



A traumatic enterorenal fistula

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A B S T R A C T

Enterorenal fistulas can arise from various spontaneous and traumatic etiologies. While nephrectomy is frequently the treatment of choice, renal sparing techniques have been described. We report a case of an enterorenal fistula as a complication of penetrating trauma. The fistula was managed conservatively with only ureteral stenting.

1. Introduction

Enterorenal fistulas can arise from various spontaneous and traumatic etiologies.¹ Nephrectomy is frequently the treatment of choice however, renal sparing techniques have been described.^{2,3} We report a case of an enterorenal fistula as a complication of penetrating trauma which was managed conservatively.

2. Case presentation

A 32-year-old man presented to the emergency department with a gunshot wound and exploratory laparotomy found an injury to the splenic flexure of the colon and an injury to the anterior left kidney. Partial colectomy with a primary anastomosis and renorrhaphy were performed. The posterior kidney was not able to be explored. A post-operative CT scan with delayed images which showed a left perinephric hematoma without evidence of urinary leak.

The patient developed persistent leukocytosis and CT imaging revealed a large intraperitoneal fluid collection. A percutaneous drain was placed, and the collection was identified as a urinoma by a high creatinine level. A left retrograde pyelogram showed extravasation of contrast, so a ureteral stent was placed. Two additional intra-abdominal fluid collections were subsequently identified. Washout was attempted however dense adhesions prohibited access to the upper quadrants. Additional percutaneous drains were placed in each of the collections. Two weeks after the initial injury, the patient required coil embolization of a pseudoaneurysm arising from a branch of the left inferior renal pole. A repeat retrograde pyelogram demonstrated persistent leak and a ureteral stent was again left in place (Fig. 1). The patient eventually was discharged with three percutaneous drains, one left ureteral stent, and a Foley catheter.

The patient was re-admitted three weeks later with abdominal pain, vomiting, and dysuria. CT imaging showed drain erosion into small bowel. This was managed conservatively with eventual drain removal. A continued fluid collection prompted repeat left retrograde pyelogram which showed contrast extravasating from the lower pole of the kidney and filling bowel, consistent with an enterorenal fistula (Fig. 2). The ureteral stent was replaced and positioned to ensure the proximal curl was in the upper pole of the kidney. Repeat left retrograde pyelogram was performed three months later. At this time, no extravasation of contrast was seen outside of the collecting system (Fig. 3), and the stent was removed.

3. Discussion

The etiology of enterorenal fistulas can be divided into spontaneous and traumatic causes. Spontaneous fistulas can arise from primary renal or gastrointestinal (GI) causes.⁴ Traumatic cases are less common than spontaneous, and are often iatrogenic following open or percutaneous procedures, including cryoablation, radioablation, nephrostomy tube placement, and percutaneous nephrolithotomy.⁴ Traumatic enterorenal fistulas from gunshot wounds have been previously described, although are rarer.³

The fistula in this case was diagnosed on retrograde pyelogram with contrast filling bowel. Renocolic fistulas account for 59% of enterorenal fistulas.⁴ This patient did have a risk factor for colonic fistula formation given the colonic anastomosis in proximity to the renorrhaphy and area of urinary leak. While renojejunal and renoileal fistulas are uncommon, together accounting for 6.3% of enterorenal fistulas,⁴ this patient had percutaneous drains that injured small bowel, allowing for potential communication with the renal defect. In this case fistula to the small bowel may be the most likely, although further imaging to identify the

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Fig. 1. Initial Left Retrograde Pyelogram
Left retrograde pyelogram showing stent placement in area of contrast extravasation.

