

Iatrogenic Vesicojejunal Fistula Six Years Following Subtotal Hysterectomy: Diagnostic Challenges and Management

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Abstract

Enterovesical fistula represents an abnormal communication between the urinary bladder and the gastrointestinal tract. It can result spontaneously from different disease processes, but can also complicate a surgical procedure. While most involve the large bowel, few involve the small bowel and these present with more clinical problems, as well as challenges in diagnosis and management. The patient is a 50-year-old P₈⁺⁰, woman who presented to our facility with a 6 months' history of faecaluria. There was associated history of urinary frequency, urgency, pneumaturia and dysuria. She had subtotal hysterectomy 6 years prior to presentation. Cystography, Abdominal computed tomography scan, and cystoscopy done revealed a small bowel fistula with the bladder. She had exploratory laparotomy which revealed the fistula and extensive intra-abdominal nylon suturing of bladder and jejunum. She was treated and did well postoperatively. Enterovesical fistula can follow wrong suture use in surgical procedures even many years after the procedure. A high index of suspicion and imaging modalities are needed for early diagnosis and prompt management.

Keywords: Enterovesical Fistula; Hysterectomy; Intra-Abdominal Nylon Sutures.

Introduction

Enterovesical fistula represents an abnormal communication between the bowel and the urinary bladder. Though generally uncommon, it is a condition that can be both frightening and embarrassing. While its occurrence is commonly spontaneous from diverticulitis, malignancy or inflammatory bowel disease, a percentage is from iatrogenic injury.^[1] This can result from major general surgical procedures (particularly for colorectal cancer, diverticulitis, or inflammatory bowel disease), as well as vascular, gynaecological and urological surgeries.^[1] While a greater percentage involve the large gut, a smaller percentage (16%) has been reported to involve the small gut and this presents with its own peculiar challenges.^[2]

It is characterized mainly by faecaluria,

pneumaturia and recurrent urinary tract infections. Diagnosis is usually clinical but establishing the actual anatomical location of the fistulous connection may be challenging and require varying types of imaging and in some cases will require exploratory laparotomy to unravel.^[3] We present a case of a vesicojejunal fistula occurring 6 years after a subtotal hysterectomy done in a secondary health facility from use of intra-abdominal nylon sutures.

Case Report

The patient is a 50-year-old P₈⁺⁰, woman who presented to our facility with 6 months' history of

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faecaluria. There was associated history of urinary frequency, urgency, pneumaturia and dysuria. She also reported haematuria which initially was intermittent, terminal, with no associated clots until about 2 days prior to presentation when it became continuous and total, with amorphous clots. There was intermittent low-grade fever. There was no history of vaginal bleeding, suprapubic swelling, necroturia, abdominal swelling and change in bowel habit. She had no history of chronic cough, contact with anybody with chronic cough, drenching night sweats or ingestion of unpasteurized milk. She was not known to be living with HIV/AIDS and had no other immunosuppressive disease. Also, there was no history of pelvic irradiation, smoking or exposure to dyes, paint, rubber processing or petrochemicals. She had no family history of colorectal or genitourinary malignancy. There was history of marked weight loss though she was still feeding well. She gave a history of hysterectomy done 6 years prior to presentation at a secondary health facility by a doctor of unknown cadre. She was transfused with 8 units of blood peri-operatively, otherwise recovery was uneventful.

On examination, she was chronically ill-looking, pale and dehydrated, with the following vital signs: pulse rate of 90bpm, blood pressure of 120/80mmHg, respiratory rate of 22cpm and temperature of 37.1°C. Her body mass index was 14.4kg/m². She had an extended lower midline abdominal scar that healed by primary intention. There was no significant finding on rectal examination while vaginal examination revealed an induration on the anterior wall of the vagina. Urethral catheterization yielded a faeculent urine. Admission packed cell volume was 0.25L/L. Serum protein and albumin done were within normal limits. The diagnosis of enterovesical fistula was made.

