

Colo-uterine Fistula, a Rare Complication of Diverticular Disease of the Colon, Case Report and Literature Review

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Citation

A Mohamed, Y Al Suhaibani, F Emran, S Al Shami. *Colo-uterine Fistula, a Rare Complication of Diverticular Disease of the Colon, Case Report and Literature Review*. The Internet Journal of Surgery. 2009 Volume 25 Number 1.

Abstract

Diverticular disease of the colon

can cause many complications including strictures, obstruction, perforation, abscess, and less often fistulas communicating with surrounding organs.

Colouterine fistula is a rare complication of diverticular disease of the colon. We report a case of colouterine fistula treated conservatively due to multiple associated co-morbidities.

INTRODUCTION

Colouterine fistula is a rare complication of diverticular disease of the colon. The rarity of the condition is reflected in the fact that only few cases have been reported in the literature. We report a case of colouterine fistula in an 80-year-old female who presented with a diverticular abscess with a colouterine fistula suspected on the pelvic CT scan. Because of her age and her associated co-morbidities she was treated conservatively with CT-guided percutaneous drainage, intravenous antibiotics and total parenteral nutrition. We also review the literature for this rare complication of diverticular disease of the colon.

CASE PRESENTATION

An 80-year-old female presented to the emergency department at King Fahad Medical City, Riyadh, KSA, with a history of bilateral loin pain of 7 days' duration. The pain was of sudden onset, radiating to the back, without aggravating or relieving factors. It was associated with constipation, dysuria and polyuria, but no macroscopic hematuria or vaginal discharge. There was no history of fever or rigors.

She sought medical advice initially at a local hospital, where a CT scan of the abdomen was done which showed multiple right renal cysts. Urine analysis indicated urinary tract infection. She was treated as UTI and discharged home.

At KFMC she was attended initially by the medical team.

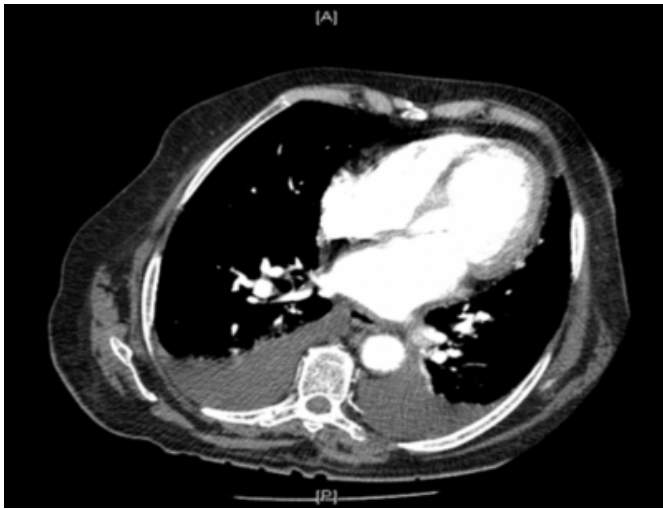
On admission she was pale, moderately dehydrated, and febrile with a temperature of 38.8°C. Abdominal examination revealed tenderness in the right renal angle. Laboratory investigations revealed a hemoglobin of 8.6g%, a leukocyte count of 11.3×10^3 (predominantly neutrophilic - polymorphs 72.5%), and platelets of 624×10^3 . Her urea and electrolytes showed a urea of 10.6 and a creatinine of 134. Urine analysis showed 80 WBC and 15 RBC, urine culture grown E coli.

She was admitted to the female medical floor as a case of pyelonephritis, iron deficiency anemia and pre-renal azotemia for rehydration and further investigations. She was started on IV antibiotics.

The abdominal ultrasound done on admission showed bilateral cortical renal cysts with no evidence of obstruction. Few days after admission, she had a sudden drop of her oxygen saturation and her blood pressure shot up to 210/140mmHg. She was seen by the cardiac team and found to have congestive heart failure, pulmonary edema and bilateral pleural effusion with suspicion of pulmonary embolism which was excluded by spiral chest CT scan (figure 1).

