



Large rectal diverticulum in the setting of pelvic organ prolapse treated with robotic ventral mesh rectopexy: a case report

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Background: Rectal diverticula are a very rare occurrence compared to diverticula of the colon. They are reported to account for only 0.08% of all diverticulosis. Diverticula of the rectum can be caused by congenital or acquired factors. The majority are asymptomatic, diagnosed incidentally, and require no treatment. The low incidence of rectal diverticulosis may be attributed to the unique anatomical structure and physiological environment of the rectum. However, complications can arise and may necessitate surgical or endoscopic treatment.

Case Description: We report the case of a 72-year-old female with a history of diabetes mellitus, hyperlipidemia, and hypothyroidism who presented to the colorectal surgery clinic with symptoms of constipation of nearly a 50-year duration. The patient underwent an anorectal exam under anesthesia which revealed a 3 cm defect in the left levator muscles with herniated rectal wall. A large left lateral rectal diverticulum was diagnosed during the work-up for pelvic organ prolapse on defecography. She underwent robotic assisted ventral mesh rectopexy and recovered uneventfully. After 1 year of follow-up, the patient is asymptomatic, and the control colonoscopy shows no signs of the rectal diverticulum.

Conclusions: Rectal diverticula can present in the setting of pelvic organ prolapse and can be safely managed with ventral mesh rectopexy.

Keywords: Rectal diverticulum; robotic ventral mesh rectopexy; pelvic organ prolapse; case report

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Introduction

Background

Diverticulosis refers to the presence of sac-like outpouchings from the wall of a hollow organ (1). Colonic diverticulosis is thought to affect approximately half of adults over the age of 60 (2) and is a cause of significant healthcare burden. Rectal diverticulosis, however, is rare and only described in several case reports in the literature (3-10). Most cases are asymptomatic, diagnosed incidentally, and carry no significant clinical implications (10,11). Complications are exceedingly rare but often necessitate surgical resection (12-14).

The low incidence of rectal diverticulosis may be attributed to the unique anatomical structure and physiological environment of the rectum. Several predisposing factors have been proposed including congenital anomalies, muscle atrophy, trauma, infections, and iatrogenic reasons (9,10).

Objective

We report a case of rectal diverticulum diagnosed in the setting of pelvic organ prolapse and in accordance with the CARE reporting checklist (available at <https://tcr.amegroups.com/article/view/10.21037/tcr-22-2676/rc>).

Case presentation

The patient is a 72-year-old female with a history of diabetes mellitus, hyperlipidemia, and hypothyroidism who presented to the colorectal surgery clinic with symptoms of constipation of nearly a 50-year duration. After the Diagnosis of Partial Obstructive Defecation was

made, and this was managed conservatively with dietary changes. However, during work-up, that included digital rectal examination, constipation scoring system, anorectal manometry, defecography, and colonic transit studies, the patient was found to have pelvic organ prolapse (rectocele) with an associated rectal diverticulum seen on defecography (*Figure 1*).

The patient underwent an anorectal exam under anesthesia which revealed a 3 cm defect in the left levator muscles with herniated rectal wall. Given her presenting symptoms, the results of her diagnostic work-up, and after a discussion of the treatment options and presentation at a multi-disciplinary conference, she was scheduled for robotic-assisted ventral mesh rectopexy (*Figure 2*).

The patient recovered uneventfully and was discharged on the first post-operative day. After 1 year of follow-up, the patient is asymptomatic, without any recurrence of the pelvic organ prolapse and the control colonoscopy shows no signs of the rectal diverticulum.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

This case report, to our knowledge, is the first in the literature to present a rectal diverticulum in the setting of pelvic organ prolapse.

Rectal diverticulosis is a rare entity with only several reported cases in the literature (3-19). Most cases are asymptomatic, diagnosed incidentally, and require no specific treatment.

It is estimated to account for only 0.08% of cases of diverticulosis (1). Diet, lifestyle, and genetics have been proposed as factors implicated in the pathogenesis of diverticula of the colon. Rectal diverticulosis is a unique entity that is minimally understood given its low incidence.