She was resuscitated with intravenous fluids, intravenous antibiotics and blood transfusion and subsequently had a cystoscopy with findings of extensive faecal soilage making vision obscure, a rent at the dome of the bladder continuous with the bowel, non-absorbable sutures seen within the bladder, multiple areas of inflammatory polyps, more at the bladder base, as well as hyperaemic areas and stigmata of a recent bleeding. Specimens were

collected from the areas of inflammatory polyps and hyperaemia and histology revealed inflammatory features with areas of ulceration and granulation tissue, having intense mixed inflammatory infiltrate of neutrophil polymorphs and lymphocytes. This ruled out the suspicion of malignant aetiology. Cystogram done after the cystoscopy revealed an enterovesical fistula (see Figure 1). The general surgeons were invited and they did a defunctioning sigmoid colostomy. However, she continued to have faecaluria and worsening weight loss.

Barium enema done did not make an impression of an enterovesical fistula (see Figure 2). An abdominopelvic CT scan was done which showed a fistulous communication between the left anterolateral wall of the urinary bladder and the bowel loops on the left side of the pelvic cavity (see Figure 3).

When faecaluria continued unabated with the defunctioning colostomy and other conservative care, she had an exploratory laparotomy. The findings were: multiple intestinal adhesions, extensive and multiple nylon sutures joining the bladder to the jejunum, a 2cm fistulous communication between the urinary bladder and the jejunum, 120cm from the duodenojejunal junction, multiple intravesical nylon sutures and dense adhesion between the urinary bladder and the uterine stump (see Figure 4). Jejunal resection and jejunojejunal anastomosis were done and bladder wall repair done in two layers with absorbable polyglactin 910 sutures. Also the sigmoid colostomy was reversed.

Postoperatively, she was placed on nil by mouth, intravenous fluids, total parenteral nutrition and intravenous antibiotics. She commenced oral intake on the 5th day post-op and urethral catheter was removed after 14 days. She made an uneventful recovery. Her weight went from 36kg to 42kg in 2 weeks. She is yet to see us again for follow-up probably because she lives in a far place.

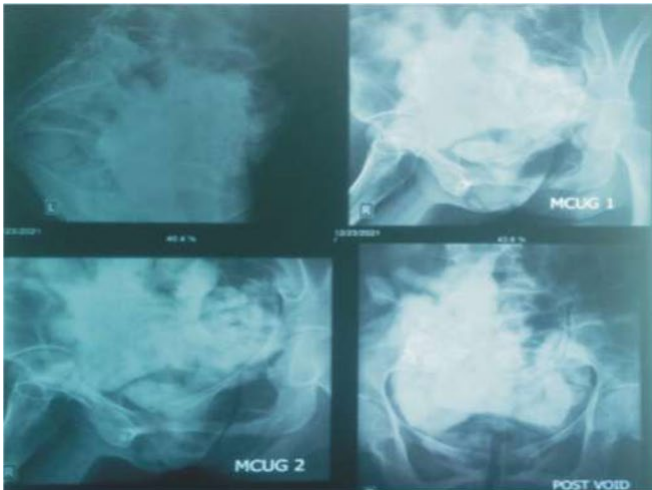


Figure 1: Cystography demonstrating extravascular spillage of contrast.



Figure 2: Barium enema not suggestive of colovesical fistula

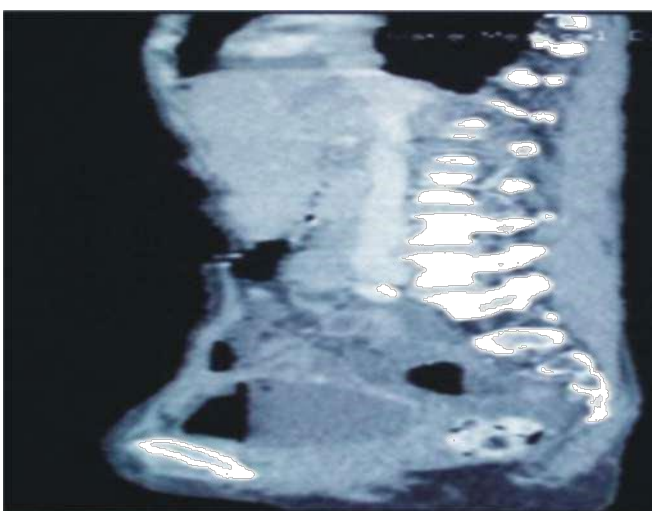


Figure 3: Abdominopelvic CT Scan showing air in the bladder with thickening of superior bladder wall and contiguous bowel wall.

