Giant vesical diverticulum: A rare cause of defecation disturbance

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Abstract

Vesical diverticula frequently result from bladder outlet obstructions. However, giant vesical diverticula which cause acute abdomen or intestinal obstruction are very rare. Our review of the English medical literature found 3 cases of bladder diverticula which caused gastrointestinal symptoms. Here, we present a 57-year-old man with a giant diverticulum of the urinary bladder who complained of abdominal pain, nausea and vomiting, constipation, no passage of gas or feces, and abdominal distension for 3 d. A 20 cm × 15 cm diverticulum was observed upon laparotomy. The colonic obstruction was secondary to external compression of the rectum against the sacrum by a distended vesical diverticulum. We performed a diverticulectomy and primary closure. Twelve months postoperatively, the patient had no difficulty with voiding or defecation.

INTRODUCTION

Vesical diverticula are herniations of the bladder mucosa and submucosa through the muscular wall of the bladder[1]. They are often asymptomatic and are discovered incidentally during an examination for other reasons[1,2]. Some patients present with urinary tract infections, obstruction, gallstones, or frequent voiding caused by diverticula, especially when they are large and empty poorly. The common causes of large bowel mechanical obstruction in adults are malignant tumors, diverticular disease, and volvulus. Extrinsic obstruction secondary to distension of a giant vesical diverticulum is rare. To our knowledge, this is the fourth report of a vesical diverticulum causing disrupted defecation or intestinal obstruction in the English medical literature since 1957[3-5]. We report an unusual case of large bowel obstruction caused by a giant bladder diverticulum. In addition, this is the largest vesical diverticulum reported in the literature.

CASE REPORT

A 57-year-old man was admitted to the general surgery department with abdominal pain, nausea and vomiting, constipation, no passage of gas or feces, and abdominal distension for 3 d. The relevant physical examination revealed a distended abdomen, decreased bowel sounds, diffuse sensitivity on palpation of the abdomen, and empty rectal ampulla. Laboratory investigations showed a blood urea nitrogen level of 31 mg/dL, a creatinine level of 1.1 mg/dL, and a C-reactive protein level of 35 mg/L. The blood cell count revealed leukocytosis at 16 500/μL, a hemoglobin level of 13.5 g/dL, and a platelet count of 423 000/μL. Other serum parameters, including prostate specific antigen (PSA, 1.9 ng/mL), were within normal limits. Computed tomography (CT) showed a 15 cm × 10 cm low density cystic lesion with smooth contours located in the presacral region, pushing the rectum to the right and the sigmoid colon and bladder superiorly (Figure 1A and B). The patient had a history of trauma because of a traffic accident 4 years previously, and

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because of this diagnostic laparotomy was performed and a few sutures were placed in the bladder. As the patient had symptoms of acute abdomen, laparotomy was performed.

During laparotomy, the mass was found to be a diverticulum originating from the posterosuperior region of the bladder. The colonic obstruction was secondary to external compression of the rectum against the sacrum by a distended vesical diverticulum. The diverticulum measured approximately 20 cm × 15 cm and was difficult to mobilize by dissecting its delicate attachments to the anterior rectal wall. The diverticular orifice was approximately 1-1.5 cm in diameter. A diverticulectomy and primary closure were performed. Postoperatively, the bladder was catheterized for 10 d. Three months postoperatively, the patient’s urinary frequency and constipation had disappeared. An intravenous pyelography (IVP) showed no significant pathologic findings (Figure 2). The patient had no difficulty in voiding nor had constipation 12 mo postoperatively.

