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## Case Report

# Migration of a bladder diverticulum stone into the rectum revealing an advanced rectal process <sup>☆,☆☆</sup>

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## ABSTRACT

Rectovesical fistulas are rare and typically result from inflammatory or neoplastic conditions in the small pelvis. They occur within a pelvic region that has been altered by local inflammatory or neoplastic processes. This explains the challenges in detecting these fistulas using conventional imaging techniques, despite the effectiveness of CT and MRI. Colonic diverticulosis is the primary cause of colovesical fistulas. To date, there have been no reported cases of a rectovesical fistula associated with a bladder diverticulum in the literature. We present a case of a patient who presented with a large stone within a bladder diverticulum. The migration of this stone into the rectum revealed an advanced rectal tumor. The unique aspect of our case is primarily the presence of a rectovesical fistula arising from a lateral bladder diverticulum. Additionally, we observed the migration of the diverticular calculus from the bladder to the rectum.

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## Introduction

Rectovesical fistulas are rare and typically result from inflammatory or neoplastic conditions in the lower pelvis. They develop within a pelvic region that has been affected by local inflammatory or neoplastic processes. In this case report, we

present a patient who presented with a large stone found within a bladder diverticulum. The migration of this stone into the rectum revealed an advanced rectal tumor. What makes our case unique is the presence of a rectovesical fistula originating from a lateral bladder diverticulum. Furthermore, we observed the migration of the diverticular calculus from the bladder to the rectum.

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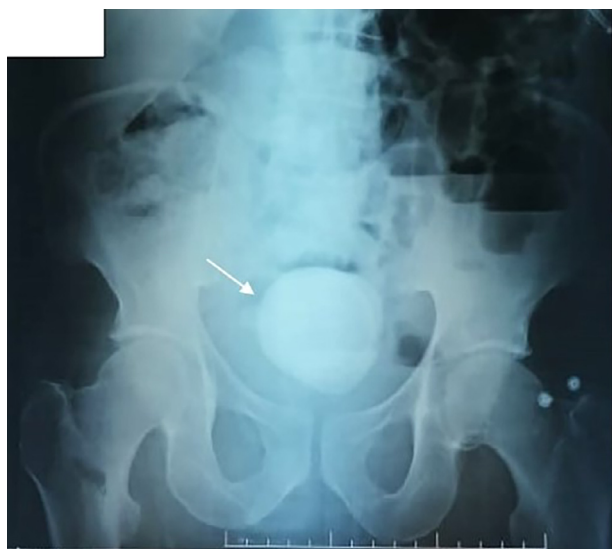
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**Fig. 1 – Abdominal radiograph displaying a large, regular, opaque formation in the pelvic region (white arrow).**

### Case report

A 54-year-old patient was admitted to the emergency department due to severe chronic pelvic pain and dysuria. The clinical examination did not reveal any significant findings. Subsequently, the patient underwent an abdominal radiography (Fig. 1) and an abdominopelvic CT scan (Figs. 2 and 3), which revealed a sizable right lateral bladder diverticulum containing a significant stasis lithiasis. The patient was then referred to the urology department.

After 17 months, the patient returned to the emergency room with intense pelvic pain and rectal bleeding. Laboratory analysis indicated an inflammatory response. An abdominopelvic CT scan without and with contrast was performed, identifying a rectovesical fistula with the migration of the large stone into the rectum (Fig. 4). Furthermore, there

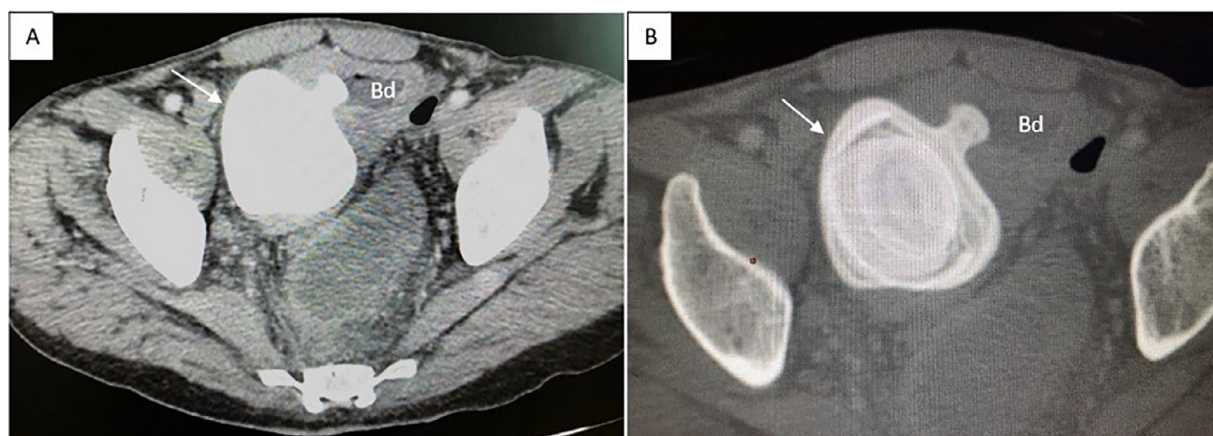


**Fig. 2 – CT scan of the abdomen in axial section and bone window reveals a large stone (white arrow) located in a right lateral diverticulum of the bladder (Bd).**

was irregular thickening of the upper and middle rectal wall (Fig. 5). The patient subsequently underwent surgery, and the histological examination of the rectal specimen confirmed it to be adenocarcinoma.

