Giant urinary bladder diverticulum in elderly: A common condition with atypical initial presentation

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Abstract - Urinary bladder diverticulum is outpouching of the bladder wall with variable sizes. It is usually asymptomatic and diagnosed incidentally following an imaging investigation to rule out other pathologies. It can be either congenital or acquired. We present a case of a 61-year-old gentleman with colonic carcinoma. A giant cystic mass was accidentally found during imaging and a diagnosis of urinoma was made. The patient underwent various imaging modalities before the diagnosis of giant bladder diverticulum was finally concluded.

***Keywords*— Bladder diverticulum, cystogram, cystoscopy**

1 INTRODUCTION

Differential diagnoses of a cystic mass in the abdominal cavity includes collection, appendiceal mucocele, appendix mucinous tumour, hematoma, abscess, bladder diverticulum, ovarian malignancy and many more. In an acute presentation, benign lesions such as urinary bladder diverticulum might cause diagnostic confusion.

Diverticulum is defined as an outpouching of a wall of a hollow viscus organ (1). Most of the urinary bladder diverticula are asymptomatic and are usually discovered incidentally during an investigation of other pathologies (2). We present a case of giant urinary bladder diverticulum in an elderly with colon carcinoma causing initial diagnostic dilemma.

2 PRESENTATION

A 61-year-old man presented with abdominal distention accompanied by bloated feeling for three days. Initial abdominal radiograph showed dilated small and large bowels suggestive of intestinal obstruction. Subsequent contrasted computed tomography (CT) of the abdomen demonstrated circumferential enhancing mass at the descending colon and incidental findings of right ureteric calculus measuring 1.4cm causing moderate right hydronephrosis and hydroureter. The colonic mass was later confirmed as adenocarcinoma.

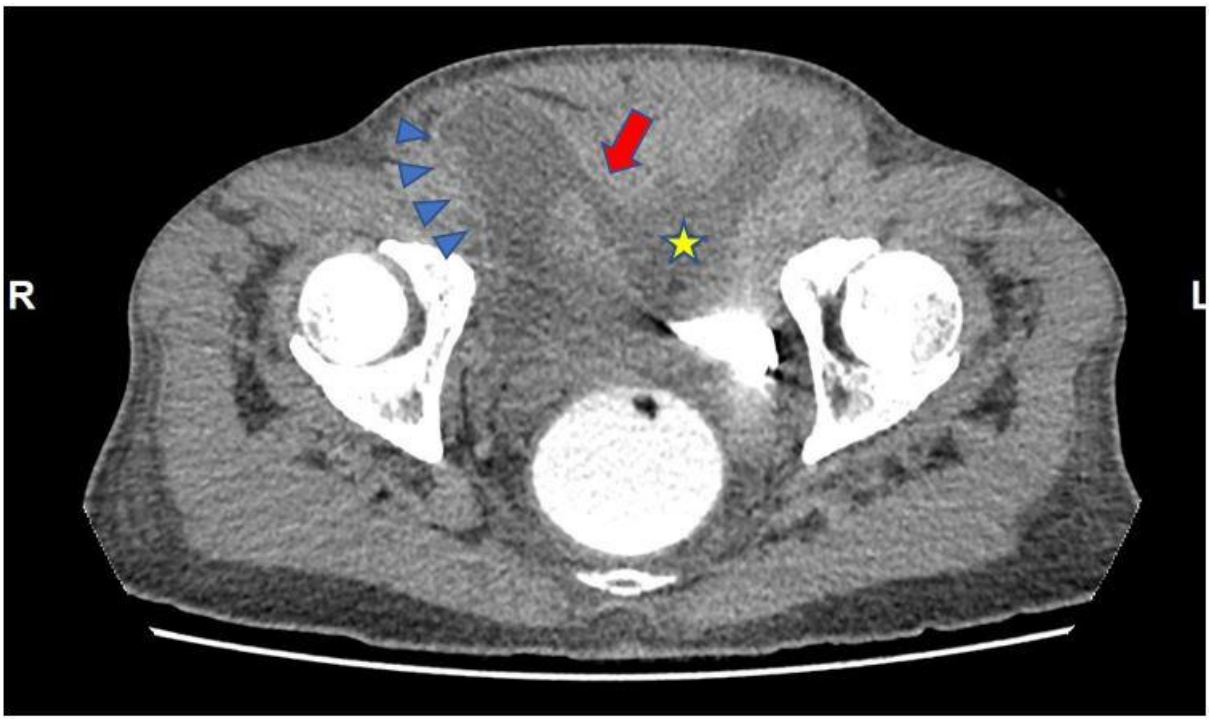

Figure 1. Axial contrasted CT scan image showing a partially filled urinary bladder (yellow star) with fistulous communication (red arrow) to adjacent fluid collection (blue arrow heads).