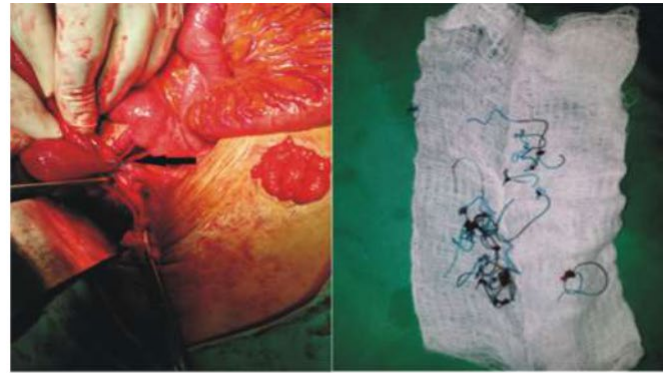


Figure 4: Intraoperative picture showing the fistulous connection (bold arrow) and some of the nylon sutures around the fistula and within the bladder.

Discussion

Enterovesical fistula can be divided into four anatomically distinct subgroups, colovesical (70%), rectovesical (11%), ileovesical(16%), and appendicovesical (< 3 %).^[2] Most enterovesical fistulae result mostly from diverticular disease, Crohn's disease and malignancy, with a smaller percentage having iatrogenic origin. These are associated with pelvic surgeries in general surgery, vascular surgery, urology and gynaecology, and may result from direct injuries during surgery or from retained foreign body.^[1,4] Such fistulae resulting from iatrogenic injury will normally be expected to manifest early postoperatively. However, when it occurs after a long time from the surgery like in the index patient, it usually results from presence of foreign bodies and other aetiologies. In our patient, the most likely pathogenesis is that the non-absorbable suture acting as a foreign body probably gradually eroded the bladder and gut over many years and caused the damage.

Most of these patients will present with faecaluria, pneumaturia and recurrent urinary tract infections. These occur as a result of the highly compliant nature of the bladder, with a relatively low intraluminal pressure when compared to the colon, which favours the flow of contents from the bowel to the bladder.^[2,5] Some patients may also report haematochezia, diarrhoea, alteration of bowel habit, urinary flow via the rectum and abdominal pain especially those with underlying diverticular disease or malignancy.^[2,5] Complaint of weight loss without anorexia is a pointer to an involvement of

the small bowel due to poor absorption of nutrients. Our patient presented with most of these symptoms. However, malignant aetiology was high on the list in the aetiology of the index patient as it looked remote that a surgery of six years prior to presentation was the cause of the fistula until we did the exploratory laparotomy.

Though the diagnosis of enterovesical fistula is primarily clinical, with the symptoms of pneumaturia, faecaluria, and persistent or recurrent urinary tract infections being essentially pathognomonic findings, it can be challenging in some scenarios. Bedside tests like the Poppy seed or charcoal test which involves detection of orally consumed poppy seeds or charcoal in a centrifuged sample of urine have a high sensitivity in demonstrating the presence of an enterovesical fistula. However, they do not provide any information regarding the location or aetiology of the fistula.^[6] They are also not necessary with the presence of clear faecaluria.

