

Acute Rectovesicoprostatic Fistula Formation after Intensity-Modulated Radiation Therapy for Localized High Risk Prostate Cancer: A Case Report

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Abstract

Colovesical Fistula (CVF) is a relatively rare, but potentially devastating complication of pelvic radiation. The entity has been associated with severe malnutrition and the success or failure of subsequent therapy may be dependent on a patient's nutritional status. We describe our experience with a patient who developed a severe colovesical fistula six months after completing radiation therapy and his clinical course thereafter. Ultimately, nutritional status is of the utmost importance when approaching curative therapy in patients who may already suffer from malnutrition.

Case Presentation

A 70-year-old African-American male presented to the hospital with a chief complaint of rectal pain. He was found to be febrile with a leukocytosis of 15.6×10^3 and malnourished with a pre albumin of 6.2 mg/dL (normal range 17.0-39.0). Approximately 6 months earlier, the patient completed a course of Intensity-Modulated Radiation Therapy (IMRT) for Prostate Cancer (CaP) at an outside hospital consisting of 79.2 Gy over 44 fractions. He had been diagnosed with D'Amico high volume localized high-risk cT1c adenocarcinoma with Gleason 4+4 in one core, 4+3 in six cores and 3+4 in five cores. Pre-treatment PSA was 11.0 ng/mL. He did not receive androgen deprivation therapy.

Upon physical exam, the patient was seen to be cachectic with perineal and scrotal tenderness. Digital Rectal Examination (DRE) demonstrated a complete absence of the prostate with an abnormally large rectal vault. Computed Tomography (CT) scan of the abdomen and pelvis with PO and IV contrast revealed a large fistulous tract between the bladder, prostate and rectum. The patient underwent cystoscopy and sigmoidoscopy to evaluate the fistula, which demonstrated extensive necrosis of the bladder neck, trigone, and bilateral Ureteral Orifices (UO). Subsequently, the patient was diverted via suprapubic cystostomy and loop sigmoidostomy. He received a gastrostomy tube for supplemental enteric feedings to improve his nutritional status. He then underwent pelvic exenteration with abdominopelvic en bloc resection of the sigmoid colon and rectovesicoprostatic complex with urinary diversion via ileal conduit. Additionally, his loop colostomy was converted to end-sigmoidostomy. Ultimately, the patient experienced multiple returns to the OR within one month following surgery secondary to breakdown of his bowel anastomosis requiring revision. He also experienced wound dehiscence requiring abdominal mesh. Following his final laparotomy and anastomotic revision he was unable to be extubated and remained in the intensive-care unit for several weeks. He was ultimately extubated and discharged home on hospice care (Figures 1 and 2).

Colovesical Fistulae (CVF) are a relatively rare condition arising from several etiologies, the most common being diverticulitis, inflammatory bowel disease and colonic malignancy [1]. Radiation-induced CVF is demonstrated to be responsible for 4.5%-12% of CVF and is associated with a dose of at least 50Gy with presentation 4-15. 8 years after therapy [2,3,4]. However, Mohammed, et al. investigated a large cohort of 1900 patients undergoing radiation therapy with a median follow up of 4.8 years and reported no episodes of CVF, thus demonstrating the rarity of this disease process. They did report dysuria, urinary frequency and tenesmus as the most common early complications and urethral strictures and proctitis as the most common late complications [5]. Malnutrition is noted to be associated with impaired blood flow and healing leading to potential fistula formation and wound breakdown [6]. Zhu, et al. reviewed a cohort of 134 patients who underwent surgery for genitourinary and intestinal complications following radiation therapy and found that correction of malnutrition resulted in generally positive outcomes and low complication rates for their patients [7]. Following restorative surgery, it has been shown that serum albumin less than 2.5g/dL is associated with increased morbidity and mortality in patients with fistulas [6]. Unfortunately, despite



Figure 1: 1a (left) and 1b (right) representing CT scan with PO and IV contrast with delayed images. Figure 1a demonstrates PO contrast travelling through the fistula and layering in the bladder, while figure 1b demonstrates excreted IV contrast exiting the bladder and layering in the rectum.



Figure 2: 2a (left) and 2b (right) demonstrating endoscopic views of the fistula. Figure 2a represents view of ureteral orifices as seen by colonoscopy. Figure 2b represents the internal view of the bladder via colonoscopy.

aggressive attempts at nutritional optimization our patient's serum albumin never rose above 1.7g/dL. Based on the current evaluation of the literature, there has been no published report of radiation induced CVF occurring less than four years after completion of therapy. In our current unfortunate case, severe malnutrition likely contributed not only to the initial fistula formation, but also subsequent treatment failure and, ultimately, the demise of the patient.

Considering that radiation for localized prostate cancer may be considered a first-line treatment, it is important to be aware of potentially devastating complications including the rare and aggressive CVF. Furthermore, this patient's extreme malnutrition cannot be overlooked as a possible predisposing factor to the development of the fistulas well as the failure of his intervention, which underscores the importance of maximizing the nutritional status of all cancer patients, especially those undergoing radiation and/or surgery.

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