Inflammation and infection

An unlikely connection: Rare case of colo-urachal fistula, surgical management, and review of the literature

Mary Soyster a, *, Benjamin T. Ristau b, Eric D. Girard c, Yu Liang c, Poornima Hegde d, Brooke A. Harnisch b

a University of Connecticut School of Medicine, Farmington, CT, USA
b Division of Urology, UConn Health, Farmington, CT, USA
c Department of Surgery, UConn Health, Farmington, CT, USA
d Department of Pathology and Laboratory Medicine, UConn Health, Farmington, CT, USA

Introduction

The urachus is a derivative of the allantois that normally obliterates during the first 5 months of the fetal period leaving behind the median umbilical ligament. Persistent urachal remnants are rare and most often found in the pediatric population. Colouroachal fistulas are even less common, with only a handful reported cases. We describe the surgical management of a 65-year-old patient who presented with feculent umbilical drainage and review the pertinent literature.

Case presentation

A 65-year-old male presented with an eight-day history of abdominal pain and associated umbilical mass. There were no urinary tract symptoms, gross hematuria, or recurrent urinary tract infections. He had no prior history of abdominal pathology or previous surgical intervention. Physical exam revealed a 5cm slightly firm periumbilical mass with surrounding erythema. On palpation, feculent material was expressed from a small opening in the center of the mass.

A CT abdomen and pelvis with IV contrast demonstrated soft tissue thickening of the mid sigmoid colon with mass like effect on the bladder and a potential fistulous tract from the sigmoid colon to an urachal cyst (Fig. 1). Colonoscopy revealed diverticulosis, but no evidence of malignancy. Office cystoscopy demonstrated bullous edema of the left posterolateral wall of the bladder but no pathology at the dome. A fistulogram to delineate the fistula tract was not done due to its minimal impact on surgical management. Urine cytology was negative for malignant cells.

Fig. 1. CT scan of abdomen and pelvis with IV contrast showing the colo-urachal-cutaneous fistula. A. The arrow demonstrates the lumen of a fistulous tract to the umbilicus. B. Demonstration of the urachal component of the colo-urachal-cutaneous fistula as it courses from the bladder to the umbilicus. C. The arrow demonstrates the fistula between the sigmoid colon and the urachus near the dome of the bladder. D. Representative image of the fistula tract.
Following counseling in the outpatient setting, the patient elected to undergo surgical repair. The procedure commenced with laparoscopic takedown of the colonic splenic flexure. Once completed, attention was turned toward laparoscopic mobilization of the urachal remnant. The space of Retzius was entered and the bladder and urachus were dissected in continuity from the anterior abdominal wall. This mobilization allowed for a small lower midline incision to be made without risking entry into the urachal remnant. The urachal remnant and fistulous tract were dissected free from the bladder. No vesico-urachal fistula was observed. En bloc excision of the urachal-sigmoid colon fistula with primary end-to-end colonic anastomosis was performed. The patient had an unremarkable post-operative course and was doing well at his most recent post-operative follow-up.

The final pathology demonstrated diverticular disease and a colo-omphalic fistula lined with inflamed granulation tissue and foreign giant cell reaction with evidence of acute serositis. Vast ulcerations on histology slides made it difficult to determine the origin of fistulous tract tissue, however, radiology and intra-operative visuals confirmed urachal involvement. (Fig. 2). There was no evidence of malignancy.

Discussion

The urachus is derived from the involution of the allantois, which connects the urogenital sinus with the umbilicus. Normally, the urachus is obliterated at the 5th month of gestation and leaves behind the median umbilical ligament, a fibrous cord with no known function that travels from the dome of the bladder to the umbilicus. This cord lies between the transverse fascia and the parietal peritoneum and if it does not close correctly, an urachal anomaly ensues.

In adults, most urachal anomalies are asymptomatic. However, urachal anomalies may cause symptoms such as umbilical drainage, erythema, pain, or urinary problems. In rarer instances, patients may presents with acute peritonitis from urachal rupture or with urachal adenocarcinoma.

Colo-urachal fistula has been infrequently reported with only eight cases described in the literature. In most instances, diverticular disease is the underlying pathology. It is unclear whether an infected urachal anomaly or inflamed diverticular disease is the inciting source. This case demonstrated diverticulosis, but it is possible that a history of subclinical diverticulitis created this connection. Treatment of colo-urachal fistula consists of en bloc excision of the urachal remnant and segmental colon resection. Antibiotics and percutaneous drainage are commonly performed prior to surgery if there is concern for abscess. Colonic anastomosis can be established primary or delayed according to operative conditions. Surgical approach is typically via open approach. However, there has been use of laparoscopy in removal of urachal remnants. Araki et al. completed eight laparoscopic urachal cyst excisions with umbilicoplasty. Furthermore, Garisto et al. performed a single-incision laparoscopy of an infected cyst. All of these cases involved removal of urachal cysts. To the best of our knowledge, this is the first reported case of laparoscopic-assisted excision of colo-urachal fistula.

References

1. Ohgaki M, Higuchi A, Chou H, et al. Acute peritonitis caused by intraperitoneal rupture of an infected urachal cyst: report of a case. Surg Today. 2003;33:75–77.
2. Gargouri M, Boulma R, Sallehmi A, et al. A colourachal-cutaneous fistula: a report of an usual case. Case Rep Urol. 2013, 865852.
3. Rapoport D, Ross A, Goshko V, McAuley I. Urachal-sigmoid fistula associated with diverticular disease. Can Urol Assoc J. 2007;1(1):52–54.
4. Araki M, Saika T, Kobayashi Y, et al. Laparoscopic management of complicated urachal remnants in adults. World J Urol. 2012;30:647–650.
5. Garisto J, Henriquez K, Pimentel E. Single-incision laparoscopic surgery excision of an infected urachal cyst: description of technique. J Endourol Case Rep. 2017;3(1):7–9.