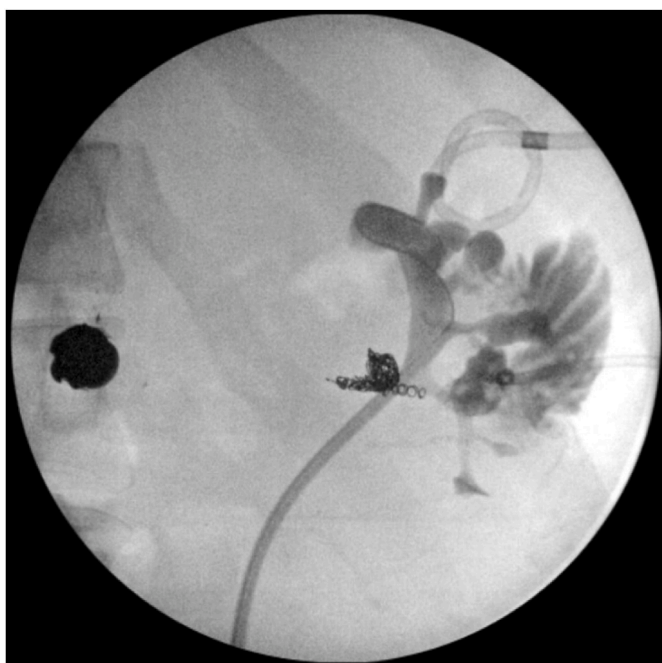


Fig. 2. Left Retrograde Pyelogram with Fistula
Left retrograde pyelogram showing contrast filling bowel.

segment of bowel involved was not pursued.

The presenting symptoms of enterorenal fistula are heterogeneous and often non-specific. Presenting symptoms include those of the GI tract such as dyspepsia, nausea, vomiting and diarrhea, as well as urinary such as frequency, urgency, dysuria. Generalized symptoms of fever, malaise and weight loss may occur. In cases of traumatic enterorenal fistula, GI and peritonitic symptoms tend to predominate.^{4,5} Keeping with the heterogeneous and non-specific symptomatology of previously described cases, the main complaints of our patient at the time of diagnosis were abdominal pain, vomiting, and dysuria. The diagnosis of

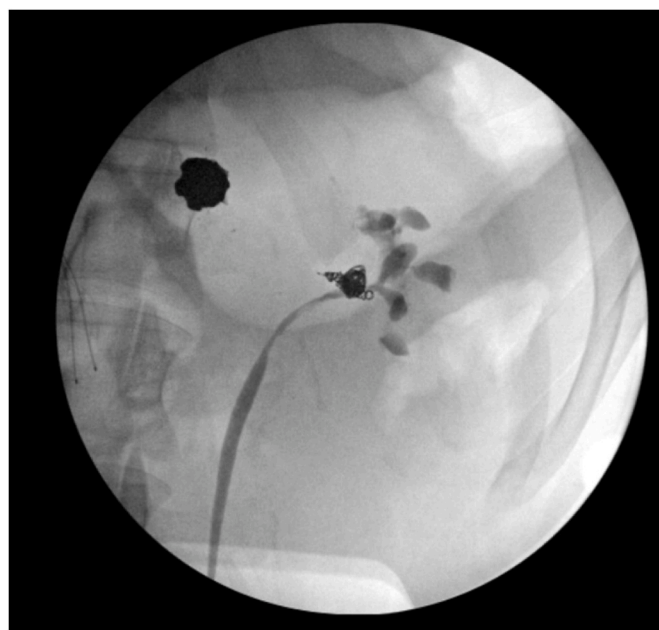


Fig. 3. Left Retrograde Pyelogram with Resolved Fistula
Left retrograde pyelogram showing no contrast extravasation.

enterorenal fistula was not suspected based on presenting symptoms, but rather incidentally found. Given the varied and non-specific symptoms of enterorenal fistulas, a high clinical suspicion is required to make the diagnosis.

In this case, the enterorenal fistula was managed with ureteral stenting, allowing for renal sparing. Nephrectomy with closure of the fistula tract or resection of involved bowel is often the chosen treatment for enterorenal fistulas, particularly when the underlying disease process involves chronic inflammation of the kidney, or when the kidney is no longer functional.¹ When possible, sparing of a functional kidney is preferred, and some renal sparing techniques have been described. In one case of pyeloduodenal fistula, endoscopic clipping of the fistula successfully closed the fistula tract.² In another case the fistula tract was surgically resected with primary closure of the duodenum and an inferior pole ureterocalicostomy.³

In this case, renal sparing was possible due to the traumatic etiology, as there was absence of the chronic inflammatory processes often present in spontaneous causes of enterorenal fistula. A conservative approach was taken with only ureteral stenting. Previous descriptions of conservative management include bowel rest with nasogastric tube and total parenteral nutrition,^{2,3} which this patient did not have. Long term follow-up of this patient is needed to ensure resolution of symptoms to evaluate residual function of the involved kidney.

4. Conclusion

Enterorenal fistulas are an uncommon diagnosis, with traumatic etiologies such as gunshot wounds occurring far less frequently than spontaneous etiologies. This case is made even more unique by the likely area of bowel involved being ileum or jejunum. Additionally, there are only few reports of enterorenal fistulas successfully being managed conservatively.

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