Figure 1

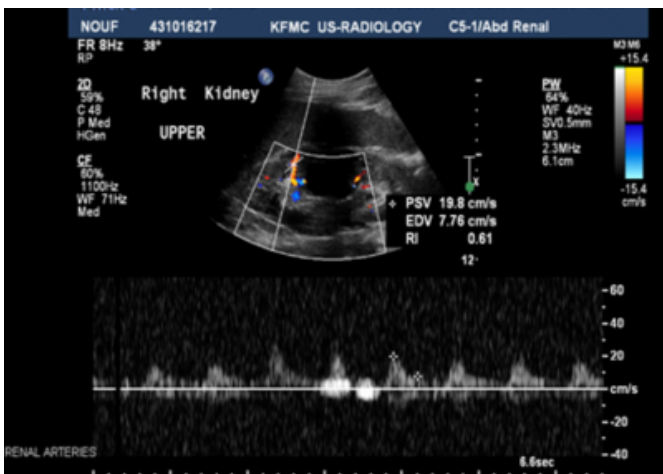
Figure 1: Chest CT scan showing bilateral pleural effusion, but no evidence of pulmonary embolism



The echocardiogram showed poor ventricular functions with low ejection fraction (25%). The renal arteries duplex ultrasonography showed no renal arteries stenosis (figure 2).

Figure 2

Figure 2: Doppler ultrasound showing multiple non-communicating cysts with tiny foci of bilateral calcification/calculi. Doppler ultrasonography of the renal arteries demonstrated normal renal blood flow.



The pleural effusion was drained percutaneously and it was transudative in nature, with negative bacterial culture. She was also started on antihypertensive and heart failure medications.

In spite of being on intravenous antibiotics for few days, she had on-and-off fever with sweating and rigors. A CT scan of the abdomen was ordered and showed multiple sigmoid diverticula with a large loculated pelvic collection of about

6.1 x 13 x 9.7cm extending to the right iliac fossa, together with a paracervical collection. There was enhancement of the uterus with gas bubbles in the uterine fundus with a questionable fistula between the sigmoid colon and the uterus (figures 3 & 4).

Figure 3

Figure 3: Abdominal CT scan (axial view) showing sigmoid diverticula associated with a large air-filled cavity with some fluid located in the anterior aspect of the pelvis and gas bubbles in the uterine fundus, suggestive of colouterine fistula.

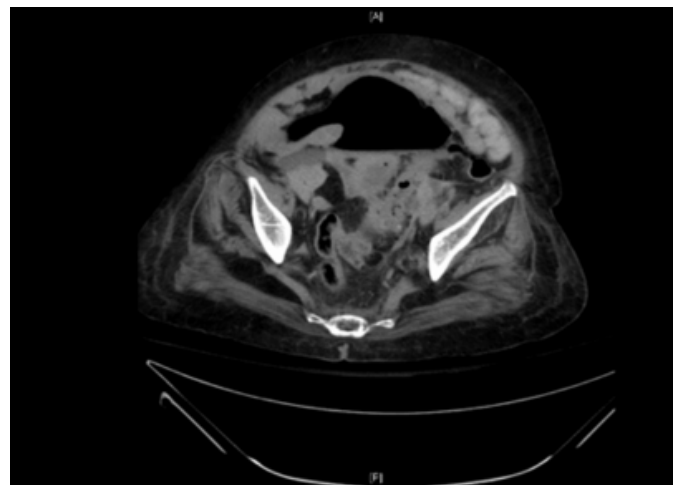


Figure 4

Figure 4: Abdominal CT scan (sagittal view) showing a heterogenous uterus with air bubbles in the fundus adjacent to the air-filled cavity.



Surgical consultation was sought and the patient was seen by the surgical team. At that stage she was febrile with a temperature of 38.3°C but she had no signs of localized or

generalized peritonitis apart from tenderness on deep palpation in the left iliac fossa. Considering the patient age, associated co-morbidities and lack of signs of peritonitis together with the fact that the patient and her family denied the possibility of need of colostomy, we decided to treat her conservatively. She was kept fasting and started on peripheral parenteral nutrition (PPN). The pelvic abscess was drained percutaneously and the antibiotic was changed according to the pus culture result which yielded *Klebsiella pneumoniae* (ESBL). The patient showed dramatic clinical improvement after the abscess drainage. She became afebrile and the leucocyte count dropped down to normal. A repeat CT scan of the abdomen 14 days after the percutaneous drainage showed almost complete resolution of the pelvic abscess with residual air in the uterine cavity (figures 5 & 6).

