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Colo-urethral Fistula: An Uncommon Complication of Sigmoid Diverticulitis

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A 66-year-old man with a remote history cystoprostatectomy and ileal conduit for invasive bladder cancer presented for evaluation of new onset pneumaturia and fecaluria. Internal examination via urethroscopy and proctoscopy revealed a fistulous tract to the remaining portion of the urethra, suggestive of a rectourethral fistula. However, a rectal opening could not be identified despite the presence of irrigant noted on the proctoscope during the procedure. Computed tomography with oral and rectal contrast revealed sigmoid diverticulitis with a fistulous tract from the sigmoid colon to a periurethral fluid collection (Figure 1). In the context of the urologic examination, this was more suggestive of a colo-urethral fistula. Subsequent flexible sigmoidoscopy confirmed the presence of chronic diverticulitis, and both a lower gastrointestinal tract enema (Figure 2) and a retrograde urethrogram (Figure 3) identified a small fistula between the mid-sigmoid colon and proximal urethra.

The patient was electively taken to the operating room for an exploratory laparotomy. While taking care to protect the ileal conduit, the mesentery of the descending colon was mobilized away from the retroperitoneum. The sigmoid colon was then mobilized from the left peritoneal wall and what was once the space of Retzius through significant adhesions from his prior intraabdominal operation. After mobilizing the mesocolon from the retroperitoneum, an area of normal-appearing descending colon was isolated and transected. The rectum was transected at its superior margin at the level of the sacral promontory. The descending colon and rectal stump were then anastomosed with patency confirmed by sigmoidoscopy and air leak test. The patient's postoperative recovery was uneventful on an enhanced recovery pathway, and he was discharged home on postoperative day 3. At time of most recent follow-up he reported resolution of symptoms.

Recto-urethral fistula development is most often recognized as a long-term complication of prostate cancer treatment. While the exact pathophysiology is unclear, tissue damage and distortion in close proximity to both the prostate and rectum are implicated in fistula

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development.¹ Similarly, colovaginal and colovesical fistulae are common surgical indications in patients with diverticular disease. With diverticulitis, the inciting event for fistula development is the associated colonic inflammation. The fistulous connection forms to whichever organ the inflammatory process tracks—including many unexpected sites, such as in this case.²

For our patient, a colo-urethral fistula was able to form when a subclinical diverticular abscess eroded into the proximal urethra. Similar to the increased prevalence of colovaginal and colovesical fistulae in women after hysterectomy, this patient was predisposed to development of a colo-urethral fistula given the anatomic alterations following cystoprostatectomy. To our knowledge, this is the first report of a colo-urethral fistula in the literature.

The clinical presentation and diagnostic work up for a presumed colo-urethral fistula should mirror that of a colovesical fistula. Left untreated, these fistulae result in persistent pneumaturia, fecaluria, and recurrent urinary tract infections which can ultimately result in renal dysfunction. Computed tomography of the abdomen and pelvis with rectal and/or oral—but not intravenous—contrast is an effective technique for the diagnosis of a colovesical fistula. While colonoscopy and cystoscopy can clarify anatomy and exclude malignancy, both have poor sensitivity in detecting fistulae. Colonoscopy should, however, be utilized to rule out a malignancy-related fistula.³ Surgical treatment is standard, and a colon (sigmoid) resection is typically mandated for diverticular-related colovesical fistula, with extrapolation to the colo-urethral fistula seen in this patient.²

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Figure 1. Coronal (A), axial (B), and sagittal (C) computed tomography images with oral and rectal contrast demonstrate inflamed sigmoid colon with adjacent periurethral stranding and fluid collection.

Figure 2.
Water soluble contrast enema demonstrating opacification of the urethra (A), consistent with communication with the sigmoid colon (B).

Figure 3. Retrograde urethrogram shows contrast from the urethra (A) spilling into the adjacent sigmoid colon (B) through the fistulous tract.