Colovesical fistula as result of diverticular disease and multiple bladder diverticula
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Section: Abdominal imaging
Area of Interest: Abdomen Gastrointestinal tract Urinary Tract / Bladder
Procedure: Contrast agent-other
Procedure: Diagnostic procedure
Procedure: Cystography / Uretrography
Imaging Technique: CT
Imaging Technique: Fluoroscopy
Special Focus: Fistula Diverticula Case Type: Clinical Cases
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Patient: 65 years, male

Clinical History:

A 65-year-old male patient presented to the emergency department with diarrhoea of 8 days duration, accompanied by tremors and poor general status. Leukocytosis was detected and he was admitted to further investigation and treatment. During hospitalisation, he presented with subtle desaturation and fecaluria.

Imaging Findings:

CT cystography (Fig. 1) revealed well-distended bladder with thick walls, multiple diverticula, an air-fluid level and leakage of contrast material out of the bladder and into the colon. Associated active diverticulitis was found, with sigmoid wall thickening. The affected section of the sigmoid was contiguous to the bladder dome wall, with obliteration of the fascial plane between them.

The patient underwent surgery with identification of the fistulised colon and resection of the diseased segment, and a protective colostomy was performed. The bladder fistula was not identified intraoperatively and the bladder was relieved by a permanent urinary catheter.

Seven months later, the patient complained of urine leakage by anus, despite permanent urinary catheter. No additional imaging was done during this period of time. A cystography (Fig. 2) and a water-soluble contrast enema were then performed. The water-soluble contrast enema showed persistence of the colovesical fistula, with moderate flow (Fig. 3).

Discussion:

Colovesical fistulas are the most prevalent form of acquired bladder-enteric fistula, being more common between the
recto-sigmoid colon and the bladder dome [1]. Although rare, they occur most often in association with diverticular disease when a ruptured diverticulum or a peri-diverticular abscess extends and erodes into the bladder, but may also arise as a complication of colorectal carcinoma, inflammatory bowel disease or previous pelvic surgical procedures [2, 3]. There is a male predominance because in non-hysterectomised women, the bladder and colon are separated by the uterus and adnexa [4, 5].

Pathognomonic clinical findings are pneumaturia and fecaluria, which may be associated with fever, abdominal pain or weight loss [1, 2], and imaging studies should be performed in order to determine the underlying mechanism and help surgical planning. Abdominopelvic computed tomography (CT) is the most sensitive imaging test and should be the primary imaging modality [4]. Although it may fail to show the fistulous tract on its own, it is able to demonstrate indirect signs such as localised bladder wall thickening, intravesical air or an adjacent extraluminal mass [2, 4]. CT cystography was developed to complement non-enhanced CT, allowing precise identification of small urine leaks, and has been successfully applied in patients with colonic diverticular disease and suspected fistula, as in this case [1].

Colovesical fistula can frequently be treated with resection of the involved segment of colon and primary anastomosis in a single procedure [4]. Emergency surgery may require resection of the involved segment of colon and a terminal colostomy. A few months later, after resolution of pelvic inflammation, intestinal transit is reconstructed with reanastomosis of the colon [6]. When the fistula is small and unidentifiable intraoperatively, the bladder defect usually heals with temporary catheter drainage [4, 7].

In our patient, seven months after surgery and with the strong suspicion of residual fistula, a cystography was requested, which showed diverticula of the bladder but did not reveal the fistula. In cases like this, a limited water-soluble contrast enema may be done [8] by filling the rectosigmoid stump and show the presence of colovesical fistula.

In this case, we emphasise the importance of performing complementary examinations soon after the protective colostomy, in order to assess proper occlusion of the fistula and prevent contact between urine and colonic mucosa, due to the increased risk of colonic cancer even with short-term exposure in these patients [9].

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Colovesical fistula as result of diverticular disease and bladder diverticula, Other causes of enterovesical fistula:; - Cancer, - Infection, - Inflammatory conditions, - Foreign body, - Iatrogenic causes

**Final Diagnosis:** Colovesical fistula as result of diverticular disease and bladder diverticula

**References:**


Liang ZW, Hsiao PJ, Chen YL, Li YK, Chan JS (2015) Refractory Urinary Tract Infection in a Male with Colovesical Fistula. International Archives of Medicine Section: Urology Vol. 8 No. 269


Description: Bladder with diverticula (yellow arrow), an air-fluid level (white arrow) and a leakage of contrast material out of the bladder and into the colon (blue arrow). Red arrow shows the fistulous tract.

Origin: Department of Radiology, Hospital do Divino Espírito Santo de Ponta Delgada, Azores, Portugal.
Description: Lateral view - Cystography performed with water-soluble contrast immediately before the enema, showed bladder diverticula (yellow arrow), but could not demonstrate the fistulous tract. Origin: Department of Radiology, Hospital do Divino Espírito Santo de Ponta Delgada, Azores, Portugal.
Description: Anteroposterior view - Bladder diverticula (yellow arrow). Origin: Department of Radiology, Hospital do Divino Espírito Santo de Ponta Delgada, Azores, Portugal.
Description: At first, the enema showed multiple colonic diverticulae (green arrows).

Origin: Department of Radiology, Hospital do Divino Espírito Santo de Ponta Delgada, Azores, Portugal.
Description: During the examination, there was filling of the bladder (*), demonstrating the maintenance of the fistulous tract. Origin: Department of Radiology, Hospital do Divino Espírito Santo de Ponta Delgada, Azores, Portugal.