Figure 5

Figure 5: Repeat CT scan 2 weeks after percutaneous drainage of the abdomen showing resolution of the pelvic abscess, air in the uterine fundus and residual air filling the cavity, with the draining tube within the cavity.

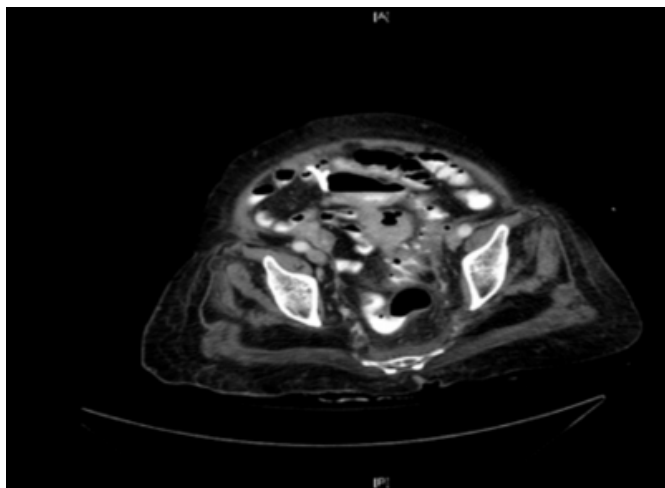
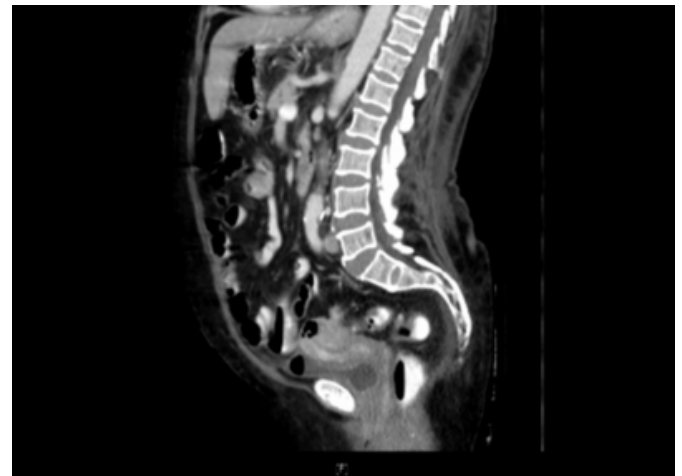


Figure 6

Figure 6: Repeat CT scan 2 weeks after percutaneous drainage of the abdomen (sagittal view) showing the same finding as figure 5.



The patient gradually resumed oral intake. She tolerated oral diet very well and was discharged after 26 days of hospital stay. She was followed in the outpatient clinic on weekly basis and she remained well. A repeat CT scan 8 weeks post discharge showed no residual pelvic collection or evidence of persisting fistulation or colonic malignancy (figures 7 & 8). The patient refused to have colonoscopy.

Figure 7

Figure 7: Abdominal CT scan for the previously suspected colouterine fistula showing no evidence of persistent colouterine fistula or pelvic collection.

