

# Bladder Diverticulum and Sepsis

## CASE REPORT

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## Abstract

**Introduction:** Bladder diverticula are rare both in adults and in children and may be congenital or acquired, are rare in females.

**Objective:** To describe the case of occasional finding of bladder diverticulum in women, which developed into sepsis.

**Case report:** Patient MIB, 81, female was admitted to the Cariri Regional Hospital after a fall from height resulting in trochanteric fracture of left femur. No fifth day of hospitalization, the patient developed an abdominal mass in right iliac, associated the signs of inflammation and painful abdomen. Computed tomography of the abdomen with contrast revealed a cystic collection of air-fluid content and inflammatory aspect in the right lower abdomen measuring approximately 212 mL volume with continuity with the bladder.

**Discussion:** Bladder diverticula are usually asymptomatic, and occasionally found more commonly in men. It is a rare condition in women and its clinical presentation is associated with infection or neoplasia. There are reports of peritonitis after spontaneous perforation of the diverticulum, however, its evolution to sepsis is rare.

**Conclusion:** Bladder diverticulum in women and evolving to sepsis without drilling is a rare condition, with few reports in the literature.

## Keywords

Bladder diverticula, sepsis, infection.

## Introduction

Bladder diverticula can be defined as pouches in the bladder mucosa through its muscular layer [1]. They are rare in adults and in children, and may be congenital or acquired. Acquired bladder diverticulum usually occurs in men over 60 years old, whose intravesical pressure increases caused by underlying diseases such as prostate diseases or neurological disorders [2, 3].

It is occasionally found in elderly men undergoing cystoscopy and cystography. The incidence in cystoscopy patients is 27.4% and in cystography patients is 40% [4]. In general, the bladder diverticula are more common in men than in women [3,5]. They are usually asymptomatic, but may develop gradually into hematuria, urinary tract infection, acute abdomen (in the case of diverticulum rupture), urinary retention and others [1]. However, rarely progress to sepsis. Another complication is the formation of a diverticular carcinoma that occurs in 0.8% to 10% of the cases [7].

Still, it is noteworthy that in search held this year 2015 within PubMed database using the keywords "bladder diverticulum" and "sepsis", it was found three articles, one of which was deleted because it addressed other pathology. The other two articles addressed sepsis with origin from a bladder diverticulum, however both in men. A study that correlates sepsis with bladder diverticulum in females was not found. [5, 6]

Thus, this study aims to describe the case of occasional findings of bladder diverticulum which developed into sepsis.

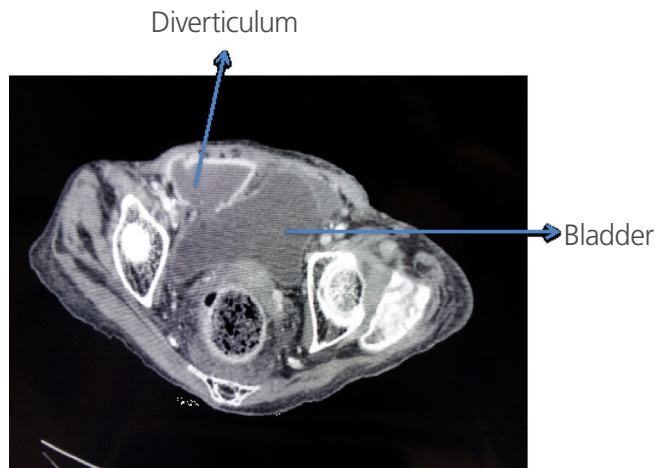
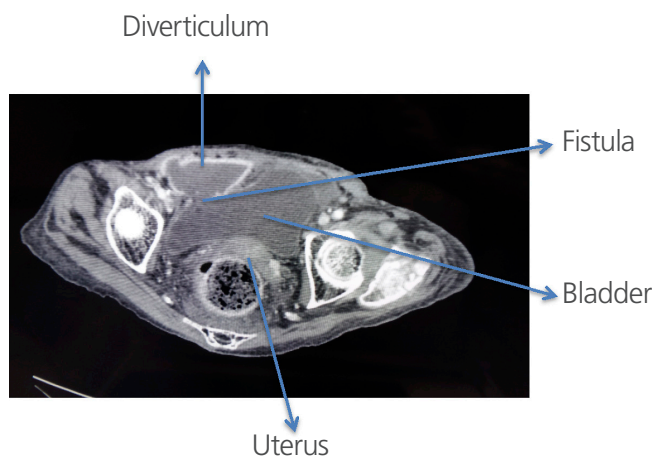
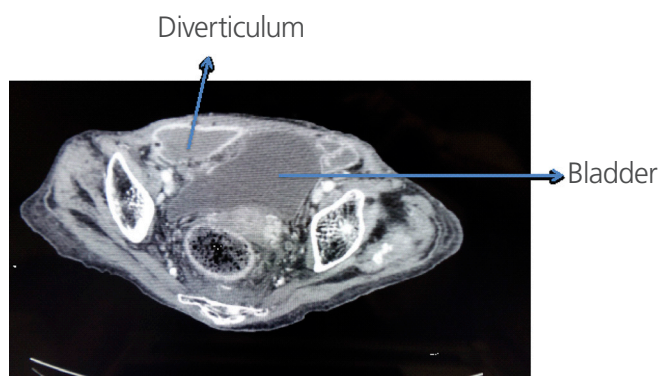
## Case report

