives. The medical history consisted of a hemorrhoidectomy 2.7 years ago. On rectal examination, a 2-3 cm retrorectal soft, round mass was palpated 6 cm from the anal verge. We performed the work-up for retrorectal or submucosal disease. A transrectal ultrasonography revealed a 2×3 cm rectal mass surrounded by the submucosal and proper muscle layers of the rectum with mixed echoic content and a small rectal wall defect was identified at the left posterior aspect of the rectum (Fig. 1A). Magnetic resonance imaging (MRI) revealed a retrorectal cystic lesion contiguous with the rectal lumen (Fig. 1B). However, there were not remarkable findings, such as mucosal defects or elevation in the rectum during colonoscopy (Fig. 2). Radiologically, a rectal diverticulum

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Fig. 1. Transrectal ultrasonography (TRUS) and magnetic resonance imaging (MRI). (A) An out-pouching of the rectal lumen was revealed on TRUS (arrow-head). (B) MRI revealed a posterior cystic lesion with a small opening tract (arrow) to the rectal lumen in the lower rectum (T1-weighted).

Fig. 2. Colonoscopy. (A) Forward colonoscopy did not reveal a luminal defect or mucosal elevation in the rectum. A previous hemorrhoidectomy scar was identified at the level of the puborectalis ring. (B) Colonoscopic retroflexion also revealed no remarkable findings.

with small opening was suspected, however, we could not identify diverticulum orifice endoscopically. The operation was performed for further differential diagnosis of retrorectal cystic tumor. Under spinal anesthesia, a transanal approach was performed in the lithotomy position. 6 cm from the anal verge, a soft retrorectal mass was palpated. After applying digital compression around the mass, a small rectal opening was identified at the left posterior aspect of the rectal wall and lesions were filled by fecal matter. After evacuation and irrigation of the fecal content, a diverticulectomy was performed, and the rectal wall was repaired with 3-0 Vicryl (Fig. 3A). The post-operative course was uneventful and she was discharged after 3 days. The pathologic examination showed a true diverticulum involving the entire rectal layer (Fig. 3B).

DISCUSSION

Diverticular disease is largely a process involving the sigmoid colon, followed by the ascending colon and cecum.¹ Rectal involvement is extremely rare, with only a

few reports in the literature since 1991. Although the true incidence of rectal diverticula is difficult to estimate because of the rarity, rectal diverticula comprise <0.1% of the cases of colonic diverticular disease which have been reported.^{3,5} Two theories for the low incidence of rectal diverticula have been advanced. First, the muscle fibers of the taenia coli spread outward, thus surrounding the rectum and fortifying it against intraluminal pressures.⁶ Second, less constant internal pressure is exerted on the rectum by accumulated feces and by a lower peristaltic activity as compared with the sigmoid colon.⁷

The cause of rectal diverticula is still unknown. Possible predisposing factors include congenital anomalies (e.g., weakness in the circumferential muscle that surrounds the rectum), primary muscle atrophy, or the absence of supporting structures (e.g., the coccyx). Other acquired causes include a relaxed rectal-vaginal septum, constipation or recurring impaction causing distension of the rectum, and rectal trauma or infections leading to weakening of the rectal wall.⁸⁻¹⁰ The occasional development of iatrogenic rectal diverticula by surgical trauma

Fig. 3. Surgical specimen and histologic findings. (A) A 2-cm diverticulectomy specimen is shown (arrowhead, mucosa; arrow, rectal muscle). (B) Histologic examination revealing the entire rectal layer with the mucosa, submucosa, and proper muscle (H&E stain, $\times 40$).

has been recently reported.^{4,11-13} The focal weakness in the rectal wall due to congenital or acquired causes of diverticula are primarily located along the lateral walls of the rectum. The taenia libera and the taenia omentalis merge, forming a broad band over the anterior aspect of the rectum, while the taenia mesocolica covers the rectum posteriorly, strengthening these areas.⁸

Most of the rectal diverticula, as opposed to the colonic diverticula, are true diverticula.¹⁴ Rectal diverticula largely accompany colonic diverticulosis. However, isolated rectal diverticula has been reported in a few cases.^{5,10} Although the age of patients with rectal diverticula is similar to the age of patients with sigmoid diverticula, patients may be diagnosed at any age. The most frequent number of rectal diverticula per patient is 1-3, with a diameter of ≥ 2 cm compared with those in the colon, which are 0.5-1 cm.⁸ Rectal diverticula may also vary greatly in size with changes in intra-abdominal pressure.¹⁴

Most patients with rectal diverticula are diagnosed incidentally and are asymptomatic. However, rectal diverticula may become inflamed with impacted feces and progress to abscess formation and perforation. Some complications associated with rectal diverticula include perforation and abscess, a prolapsed rectum from an inverted rectal diverticulum, rectal stenosis, rectal-vesical fistula, and misdiagnosis as carcinoma.^{6,10,15,16}

The retrorectal mass or cyst is a rare and heterogeneous disease collection, and the non-specific clinical presentation often leads to misdiagnoses, such as developmental cysts (epidermoids, dermoids, and teratomas), chordomas, rectal duplications, inflammatory lesions, and

neurogenic lesions.¹⁷ Although the vast majority of these lesions are benign, many can be malignant. The most common presentation of a retrorectal mass is as an asymptomatic mass noted on routine screening rectal examination.¹⁸ However, the primary treatment for masses of the retrorectal space is surgical excision, regardless of the etiology. Surgical treatment for rectal diverticula may depend on the existence of a symptom and need for diagnostic confusions. There have been no reports of a rectal diverticulum presenting as a retrorectal mass.