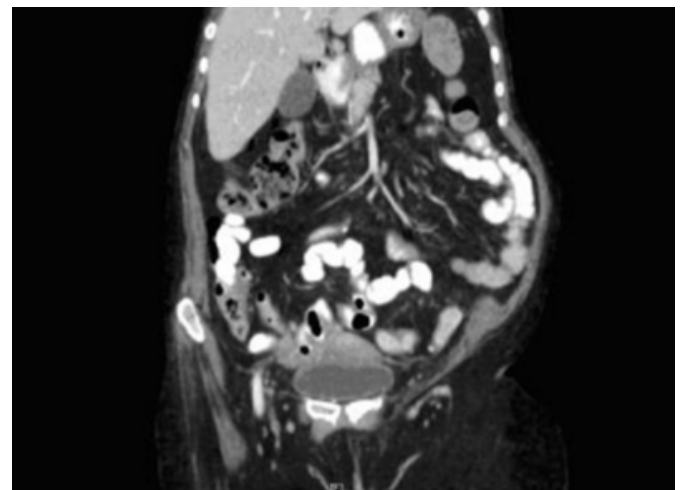
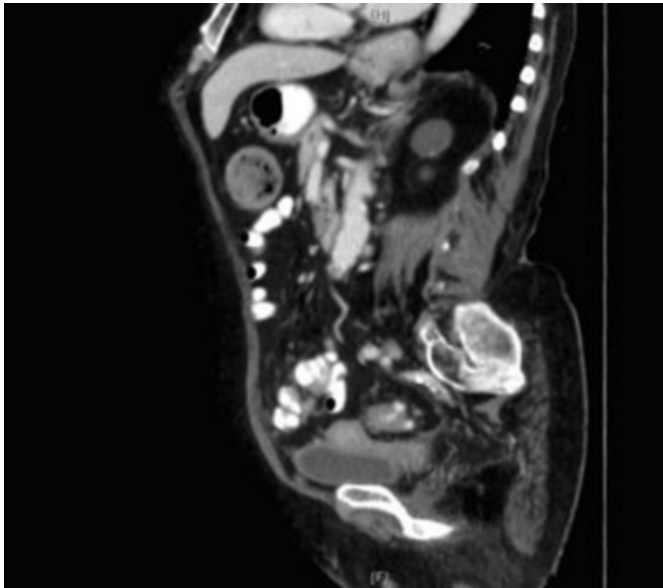


Figure 8

Figure 8: Follow-up sagittal view of the abdominal CT scan for the previously suspected colouterine fistula showing no evidence of persistent colouterine fistula or pelvic collection.



DISCUSSION

Diverticular disease of the colon primarily affects those who are living in developed countries. However, the incidence of diverticular disease is increasing in Asian countries.

According to the World Gastroenterology Organisation, the prevalence of diverticular disease in the Asian and African countries is approximately 0.2% and it predominantly involves the right side of the colon. In Saudi Arabia, there is an observable increase in the number of patients presenting with this disease, although there is no official statistic on its prevalence.

Diverticular disease of the colon can be complicated by strictures, obstruction, perforation, abscess, and less often fistulas communicating with surrounding organs. While colovesical fistula is the most common type of fistula associated with diverticular disease of the colon occurring in 2% to 22% of patients with known diverticular disease (1–4), colouterine fistulas are a relatively uncommon entity arising in the setting of the disease (5).

The formation of the fistula results from a local inflammatory process with an abscess, which spontaneously decompresses by perforating into an adjacent viscus, or through the skin. The fistulous tract is commonly single, but multiple tracts are found in 8% of patients. Fistulation occurs between the colon and the urinary bladder (colovesical fistula) in 65% of the cases and between the

colon and the vagina (colovaginal) in 25 % of the cases. Colouterine fistula is a rare complication of diverticular disease of the colon (2, 6-12).

A colouterine fistula was first reported by Lejemtel in 1909. At that time three main etiologies were described: uterine trauma, presence of abscess rupture into the bowel and the uterus and uterine or sigmoid carcinoma. In later years radiotherapy has also involved in colouterine fistula formation (13).

The first report of colouterine fistula related to diverticulitis was by Noecker in 1929 (14).

The rarity of the condition is reflected in the fact that only few cases have been reported in the literature (8, 9). There were only 17 cases reported in the world literature till 1992 (15), and only nine cases of sigmoidouterine fistula have been reported in Japan till 2001 (16).

The largest review of diverticular fistulae published in the literature is from the Cleveland Clinic, Ohio. Of 412 patients with surgically treated diverticular disease over a 26 year period, 84 (20.4%) patients had internal fistulae. The commonest fistula was from colon to bladder (65%), followed by vagina (25%). There were three colouterine fistulae, the largest number reported in any series (2).

A 20-year retrospective review from Canada of 42 patients with diverticulitis complicated by fistula formation revealed the majority of fistulae were colovesical (48%), followed by colovaginal (44%) and one colotubal fistula. There were no colouterine fistulae in this series (17, 1).