In the pelvis, the urinary bladder was partially distended with fluid collection outside the urinary bladder. A small fistulous communication was seen at the lateral part of the urinary bladder connecting the former and later (Figure 1). We concluded the findings as possible bladder injury causing urine leak or urinoma as the collection followed the contour of the bowels. In view of pre-existing colonic carcinoma, the possibility of the vesico-colonic fistulous communication was also being raised.

The patient subsequently underwent a cystogram which showed a thin linear tract measuring 1.2cm at the posterior part of the urinary bladder with contrast opacification within the rectum suspicious of a rectovesical fistula (Figure 2). Seepage of contrast was also seen at the left anterolateral part of the pelvis likely to represent extraperitoneal bladder leakage. Initial flexible cystoscopy after cystogram showed that there was an opening at the right lateral bladder wall, raising the suspicion of recto-vesicular fistula. Unfortunately, the cystoscope was unable to pass through the opening.

Following the diagnosis of colonic carcinoma, laparoscopic left hemicolectomy was performed. Flexible cystoscopy was repeated during the same setting which revealed a large opening over the right lateral bladder wall with the wall of the collection lined by normal bladder mucosa. This finally confirmed the diagnosis of urinary bladder diverticulum. No fistula was appreciated over the bladder wall. The giant urinary bladder diverticulum was well demonstrated in the follow-up CT scan, clearing the air for diagnosis (Figure 3).

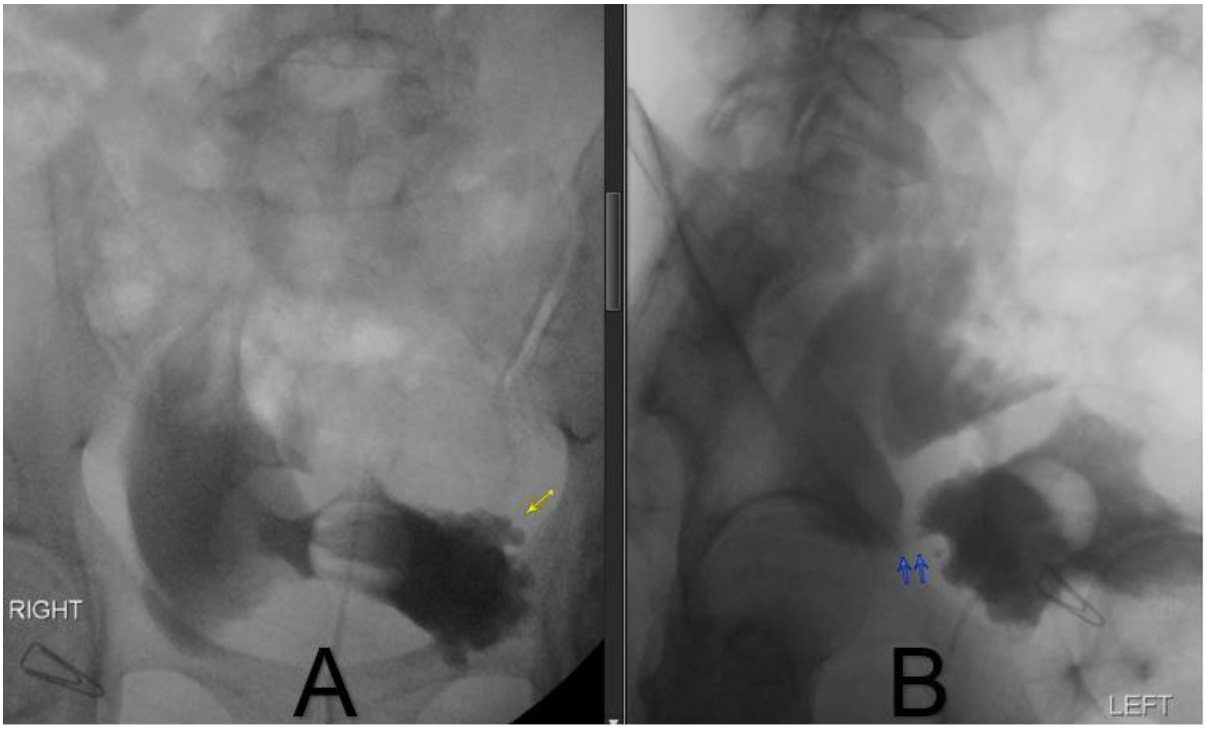

Figure 2 AP (A) and lateral (B) views of cystogram study shows contrast seepage at right lateral part of the urinary bladder resembling extraperitoneal bladder leakage. Bladder is not fully distended (yellow arrow). Thin fistulous tract connecting the urinary bladder and rectum (blue arrows) demonstrated

