Laparoscopic approach to colo-renal fistula with renal preservation and omentoplasty: A case report

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A B S T R A C T

Colorenal fistula as a result of percutaneous cryoablation has not been extensively reported. We report a gentleman who presented with urosepsis after percutaneous biopsy of a renal mass complicated by colorenal fistula. After failed attempts at conservative management, he underwent laparoscopic resection of his fistula with renal salvage and omentoplasty highlighting that nephrectomy is not always indicated.

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1. Introduction

Percutaneous cryoablation has been shown to be a possible treatment for renal masses. However, a colorenal fistula resulting from a complication of ablation has been reported on very fewer occasions [1–3]. Appropriate mode of treatment is unclear. We report a patient with a left colorenal fistula who failed conservative management requiring a laparoscopic approach to takedown his fistula with renal salvage. The work has been reported in line with the SCARE criteria [4].

2. Case presentation

A 76 year old male presented to us with worsening urosepsis, pneumaturia and fecaluria after a cryoablation was attempted at an outside hospital for an incidentally discovered 3.3 cm left renal mass. Computed tomography (CT) demonstrated the ablation cavity containing gas, perirenal fat stranding extending to the descending colon. Rectally administered iodinated contrast media extended from the descending colon to the lower pole of the left kidney into the left renal collecting system depicting a colo-renal fistula (Fig. 1).

Due to failure of medical therapy, cystoscopic left retrograde ureteropyelogram was performed that clearly identified communication of the lower pole infundibular system with the left colon and a 6-French, 26 cm left double-J ureteral stent was placed. An open ended catheter was also left in place to inject Betadine solution and identify the fistula during colonoscopy. A 3 mm fistula was found on colonoscopy and an over-the-scope-clip was deployed (Ovesco, Tubingen, Germany) to secure the colonic mucosa (Fig. 2). Repeat retrograde ureteropyelogram three weeks later, re-demonstrated the colonic fistula. Due to worsening of his symptoms and non-resolution of his fistula, the patient underwent laparoscopic takedown of the colorenal fistula and segmental colectomy with renal preservation and omentoplasty.

Patient was placed in the right lateral decubitus position to aid in mobilization of the left kidney. A Verres needle was introduced into the abdominal cavity, pneumoperitoneum was achieved and a 12-mm supraumbilical camera trocar was inserted. An additional 12-mm trocar was placed along the left mid axillary caudal to our camera port and two additional 5-mm trocars one under the left costal margin in the midclavicular line and another in the suprapubic region. Mobilization of the colon was begun along the line of Toldt distally from the pelvic inlet towards the splenic flexure medial to the left kidney. Subsequently, dissection of the kidney was begun over the upper pole working towards the lower pole and identifying the renal pelvis and ureter. Left ureter was also identified near the pelvic inlet and followed proximally towards the lower pole of the left kidney. With the colon mobilized, the fistula tract was identified beginning from the lower pole laterally and extending into the descending colon (Fig. 3). Using LigaSure™ vessel sealing (Valley Lab, Boulder, CO) the fistula tract was dissected and transected off of the lower pole of the kidney. Margins of the kidney were sent for frozen section that were negative for malignancy. Argon beam coagulation was performed on the lower...
Fig. 1. A. Axial B. Coronal. Computed tomography of the abdomen and pelvis depicting rectally administered iodinated contrast media extending from the descending colon to the lower pole of the left kidney into the left renal collecting system depicting a colo-renal fistula.
Table 1
Review of pertinent case reports of colorectal fistula with respective management.

| Study             | Age/Sex | Presenting symptoms                          | Management                                                                 | Outcome                                  |
|-------------------|---------|----------------------------------------------|---------------------------------------------------------------------------|------------------------------------------|
| Lee et al. [2]    | 63/M    | Urinary frequency and dysuria 2 months post cyroablation | Internal ureteral stents                                                  | No evidence of fistula 5 months later    |
| Gil et al. [4]    | 76F     | Lower gastrointestinal bleed 2 weeks post cyroablation | Open left nephrectomy, left coectomy with end colostomy                   | N/A                                      |
| Davies et al. [3] | 62M     | Pneumaturia and left flank pain 6 weeks post ablation | Bowel rest and outpatient antibiotics                                      | Resolution and no recurrence of the fistula 18 months later |
| Buttar et al. [1] | 75F     | Chronic urinary tract infection and pneumaturia 2 years after ablation | Combined approach involving percutaneous plugging of the fistula and endoscopically placing an over the scope clip. | No residual fistula 1 month later         |

Fig. 2. A 3 mm fistula was found on colonoscopy and an over-the-scope-clip was deployed (not shown) (Ovesco, Tübingen, Germany) to secure the colonic mucosa.

To completely fulgurate the tract and cover with fibrin glue (Tisseel, Baxter, CA).

The descending colon and fistula tract through the suprapubic incision, splenic flexure and rectosigmoid junction was sufficiently mobilized. Healthy bowel was identified on either side of the fistula tract and transected using a GIA-60 stapler. A stapled anastomosis was performed using GIA-60/TA-55 stapler. Next, a mesenteric flap was sutured to the left kidney using V-Loc™ (Covidien, New Haven, CT) sutures. Patient had an uneventful postoperative course and was subsequently discharged on postoperative day three tolerating diet with good bowel function.

3. Discussion

Renal cryoablation is associated with higher local retreatment rates in comparison with partial or radical nephrectomy, although intermediate-term outcomes suggest that disease-specific survival approaches that of either nephrectomy which has led to its increased use. Despite this, complication resulting in colorectal fistula has been reported in less than five occasions in the literature with variable management options [2,3]. To our knowledge, this is the first report of a laparoscopic technique combined with renal salvage to manage the fistula.

The most common complication after percutaneous cryoablation is bleeding or hematuria with the rate of bowel injury reported less than 10% [3]. Incidence of complication has been attributed to tumor diameter, number of cryoneedles used and tumor location within the kidney. Risk factors related to bowel injury have not been described (mostly due to small number of cases) but bowel perforation, cholecystitis, and pancreatitis have all been reported.

Colorectal fistulas usually are the result of chronic renal inflammatory states and can usually be diagnosed based on clinical examination and radiological investigations. There is no consensus on the optimal treatment option. Few case reports with their proposed management strategies are listed in Table 1. Wysocki et al. have reported successful surgical treatment involving nephrectomy, colectomy and end colostomy [5]. Successful conservative management involving either just antibiotics or a ureteral stent has been reported by others [1–3]. Recently, Schmit et al. published a combined approach involving percutaneous CT guided and endoscopic intervention leading to successful closure of the fistula [1]. As outlined above, our patient not only failed the antibiotic therapy, but also a trial of ureteral stenting and an over-the-scope colonoscopic clip placement. With his worsening clinical symptoms, a surgical intervention was offered involving segmental colonic resection and renal preservation. In order to facilitate healing of the fistula an omental patch was placed. Our patient has since been doing well with no recurrence of the fistula.

In conclusion, we report a colorectal fistula complicated by percutaneous cryoablation of a renal mass, which was managed with renal preservation and segmental colectomy after conservative measures had failed.

Conflicts of interest
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Consent
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Authors contribution
AA, RF, NM were involved in managing the patient clinically and operating on the patient. AA, NM conceptualized the study and
collected data for writing. AA, NM interpreted the data and drafted the paper. AA, RF and NM proofread and finalized the paper for publication.

Guarantor

Awais Ashfaq.

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