Several predisposing factors to rectal diverticulosis have been proposed. These include congenital structural and anatomical anomalies, as well as acquired factors such as weakness of the rectovaginal septum, trauma, infection, chronic constipation, or recurrent fecal impaction (1). An important anatomical feature that distinguishes the rectum

Highlight box

Key findings

- Large left lateral rectal diverticulum diagnosed during the work-up for pelvic organ prolapse on defecography.

What is known and what is new?

- Rectal Diverticulum is a rare occurrence.
- This is to our knowledge the first rectal diverticulum in the setting of pelvic organ prolapse.

What is the implication, and what should change now?

- Ventral mesh rectopexy is feasible and safe for the treatment of pelvic organ prolapse with an associated large rectal diverticulum.

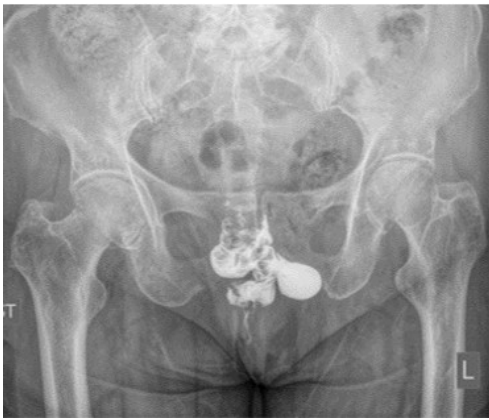


Figure 1 Anterior-posterior post-evacuation defecogram showing a 3×3 cm contrast-enhanced rectal diverticulum.

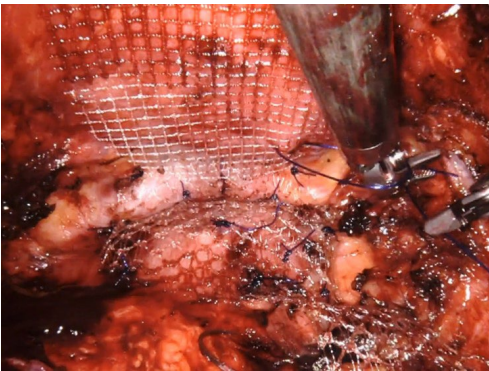


Figure 2 Robotic-assisted ventral mesh rectopexy.

from the colon is the merging of the taenia coli. These three separate bands of longitudinal muscle converge at the proximal rectum to form a continuous muscle layer providing increased structural support. Colonic diverticula are believed to arise in weak areas of the colonic wall usually corresponding to the entry sites of vasa recta along the margins of the taenia coli. The continuous layer of longitudinal muscle surrounding the rectum provides a protective layer against the development of diverticula. It is postulated, however, that the lateral aspects of the longitudinal muscle layer are thinner than the anterior and posterior aspects. Ghahremani *et al.* (15) investigated acquired rectal diverticula using barium enema and computed tomography and concluded that these pulsion type rectal diverticula present as wide-neck outpouchings of the lateral or posterior rectal wall and are often associated with coexisting anorectal lesions or disorders of defecation. A study analyzed barium enema examinations of 7,200

patients and identified 5 patients with rectal diverticula (prevalence of 0.07%), two of whom had scleroderma with no other colonic diverticula (2). When compared to sigmoid diverticula, rectal diverticula are usually fewer in number and larger in size with changes in intraabdominal pressure affecting size (6,10,16).

Iatrogenic causes of rectal diverticula are also reported. Singh *et al.* (11) describe the case of a patient with a rectal pseudodiverticulum after repeated endoscopic polypectomy. Rectal diverticula are also described as a complication arising in patients treated with transanal stapled resection for different indications. Alabiso *et al.* (17) looked at a cohort of 45 patients who underwent one of two transanal stapled resections and identified seven patients who developed rectal diverticula at the anastomotic site. Sciaudone *et al.* (18) as well as Na *et al.* (19) all both described cases of rectal diverticula that developed after stapled transanal rectal resection performed for rectocele with obstructed defecation and hemorrhoids respectively that were both treated with transanal diverticulectomy. Some reports also describe rectal diverticula associated with ectopic gastric mucosa in the rectum, although the pathogenesis of this entity remains unclear (20).