**DISCUSSION**

We described a rare cause of a giant vesical diverticulum causing mechanical bowel obstruction in an adult patient. We summarized the characteristics of the 12 cases of “giant bladder diverticulum” which we found in the literature in the Table 1[3-11]. Three of the cases

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**Table 1** A summary of 12 cases of giant vesical diverticula reported in the English medical literature from 1957 to 2009 and description of the studies

| Ref. | Yr | Age | Sex | Medical history | Initial symptom | Diagnosis | Management | Complication |
|------|----|-----|-----|----------------|----------------|-----------|------------|--------------|
| Kauffmann et al[3] | 1957 | 70 | M | Not available | Constipation | X-ray films, intravenous urography | Diverticulectomy | Not found |
| Mirow et al[4] | 2007 | 84 | M | Sigmoid carcinoma | Abdominal pain, intestinal obstruction | Intraoperative | Diverticulectomy | Not found |
| Shaked et al[5] | 2009 | 76 | M | Hypertension, diabetes mellitus | Abdominal pain, constipation | CT | Diverticulectomy | Not found |
| Shukla et al[6] | 2004 | 11 | F | EDS | Infection, incomplete voiding | Cystogram | Diverticulectomy | Not found |
| Burrows et al[7] | 1998 | 16 | M | EDS type 1 | Decreasing urinary stream and urinary retention | Cystogram | Diverticulectomy | Not found |
| Suzuki et al[8] | 2002 | 84 | M | Bladder injury with bullet | Abdominal distension | CT, cystogram | Diverticulectomy | Not found |
| Farhi et al[9] | 1991 | 31 | F | Recurrent urinary infection | Ovarian cyst | USG, cystogram | Diverticulectomy | Not available |
| Taha et al[10] | 1987 | 65 | M | Not available | Abdominal distension, slow stream of urine | CT | Reduction cystoplasty | Not available |
| Siddiqui et al[11] | 2003 | 77 | M | TUR-P was performed twice because of urinary retention | Acute urinary retention | Intravenous urography | Diverticulectomy | Not found |

The first three references present cases of bladder diverticula which caused gastrointestinal symptoms. CT: Computed tomography; EDS: Ehlers-Danlos syndrome; TUR-P: Transurethral prostatectomy; USG: Ultrasonography.
caused intestinal obstruction\textsuperscript{[3-5]}. The bladder is a hollow muscular organ that stores and evacuates urine. The normal bladder can store approximately 350-400 mL of urine. A diverticulum is an abnormal sac or pouch protruding from the wall of a hollow organ. Most bladder diverticula are primary, congenital, or secondary to outflow obstruction or neurogenic bladders\textsuperscript{[12-14]}. Congenital diverticula usually occur in areas where there is insufficient muscle, typically at the ureterovesical junction, or between bundles of hypertrophied muscle. They are usually asymptomatic and are discovered incidentally. Occasionally, a diverticulum may produce urinary obstruction as a result of compression of the urethra, or urinary tract infection arising from retention of urine within the diverticulum\textsuperscript{[9,10]}. In this case, only minimal obstruction caused by the pressure on the ureters was observed. No obstruction of the urethra developed. Although diverticula generally develop from the ureteral orifices in the bladder, in this case the diverticulum was located in the posterosuperior region of the bladder distant from the orifices.

In this patient, the diverticulum was in the same location as previous trauma. Because of this and since trauma is known to be one of the etiologic factors for acquired diverticula, we believed that this diverticulum had occurred as a result of the previous trauma.

The indications for surgery are persistent or recurrent urinary infection, the presence of a stone or tumor in the diverticulum\textsuperscript{[16,17]}, a vesicocutaneous fistula\textsuperscript{[18]}, lower urinary tract symptoms, and voiding symptoms or vesicoureteral reflux\textsuperscript{[19]} resulting from the diverticulum or ureteral obstruction\textsuperscript{[6,12]}. In this case, laparotomy was indicated by the normal IVP results and CT scan showing a mass exerting pressure on the ureters and rectum. Vesical diverticula are a common pathology of the urinary bladder, generally secondary to cervicourethral obstruction. Shaked et al\textsuperscript{[3]} presented a case of bladder distention and diverticulum arising from obstruction caused by a prostate adenoma. In their case, they reported that colonic obstruction occurred because the colon was packed between the sacrum and bladder. In our case, although the bladder diverticulum was large, no obstruction was observed because the diverticulum developed from the posterosuperior part of the bladder. This was reflected in the PSA and transrectal ultrasonography results.