3 DISCUSSION

Urinary bladder diverticulum is a pathology that can be readily diagnosed with ultrasound, CT, fluoroscopy, or magnetic resonance imaging (MRI). However, in the presence of a single defect causing a huge diverticulum in the background of colon carcinoma, the diagnosis can be challenging. This is because it can masquerade other diagnoses such as collection, urinoma, or tumour invasion with fistulous communication from the primary. Difficulties in advancing the flexible cystoscopy into the defect make the diagnosis much more challenging. Diverticulum may involve either partly or all the layers of the wall of a hollow organ [1]. It can be congenital or acquired.

The congenital diverticulum is mostly seen below the age of 10 years old, and almost exclusively seen in boys. This is considered a 'true diverticulum' due to the involvement of all layers of the bladder wall, which are urothelium, lamina propria, and muscularis propria. It is commonly solitary and not associated with bladder trabeculations. Normally, it is associated with the posterior urethral valve or neuropathic bladder [2].

The acquired type of bladder diverticulum is normally seen in adult patients and considered as 'pseudodiverticula' due to lack of muscle layer. It is frequently found near the ureteric orifice, where there is relatively less longitudinal smooth muscle at the region [3]. During a rise in intravesical pressure, both mucosa and submucosa layers will herniate out and forming a pseudodiverticulum. Free communication often demonstrated between the lumen of the urinary bladder and the diverticulum. However, severe diverticulitis can cause the communication to be walled-off [1].