CT scans and MRI have become the most valuable diagnostic modalities for evaluating retrorectal tumors. Endorectal ultrasonography may be beneficial in evaluating retrorectal cysts.¹⁸ Most of retrorectal masses regardless of causes needs to operation for surgical excision and pathologic confirmation. Colonoscopy and barium enema are very important diagnostic modalities for diverticular disease. The detection of some diverticula will be more missed by endoscopy than barium study. The diagnosis of a rectal diverticulum presenting retrorectal mass may be very difficult because of the rarity and atypical presentation. However, we did not perform a barium study for further diagnosis unfortunately.

In conclusion, a retrorectal mass or cyst is rare, and the final diagnosis without pathologic confirmation by surgical treatment is very difficult. Rectal diverticula are also extremely rare. Our case was presented as a retrorectal mass being hard to diagnose endoscopically, although radiologically a rectal diverticulum was suspected.

REFERENCES

- Slack WW. The anatomy, pathology, and some clinical features of diverticulitis of the colon. *Br J Surg* 1962;50:185-190.
- Hjern F, Johansson C, Mellgren A, Baxter NN, Hjern A. Diverticular disease and migration: the influence of acculturation to a Western lifestyle on diverticular disease. *Aliment Pharmacol Ther* 2006;23:797-805.
- Walstad PM, Sahibzada AR. Diverticula of the rectum. *Am J Surg* 1968;116:937-939.
- Alabiso ME, Grassi R, Fioroni C, Marano I. Iatrogenic rectal diverticulum in patients treated with transanal stapled techniques. *Radiol Med* 2008;113:887-894.
- Plavsic BM, Raider L, Drnovsek VH, Kogutt MS. Association of rectal diverticula and scleroderma. *Acta Radiol* 1995;36:96-99.
- Giffin HZ. VII. Diverticulitis of the rectum: a report of two cases operated upon, one of them with carcinomatous degeneration. *Ann Surg* 1911;53:533-537.
- Piercy KT, Timaran C, Akin H. Rectal diverticula: report of a case and review of the literature. *Dis Colon Rectum* 2002;45:1116-1117.
- Damron JR, Lieber A, Simmons T. Rectal diverticula. *Radiology* 1975;115:599-601.
- Weston SD, Schlachter IS. Diverticulum of the rectum. *Dis Colon Rectum* 1959;2:458-464.
- Chen CW, Jao SW, Lai HJ, Chiu YC, Kang JC. Isolated rectal diverticulum complicating with rectal prolapse and outlet obstruction: case report. *World J Gastroenterol* 2005;11:7697-7699.
- Sciaudone G, Di Stazio C, Guadagni I, Selvaggi F. Rectal diverticulum: a new complication of STARR procedure for obstructed defecation. *Tech Coloproctol* 2008;12:61-63.
- Grassi R, Romano S, Micera O, Fioroni C, Boller B. Radiographic findings of post-operative double stapled trans anal rectal resection (STARR) in patient with obstructed defecation syndrome (ODS). *Eur J Radiol* 2005;53:410-416.
- Altomare DF, Rinaldi M, Veglia A, Petrolino M, De Fazio M, Sallustio P. Combined perineal and endorectal repair of rectocele by circular stapler: a novel surgical technique. *Dis Colon Rectum* 2002;45:1549-1552.
- Halpert RD, Crnkovich FM, Schreiber MH. Rectal diverticulosis: a case report and review of the literature. *Gastrointest Radiol* 1989;14:274-276.
- Edwards VH, Chen MY, Ott DJ, King GT. Rectal diverticulum appearing as a prolapsed rectum. *J Clin Gastroenterol* 1994;18:254-255.
- Damin DC, Rosito MA, Tarta C, Contu PC. Giant rectal diverticulum presenting as an ischioanal abscess. *Tech Coloproctol* 2005;9:249-250.
- Hobson KG, Ghaemmaghami V, Roe JP, Goodnight JE, Khatri VP. Tumors of the retrorectal space. *Dis Colon Rectum* 2005;48:1964-1974.
- Singer MA, Cintron JR, Martz JE, Schoetz DJ, Abcarian H. Retrorectal cyst: a rare tumor frequently misdiagnosed. *J Am Coll Surg* 2003;196:880-886.