### Discussion

An abnormal connection between 2 separate cavities is referred to as a fistula. When it involves the colonic tract and the bladder, it is known as a colovesical fistula [1,2]. The exact incidence of colovesical fistulas is still unknown. It is estimated



**Fig. 3 – CT scan of the abdomen in axial section with parenchymal window (A) and bony window (B) showing the right laterovesical diverticulum and a large stone shaped like the diverticulum (white arrow).**

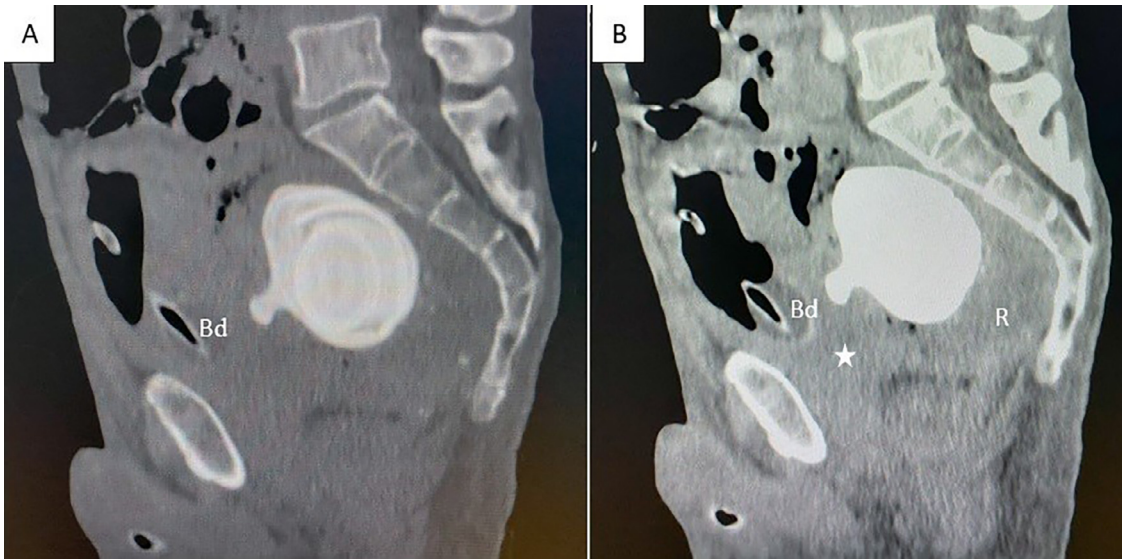


Fig. 4 – Sagittal sections of the CT scan of the abdomen with a bony window (A) and parenchymal window with contrast product injection (B) showing the migration of the large stone toward the rectum (R) and the rectovesical fistula (white star).

