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CASE REPORT

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.

Key words: Colonic obstruction; Defecation; Diverticulectomy; Urinary bladder; Vesical diverticulum

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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

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
Kauffman *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		
Shukla *et al*[6]	2004	11	F	EDS	Infection, incomplete voiding	Cystogram	Diverticulectomy	Not found
		4 mo-3 yr	M M M	No medical history of voiding dysfunction	Decreasing urinary stream and urinary retention			
Burrows *et al*[7]	1998	16	M	EDS type 1	Outflow obstruction	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	Not available	Not available
Taha *et al*[10]	1987	65	M	Not available	Abdominal distension, slow stream of urine	Intravenous urography, CT	Reduction cystoplasty	Not found
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.

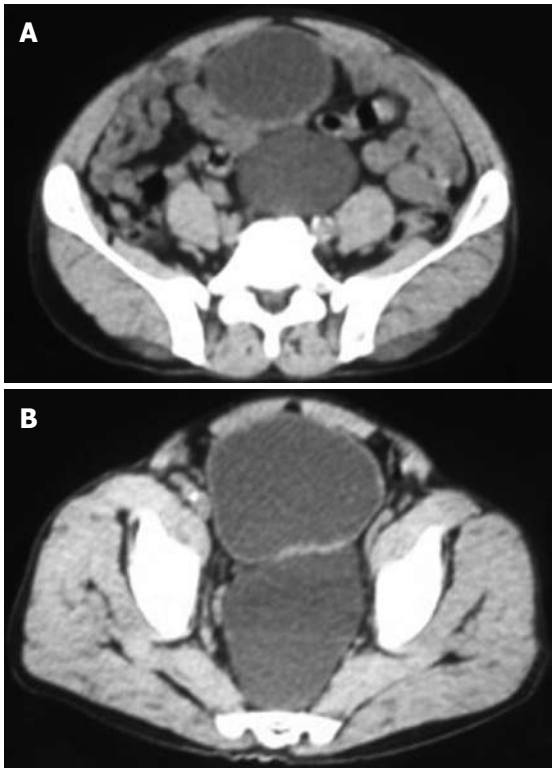

Figure 1 Computed tomography showed a 15 cm × 10 cm low density cystic lesion with smooth contours located in the presacral region, pushing the rectum to the right and the sigmoid colon and bladder superiorly (A and B).

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.

Figure 2 No significant pathology was observed on intravenous pyelography 3 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

caused intestinal obstruction[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[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[8,15]. 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 diverticula 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[16,17], a vesicocutaneous fistula[18], lower urinary tract symptoms, and voiding symptoms or vesicoureteral reflux[19] resulting from the diverticulum or ureteral obstruction[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 cervico-urethral obstruction. Shaked *et al*[5] 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.

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