Patient MIB, 81 years old with bilateral amaurosis and female was admitted to a large hospital at Cariri, CE, Brazil after a fall from her own height that resulted in transtrochanteric fracture of the left femur, requiring a femoral surgical treatment called osteosynthesis. However, because she did not have good clinical condition to undergo a surgical-

anesthetic procedure the patient was hospitalized for improvement of the clinical picture. From the fifth day of hospitalization, she developed an abdominal mass in the right iliac fossa, with signs of inflammation and abdominal pain. She also presented tachycardia (HR = 110), tachypnea (RR = 28), fever (Temperature = 38.4). A complete blood count from the same date showed leukocytosis (above 18,000 leukocytes/field). A urine examination done on the same date showed countless bacteria per field, proteinuria, hematuria, nitrites and leukocyte esterase (LE) present, confirming urinary sepsis. In addition, an abdominal CT scan with contrast for investigation of abdominal mass was requested, which indicated cystic collection of air-fluid content and inflammatory aspect from the right iliac fossa measuring approximately 212 mL of volume with solution of continuity with the bladder. Antibiotic therapy was started with 2g/day of meropenem (Merrem) according to nosocomial institution protocol. After 14 days of antibiotic therapy, the patient had significant vital signs improvement, white blood cell count, and urinalysis. However, the abdominal mass still persisted. Thus, the patient underwent exploratory laparotomy which revealed bladder diverticulum containing abscess that was connected to the bladder. Abscess drainage was performed (**Figures 1 to 3**), diverticulectomy and reconstruction of the urinary bladder. After this procedure, the patient had complete remission of symptoms and was discharged. Histopathology: bladder segment with nonspecific and chronic inflammatory process, ulcerated, with extensive areas of fibrosis and nonspecific granulomatous foci.

## Discussion

Bladder diverticula have an asymptomatic development, eventually with pelvic pain associated with urinary tract infection or neoplasia. They can be congenital or an acquired disorder. The congenital disorders usually develop from fetal mal-

**Figure 1:** Bladder diverticulum.**Figure 2:** Bladder diverticulum.**Figure 3:** Bladder diverticulum.

formations. It may be noted the detrusor muscle defect. [8, 9]

Acquired diverticula are mostly associated with other systemic diseases such as benign prostatic hyperplasia, extrinsic compression of the ureter or urinary dysfunctions. [10] The reported case corresponds to diverticulum caused most likely from traumatic nature, deduced by the late presentation and associated femoral fracture.

The most common clinical manifestations are urinary tract infections, intradiverticular bladder carcinoma, hematuria, ureteral obstruction and spontaneous rupture of the bladder. [1, 9, 10]. There are few reports of sepsis due to bladder diverticula due to the sterile nature of the urinary tract, especially in the absence of diverticulum perforation, where there are no solution of adjacency with the peritoneum. In the case presented there was no rupture or fistula of the diverticulum, keeping only communication with the bladder. Bladder diverticulitis is also rarely found. [1]

The diagnosis is usually occasional, evolving from a totally asymptomatic disorder and the patient may present other complaints such as in this case, in which the patient sought medical assistance because of a femur fracture and developed vague urinary complaints, camouflaging the base pathology, developing to sepsis. [11, 12]

Surgical treatment should be considered in the recurrence of symptoms or suspected neoplasia. [13] It can be an open, endoscopic or robotic diverticulectomy. [14] The patient described was approached by conventional laparotomy because of the size of the lesion and its nature not yet fully elucidated.

## Conclusion

Bladder diverticulum is a rare condition especially in females. Usually the diagnosis is occasional and it is not always that a diverticulectomy is indicated. Infection and carcinogenesis are possible complications; however sepsis is a rare condition.

Thus, in patients with symptomatic picture of the urinary tract or pelvic floor, it is important to think about this possibility, which although rare, can develop to cancer, infection and even sepsis.

### Consent

Written informed consent was obtained from the patient's for publication of this Case report and any accompanying images.

### Ethics questions

The current study was approved by the ethical committee of the Regional Hospital of Cariri, for case presentation.

### Competing interests

The authors affirm no conflicts of interest.

### Financial Resources

The authors used their own resources.

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