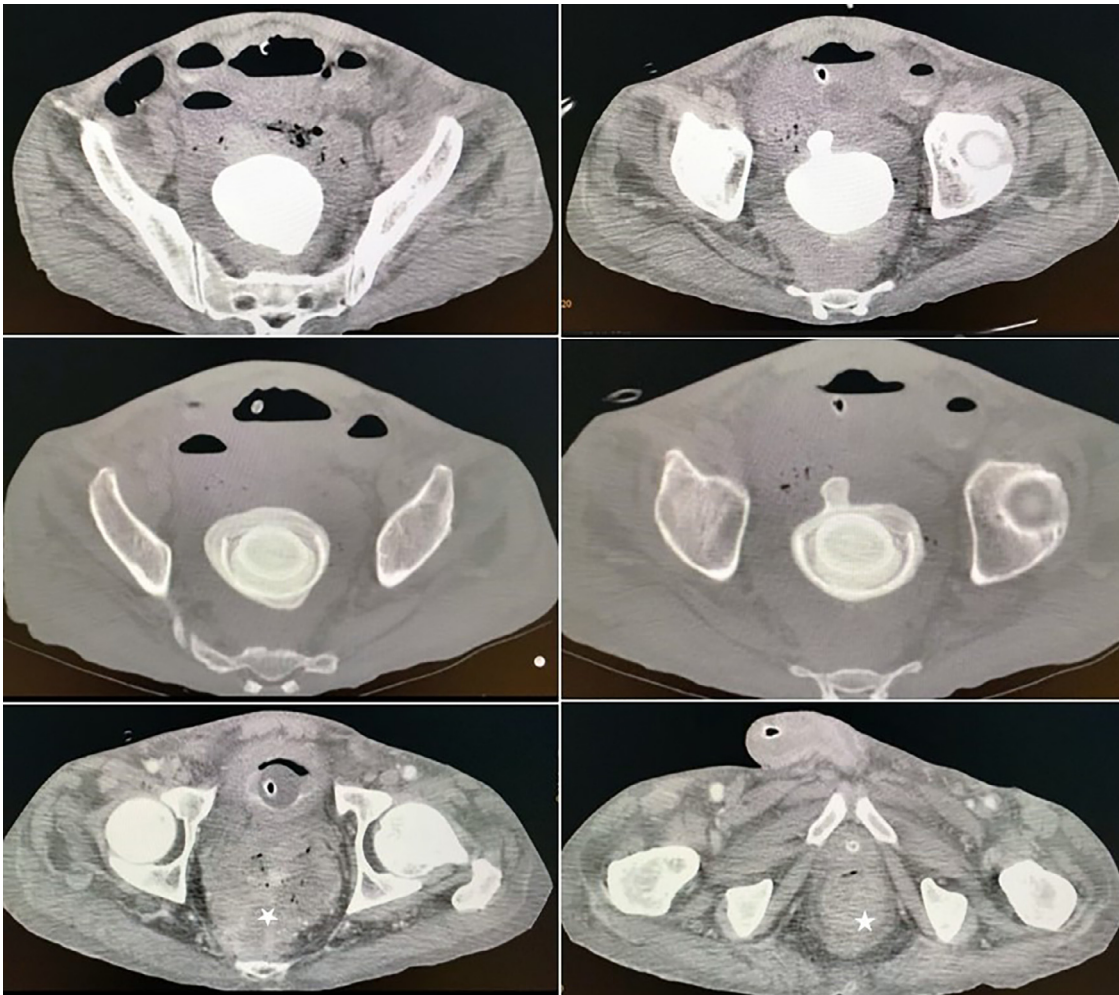


Fig. 5 – Axial abdominal CT images with contrast injection showing irregular thickening of the upper rectal wall (white star) and the migration of the large stone into the rectum (R).

that colovesical fistulas account for 1 in every 3000 surgical hospital admissions [3]. In patients with diverticular disease, 2% to 18% were found to have CVFs [3] type of fistula is commonly associated with inflammatory or neoplastic processes. Colonic diverticulosis is the most frequent cause of colovesical fistulas and is considered relatively rare [4,5]. To date, there have been no reported cases of rectovesical fistula associated with a bladder diverticulum in the literature. The most common symptoms include pneumaturia and fecaluria, although they may not always be present in the clinical presentation. Other clinical signs, such as cystitis, are nonspecific. Complementary examinations play a crucial role in determining the location of the fistulous tract and evaluating the underlying pathology to determine the most appropriate therapeutic approach.

Before any instrumental intervention on the bladder, it is advisable to conduct a CT scan to avoid introducing air. This can be achieved without the need for intravenous contrast injection and can reveal intravesical air bubbles [6]. In our case, an intravenous contrast injection was administered, which offered enhanced visualization of the thickening of the rectal wall.

The MRI is the key examination for detecting pelvic organs, especially for assessing the extent of rectal and urogenital cancers, as well as for diagnosing complications such as abscesses and fistulas [7–9]. To see small fistulas the best imaging test is fistulography when it is possible, using any available modality (X-Ray, US, CT, MRI) [10]. Magnetic resonance imaging (MRI) also plays a role in diagnosing pelvic fistulas [8,9]. These fistulas appear as more or less regular linear structures with low signal intensity on T1-weighted sequences, clearly visible with high signal intensity in fatty areas. On T2-weighted sequences, there is a moderate signal enhancement due to inflammation. The visibility of the fistulas can be further improved with the administration of Gadolinium, allowing their identification in 57% of cases [6]. MRI is also valuable for detecting wall thickening and pelvic abscesses. Some consider MRI to be the most valuable test for diagnosing and evaluating underlying pathology, particularly in cases where there has been no prior radiation exposure. However, in our case, an MRI was not performed as the migration of bladder stones enabled us to establish the diagnosis of colorectal fistula.

## Conclusion

Colovesical fistula is a rare condition primarily associated with colonic diverticulosis. It can manifest with various symptoms, most notably pneumaturia and fecaluria. While CT scans have high diagnostic accuracy, they may overlook small fistulas. In our specific case, the fistula was malignant in nature and involved communication between the rectum and a bladder diverticulum.

## Ethical considerations

We declare that we have complied with the protocols regarding the publication of the data of the patients concerned, and the anonymity of the patient data has been preserved.

## Patient consent

I would like to confirm, on behalf of my co-authors and myself, that we have obtained all the consents required by the current legislation for the publication of personal data or images of patients, subjects of investigation, or other individuals depicted in the materials submitted to your Journal.

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