Most cases of rectal diverticula are asymptomatic, diagnosed incidentally, and imply no clinical significance. However, several cases of complications attributed to rectal diverticula are reported in the literature including diverticulitis, perforation, abscess formation, post-inflammatory stenosis, recto-vesical fistula, and rectal prolapse from an inverted diverticulum (9). Diverticulitis of the rectum can present with symptoms of rectal pain and muscle spasms (9). Cases of recurrent rectal diverticulitis may require surgical resection (21). Giustra *et al.* (22) reported a case of rectal diverticulitis with perforation into the recto-vaginal septum. Abscess formation is another described complication of rectal diverticula. Gorgoraptis *et al.* (23) described a patient who presented with a large retrorectal abscess causing sciatic neuropathy, bilateral obstructive uropathy, and septic shock. Iatrogenic perforation of rectal diverticula is also reported. Perforation as a complication of colonoscopy is reported by Hong *et al.* (24) as well as Zulli *et al.* (25) in two cases that were managed conservatively with antibiotics and with endoscopic clips respectively. Cases of rectal prolapse attributed to an inverted diverticulum have also been described and are usually managed surgically (12). Chen *et al.* (20) reported the case of a patient with chronic constipation who presented with rectal prolapse and obstruction, was found

to have a large rectal diverticulum on barium enema, and was treated with Delorme's procedure. Carcinoma arising within rectal diverticula is also reported. In fact, the first reported cases of rectal diverticula by Giffin *et al.* (26) in 1911 described a case complicated by carcinomatous degeneration. Another case was reported by Kwon *et al.* (27) which described mucinous carcinoma arising from a rectal diverticulum. Of note, diagnosis was challenging given a negative endoscopic biopsy.

Given the rare incidence and mostly asymptomatic nature of rectal diverticula, diagnosis is often made incidentally. However, diagnosis in cases involving complications of rectal diverticula can be challenging. Several cases report the ability to diagnose an abnormality on digital rectal exam. Rectal diverticula, although usually large, are often missed during endoscopic evaluation. Barium enema studies have higher sensitivity. It is important to note that diverticula of the lateral rectal wall can be missed if only conventional lateral views are obtained. Instead, anterior-posterior views are necessary (15). In cases of abscess formation, computed tomography scans can aid in diagnosis. In cases with suspicion for malignancy, endoscopic biopsy can be negative and should not be used to exclude the diagnosis. Asymptomatic rectal diverticula require no treatment. Management of complicated rectal diverticulosis depends on the complication but often requires surgical resection. In cases involving perforation after colonoscopy, non-operative management may be effective (28).

Our patient presented with symptoms of constipation and was diagnosed with pelvic organ prolapse and an incidental rectal diverticulum on defecography. She underwent a robotic assisted ventral mesh rectopexy and recovered uneventfully. The use of ventral mesh rectopexy is an alternative for Pelvic organ prolapse treatment been a reinforcement of the rectal wall without risk of erosion.

To our knowledge, this is the first case of rectal diverticulum associated with pelvic organ prolapse. We believe that pelvic organ prolapse may be a predisposing factor to the development of rectal diverticula. Further studies are needed to confirm an association between the two entities.

Conclusions

Rectal diverticula can be present in the setting of pelvic organ prolapse. The appropriate diagnosis is important in considering treatment options. Ventral mesh rectopexy is feasible and safe for the treatment of pelvic organ prolapse with an associated large rectal diverticulum.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at <https://tcr.amegroups.com/article/view/10.21037/tcr-22-2676/rc>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://tcr.amegroups.com/article/view/10.21037/tcr-22-2676/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

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