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Trauma and Reconstruction

Spontaneous Bladder Rupture Masquerading as Pseudo-diverticulum

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ABSTRACT

Spontaneous bladder rupture is rare. Presentation is non-specific and in absence of history of trauma, radiation, inflammatory conditions and other leading causes, there is considerable diagnostic delay. Absence of clear cut diagnostic signs leads to increased morbidity and mortality. In many patients, omentum seals perforation, giving diverticular appearance in Cystogram. The objective of this case report is to highlight important specific diagnostic points in history and radiology which will help in clear, early diagnosis and treatment causing immense benefit to the patient. We would also like to highlight a specific radiological point to distinguish true from pseudo-diverticulum.

40 year female presented with catheter in situ. The initial history was of acute urinary retention and progressive abdominal distension. She was catheterized elsewhere, had diuresis with decrease in distension. She was given voiding trial. Retention with distension was again noticed. CT showed gross pelvic ascites (A) totally enveloping the bladder (B) and uterus (U) (Fig. 1). She was catheterized again and the distension subsided. At this time, a general surgeon did diagnostic laparoscopy. There was minimal fluid which was aspirated and sent for Creatinine analysis. There was mesenteric thickening which was biopsied. The fluid Creatinine was normal and the biopsy was non-specific. She was given a second voiding trial by the surgeon, which again caused a recurrence of abdominal meteorism and retention. She was recatheterised. Following the failed second voiding trial, she sought a referral and presented to us with catheter in situ. On admission, an Ultrasound was done and it revealed bladder dome diverticulum. Cystogram showed diverticulum with concave border (bulging inward), instead of convexity (Fig. 1). Cystoscopy revealed pseudo-diverticulum at dome. Probing the unhealthy area with ureteric catheter revealed a perforation. At laparotomy, the perforation was repaired and there was no true diverticulum at dome (Fig. 2). Biopsy confirmed pseudo-diverticulum as there was only fibrous tissue with complete absence of muscular layers at perforation site. There was no evidence of tuberculosis or candidiasis at perforation site (Fig. 3).

Spontaneous atraumatic rupture of bladder has been described by Nishimura et al in a patient with malignancy and post-radiotherapy. In the above mentioned case bladder weakening could be due to radiotherapy.[1] Muneer et al have described a patient who had bladder rupture after a binge of alcohol. In this patient, probably the patient had a minor trauma to the suprapubic area on a full bladder which could have caused it.[2] Jorion et al described a case of rupture in a patient with Ehlers–Danlos syndrome.[3] Ehlers–Danlos syndrome is associated with muscular deficiencies which could have been the cause of perforation. Mardani et al have described spontaneous bladder perforation due to candidial cystitis.[4] The present case differs from all the cases mentioned above as there was no predisposing condition and it was a pure spontaneous rupture of the bladder.

There are no clear cut diagnostic criterions for this condition. Dubey et al have opined that CT with intravesical contrast could be helpful along with fluid Creatinine in a patient presenting with decreased urine output.[5] We slightly propose to modify this and present the following criteria as diagnostic. The occurrence of recurrent distension with inability to void after catheter removal is a definitive symptom of silent perforation. Fluid Creatinine is useful only when abdomen is distended. CT showing predominantly pelvic ascites is highly suggestive but not confirmatory. Conventional

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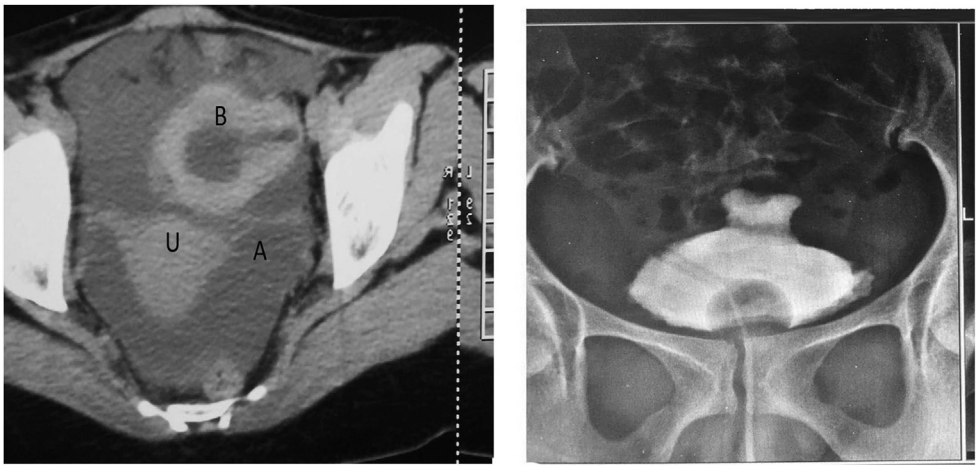

Figure 1. Radiological investigations showing predominantly pelvic ascites on CT and diverticulum with concavity on Cystogram.