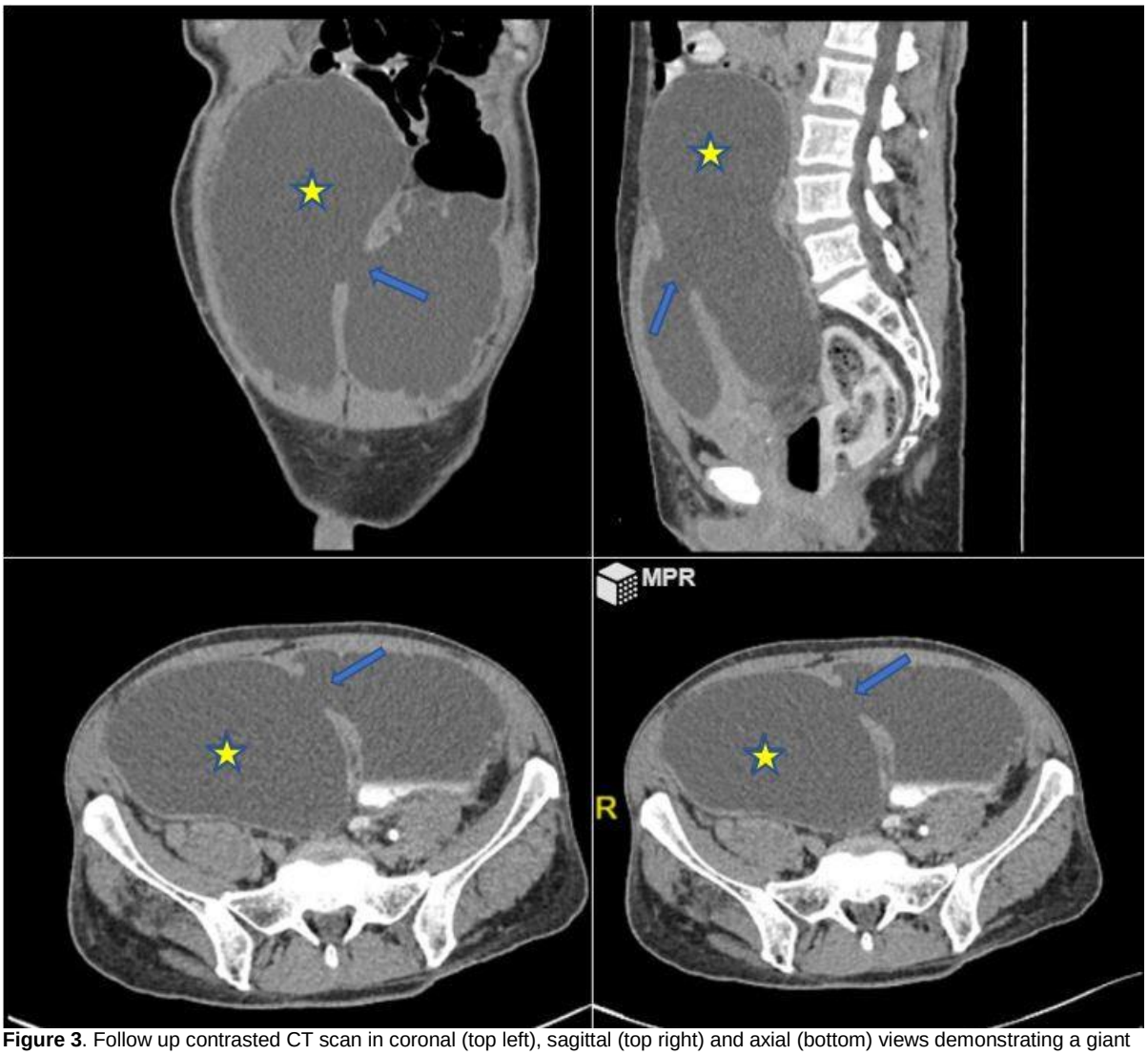

Figure 3. Follow up contrasted CT scan in coronal (top left), sagittal (top right) and axial (bottom) views demonstrating a giant urinary bladder diverticulum extending from the pelvis into the lower abdomen (yellow star). Blue arrow indicates urinary bladder wall defect**.**

In our patient, the diagnosis of urinoma secondary to urine leak from the bladder was initially made. This was because the collection was atypical in which the border of the diverticulum was following the contour of the bowels and looks as if it is insinuating in between the bowel loop. This was likely because the bladder and diverticulum were not fully distended as seen in the follow-up CT in Figure 3. Distension of the bladder plays a vital role in diagnosing urinary diverticulum [4].

Urinoma is defined as collection of urine surrounded by fibrous tissue outside the urinary system [5]. It results from disrupted urinary collecting system in the calyces, infundibula, or renal pelvis. Frequently, it is caused by renal trauma, either blunt or penetrating injury. It can also result from transmitted back pressure due to urinary tract obstruction secondary to stones, ureteric tumour, retroperitoneal fibrosis, blood clot, posterior urethral valve, or bladder outlet obstruction [5][6]. It is commonly small and spontaneously absorbed without intervention. However, if it is too large, expanding, or failed to resolve, intervention is required to prevent possible complications such as electrolyte imbalance, hydronephrosis, abscess, or urosepsis [7].

CT cystography is currently the study of choice for diagnosis as it is more sensitive in assessing the real extent of bladder injury while detecting coexisting pelvic injuries [6].

A similar case report of a huge diverticulum in a patient with colon carcinoma was reported by Jiang *et al.* (2020) [8]. In this report, the patient underwent trans-vesical diverticulectomy and cystostomy at the same setting with radical resection for colon cancer. The surgeons made a median abdominal incision into the anterior space of the bladder, opened the bladder, turned the diverticulum inside out, peeled off the diverticulum completely, sewed up, and made a fistula at the same time. The surgical option for diverticulum includes open diverticulectomy either intra- or extravesical. The intravesical approach may be beneficial in case of concurrent prostatic enlargement allowing simultaneous treatment of both entities. The extravesical approach is reserved for patients with large diverticulum associated with peri-diverticular adhesions or inflammation [9].

In our case, this giant diverticulum is likely due to acquired cause. No definite surgical management was performed after tumour resection because the patient was not keen for another operation.

4 CONCLUSION

Urinary bladder diverticulum is diagnosed with imaging or direct visualisation during cystoscopy. In a case where there is a single defect with giant outpouching and background history of nearby organ malignancy, diagnosis can be challenging. It is important to distend the bladder and diverticulum during imaging. Free communication between the bladder lumen and the diverticulum is normally demonstrable if the bladder is full. The use of multimodality investigations, performed in appropriate timing and indications are essential to differentiate between these lesions.

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ADDITIONAL INFORMATION

Conflicts of interest: The authors have declared that no competing interest exist. There was no financial support and non-financial relationship was received from any organization for the submitted work.

CONSENT

Verbal and written consent was obtained from the patient for publication of this case report and any accompanying images.

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