In conclusion, there are several reported cases of bladder distention and diverticula causing colonic obstruction. For this reason, although rare, bladder pathology should be considered in patients with obstruction of the rectosigmoid region.

REFERENCES

1. Melekos MD, Asbach HW, Barbakias GA. Vesical diverticula: etiology, diagnosis, tumorigenesis, and treatment. Analysis of 74 cases. Urolology 1987; 30: 453-457
2. Yovchevski P, Kostov K. Acquired nonobstructive urinary bladder diverticulum: a case report. Cases J 2009; 2: 36
3. Kaufman JJ, Mills H. Giant diverticulum of the bladder with gastrointestinal manifestations. Calif Med 1957; 86: 331-333
4. Mirow L, Brügge A, Fischer F, Roblik UJ, Durek C, Bürk C, Jochem D, Bruch HP. Giant bladder diverticulum as a rare cause of intestinal obstruction: report of a case. Surg Today 2007; 37: 702-703
5. Shaked G, Czeiger D. Distended urinary bladder and diverticulum-a rare cause of large-bowel obstruction. Am J Surg 2009; 197: e23-e24
6. Shukla AR, Bellah RA, Canning DA, Carr MC, Snyder HM, Zderic SA. Giant bladder diverticula causing bladder outlet obstruction in children. J Urol 2004; 172: 1977-1979
7. Burrows NP, Monk BE, Harrison JB, Pope FM. Giant bladder diverticulum in Ehlers-Danlos syndrome type I causing outflow obstruction. Clin Exp Dermatol 1998; 23: 109-112
8. Suzuki K, Tanaka O, Saito T, Tokue A. Giant bladder diverticulum due to previous bullet injury: findings of gadolinium-enhanced magnetic resonance imaging. Int J Urol 2002; 9: 517-519; discussion 520
9. Farhi J, Dicker D, Goldman JA. Giant diverticulum of the bladder simulating ovarian cyst. Int J Gynecol Obstet 1991; 36: 55-57
10. Taha SA, Satti MB, Mitry AF, Al-Idrissi HY, Ibrahim EM. Giant bladder diverticulum: an unusual presentation. Br J Urol 1987; 59: 189-190
11. Siddiqui K, Bredin HC. Giant bladder diverticulum causing recurrent urinary retention. Ir Med J 2003; 96: 247
12. Milović N, Bancević V. [Extravesical diverticulectomy— a surgical technique for managing a giant bladder diverticulum] Vojnosanit Pregl 2007; 64: 349-352
13. Breivik N, Refsum S Jr, Oppedal BR, Vesterhus P. Ehlers-Danlos syndrome and diverticula of the bladder. Z Kinderchir 1985; 40: 243-246
14. Levard G, Aigrain Y, Ferkadji L, Elghoneimi A, Pichon J, Bouroue M. Urinary bladder diverticula and the Ehlers-Danlos syndrome in children. J Pediatr Surg 1989; 24: 1184-1186
15. Sarihan H, Abes M. Congenital bladder diverticula in infants. Eur Urol 1998; 33: 101-103
16. Corbett HJ, Talwalker A, Shabani A, Dickson AP. Congenital diverticulum of the bladder mimicking tumour. J Pediatr Urol 2007; 3: 323-325
17. Shigehara K, Yovchevski P, Kostov K. Acquired nonobstructive urinary bladder diverticulum arising from a bladder diverticulum. Indian J Med Sci 2005; 59: 265-267
18. Afshar K, Malek R, Bakhshi M, Papanikolau F, Farhat W, Bagli D, Khoury AE, Pippi-Salle JL. Should the presence of congenital para-ureteral diverticulum affect the management of vesicoureteral reflux? J Urol 2005; 174: 1590-1593

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