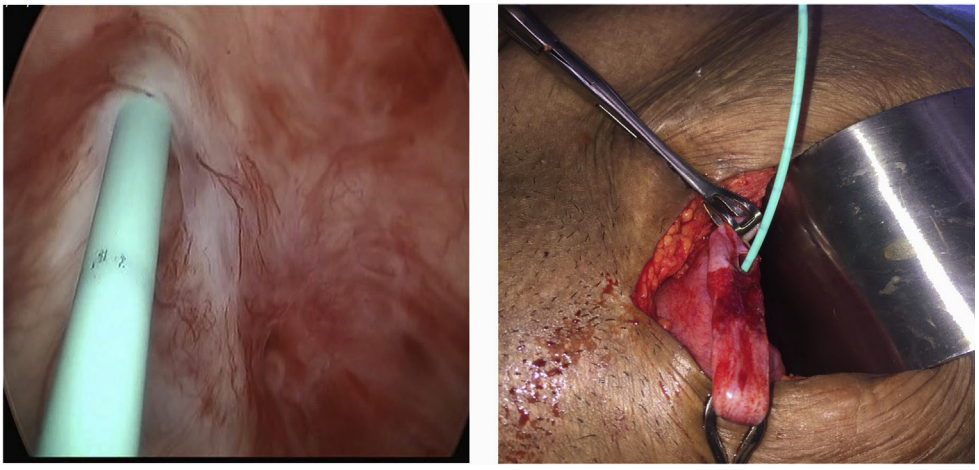

Figure 2. Cystoscopic view from inside and laparotomy view from outside showing pseudo-diverticulum with perforation.

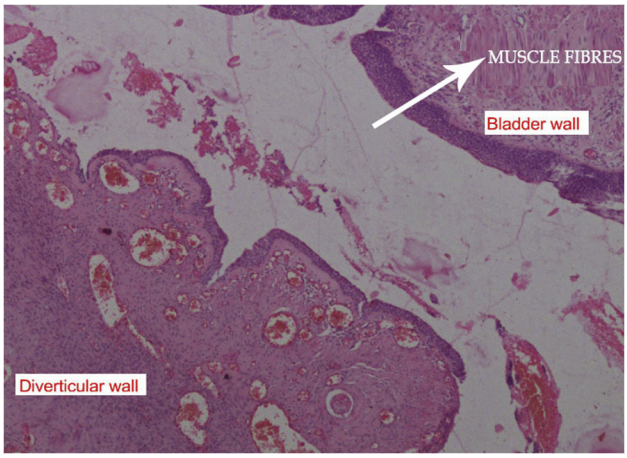

Figure 3. Histopathology showing complete lack or absence of muscle fibers at the site of perforation confirming pseudo-diverticulum.

Cystogram provides more magnification than CT and hence should be considered as investigation of choice. Diverticulum with convexity is suggestive of true bladder diverticulae, while diverticulum with concavity is definitive of pseudo-diverticulum due to perforation.

Bladder diverticulae can be congenital or acquired. Congenital bladder diverticulae have thin outer muscle coat, while the acquired diverticulae (as seen in bladder outlet obstruction cases) don't have a muscle coat, but have thickened hypertropic, hyperplastic muscularis propria. We propose our entity as pseudo-diverticula as our diverticulum did not have a muscle coat and it was totally devoid of muscularis propria (Fig. 3).

Cystoscopy with probing of the unhealthy area should be performed diligently in all cases of doubt, as most often the omentum would have sealed the perforation. Probing will reveal the perforation in such cases.

To conclude, spontaneous bladder rupture is a rare entity which can be suspected on careful history taking. CT with Cystogram is investigation of choice. Cystoscopy affirms the diagnosis of this entity. Histopathology can differentiate pseudo-diverticulum from a true diverticulum.

Conflicts of interest

None.

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