The rarity of colouterine fistulas is probably explained by the fact that the uterus is a thick muscular organ, which poses obstacles for invasion for both benign and malignant disease. Halevy et al. asked whether advanced age plays a role in the development of this entity, as the uterine wall becomes thinner and the mucosa atrophic. Unfortunately, they could not provide an answer for this question from the cases they had reported (6). Although the exact mechanism of development of colouterine fistula is not well known, it was postulated that inflammatory adherences of the bowel wall to the uterus which occur during acute episodes of diverticulitis, can result in necrosis and subsequent fistula formation. Fistulae may also develop after localized perforations of diverticula and development of a pericolic abscess (18).

Patients with established colouterine fistula usually present with chronic vaginal discharge, which may be purulent, hemorrhagic, or fecal (11). During early stages of fistula formation, patients may present with symptoms and signs of diverticulitis or pelvic abscess associated with vaginal discharge. As it may be very difficult to document the fistulas by non-invasive imaging modalities including CT scan and MRI, the diagnosis depends on a high index of suspicion. A colouterine fistula should be suspected in any patient with persistent vaginal discharge and diverticulitis of the sigmoid colon. In acute cases the diagnosis should be suspected in all patients with diverticulitis or diverticular abscess in presence of air and fluid within the uterus on ultrasound or CT scan.

Methods for diagnosis of colouterine fistula are not yet established. The imaging modality for diverticular fistulae has traditionally been contrast radiology, either rectally or vaginally (19).

The 'charcoal challenge test' has been reported as a diagnostic aid (20). The test depends on demonstrating the passage of orally administered activated charcoal from the cervical os at pelvic examination on the next day.

CT scan may show evidence of communication between the uterus and colon, but it may fail to demonstrate the fistulous tract; however, CT scan and MRI may play an important role in pre-operative surgical planning by demonstrating the extent and degree of pericolonic inflammation. CT scan has been described before in combination with vaginography to demonstrate a colouterine fistula (21).

Beattie et al. suggest that the use of multidetector computed tomography (MDCT) allows excellent multiplanar reconstructions and improves visualisation of pathology with a shorter acquisition time, although it exposes the patient to a larger radiation dose than standard CT (17).

Takada et al. reported diagnosis of colouterine fistula by sonohysterography detecting the flow of ultrasound contrast medium between the uterine cavity and the sigmoid colon through the posterior uterine wall (10).

Surgical treatment was a one-stage, en bloc resection of the uterus and sigmoid colon. If malignancy cannot be excluded, a single-stage en bloc resection of the uterus and colon is the procedure of choice. Hysterectomy may also be mandatory to extirpate a nidus of acute infection. When severe local inflammation or obstruction mandate urgent operation, a

two-stage procedure involving resection and end colostomy, followed by re-anastomosis at a later time, is safest and most effective(18).

Colouterine fistulas also have been successfully treated laparoscopically. Dadhwal et al. report successful laparoscopic management of a colouterine fistula caused by a foreign body in the uterus (22). Laparoscopic procedures have been shown to be as safe as conventional surgery and result in superior comfort and cosmesis, a shorter postoperative stay, and less postoperative ileus.

Shultz et al. reported a similar case of colouterine fistula and pyometrium treated with percutaneous drainage. There were few cases in the literature that were treated non-surgically because patients either were not willing for surgery or had a too high surgical risk because of age and associated comorbidities.

SUMMARY

Colouterine fistula is a rare complication of diverticular disease of the colon. Diagnosis depends on a high index of suspicion. It should be suspected in any patient with a persistent vaginal discharge and diverticulitis of the sigmoid colon and in all patients with diverticulitis or diverticular abscess in presence of air and fluid within the uterus on ultrasound or CT scan. Imaging modalities may show evidence of communication between the uterus and colon, but may fail to demonstrate the fistulous tract. Surgical treatment is one-stage, en bloc resection of the uterus and sigmoid colon or in presence of severe inflammation two-stage procedure involving resection and end colostomy, followed by re-anastomosis at a later time. Although surgical intervention is the treatment of choice for colouterine fistula, nonsurgical therapy is a viable option in patients for whom surgery is either not advisable or desired.

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