Diagnosis is greatly aided by both endoscopy and imaging modalities. These include cystoscopy, colonoscopy, cystography, barium studies, ultrasound scan, computed tomography (CT) scan and magnetic resonance imaging (MRI) scan. Ultrasound done via the abdominal, transrectal or transvaginal route can help in demonstrating the fistula. Abdominal ultrasound scan yield is increased with abdominal compression maneuver, which reveals an echogenic “beak sign” connecting the peristaltic bowel lumen and the urinary bladder.^[7] Barium studies are mostly inconclusive, though may occasionally demonstrate the fistulous tract as well as reveal associated bowel pathology like in the case of inflammatory bowel disease or bowel malignancy.^[6] Sensitivity of barium studies can be markedly improved by radiography of the first voided and centrifuged sample of urine, detecting a radio dense material. This is called the Bourne test.^[8] Cystoscopy, though having the highest yield of identifying an abnormality in the bladder, on its own establishes a definitive diagnosis in only 35% to 60% of cases. Findings on cystoscopy include focal hyperaemia, bullous oedema, erythema, particulate food or faecal material.^[9] Cystography also has a low sensitivity range of 20%-30% and may reveal the herald sign which is a

crescentic defect on the upper margin of the bladder representing a peri-vesical abscess. The pathognomonic sign on cystography is the “beehive” sign caused by the elevation of the bladder wall at the vesical end of the fistulous tract.^[3] Abdominopelvic CT scan with an oral contrast has the highest sensitivity and is the imaging modality of choice for enterovesical fistula.^[10] Apart from detecting the fistula, it may also give additional information about the adjacent anatomical structures. Computed Tomography findings in keeping with enterovesical fistula include air in the bladder in the absence of previous lower urinary tract instrumentation, oral contrast medium in the bladder and bladder wall thickening adjacent to a loop of thickened intestine.^[11] The diagnostic accuracy of CT for detecting enterovesical fistulae is up to 90–100%.^[12] Abdominal CT was the major imaging modality that suggested a small bowel fistulous connection in our patient. Magnetic resonance imaging (MRI) gives excellent soft tissue resolution, and is particularly good in defining complex fistulae, with a specificity and sensitivity of detecting the fistulous connection approaching 100%. However, it is very expensive and not readily available.^[13]

Conservative treatment which includes bowel rest, total parenteral nutrition, antibiotics, and bladder drainage with an indwelling catheter can be attempted in a select group of patients. These include patients with minimal symptoms, who are not infected and who have no underlying malignancy as a cause of the fistula. This is especially warranted in patients with Crohn disease in whom immediate laparotomy with bowel resection is likely to be catastrophic. However, limited success has been reported with this modality of care. When our patient failed to show an improvement with conservative management, we opted for operative treatment.^[14]

Surgical management of enterovesical fistula can be single- or multiple stage, and these can be accomplished by open, endoscopic and laparoscopic approaches.^[15] A single stage primary resection and anastomosis, with bladder wall repair is possible in more than 90% of the cases.^[16] Surgical technique generally involves dissection of the bowel from the bladder, resection of the intestine,

and primary anastomosis, as well as two-layered bladder wall repair. A two-stage repair involving primary anastomosis with proximal ileostomy or colostomy and three-stage repair, characterized by proximal defunctioning ostomy followed by resection-anastomosis and later closure of the stoma, are other options of surgical management and are preferred in patients with pelvic abscess, gross faecal contamination and large intervening pelvic abscesses or in those with advanced malignancy or radiation changes and in those with poor performance status.^[15] Our patient had a two stage management which with hindsight was needless but which was done because of challenges in diagnosis. A one-stage surgical management would have sufficed for the patient. A definitive diverting ileostomy or colostomy is also an option in patients with high risk of fistula recurrence like patients whose fistula is from malignancy or radiation.^[16]

Outcome after surgical management of enterovesical fistula is reported to be excellent. Interposition of an omental graft between the anastomosed bowel and bladder repair has been recommended to reduce fistula recurrence, though there is weak evidence to support this.^[17] Fistula recurrence may be related to an underlying malignancy, malnutrition, unrecognized foreign body, or other surgical factors.^[3]

In conclusion, enterovesical fistula can complicate surgical procedures especially when the surgical technique is poor. Wrong choice of suture materials could lead to this pathologic condition even many years after the surgical procedure. The diagnosis could be challenging and requires a high index of suspicion as well as imaging modalities.

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