Surgical Science, 2015, 6, 22-25
Published Online February 2015 in SciRes. http://www.scirp.org/journal/ss
http://dx.doi.org/10.4236/ss.2015.62004

Laparoscopic Resection of a Urachal-Sigmoid Fistula in a Heart Transplant Patient

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Received 7 January 2015; accepted 31 January 2015; published 3 February 2015

Abstract

Introduction: Urachal remnants are rare in adulthood with only a few cases of urachal-sigmoid fistula reported in the literature. We report the first case of a laparoscopic resection of a urachal-sigmoid fistula resulting from diverticulitis in an immunosuppressed heart transplant patient. Case Description: The patient is a 43-year-old male who underwent an orthotopic heart transplant one month prior for dilated cardiomyopathy. His presenting symptom was abdominal pain and imaging showed a sigmoid-urachal fistula. A laparoscopic sigmoidectomy with resection of the urachal cyst and drainage of pelvic abscess was performed. The cyst was found to be contiguous and inseparable from the bladder, and therefore a small cuff of bladder was included with the specimen followed by primary laparoscopic cystorrhaphy. He had an uncomplicated hospital course. Discussion: Our case contained several unique aspects that altered the ultimate care and hospital course of the patient. Immunosuppressed patients possess multiple risk factors predictive of poor surgical outcome—infection, bleeding, and hollow organ perforation. The patient in this study was on multiple immunosuppressants and exhibited no peritoneal signs despite an elevated leukocytosis and some worrisome radiologic findings. Our decision to operate early was influenced by the aforementioned factors and led to an uncomplicated recovery.

Keywords

Urachal-Sigmoid Fistula, Diverticulitis, Immunosuppression

1. Introduction

The urachus is an embryonic connection between the fetal bladder and the umbilicus [1]. It obliterates in infancy

and becomes the median umbilical ligament. Urachal remnants are rare in adulthood and include: congenital patent urachus (42%), urachal cyst (38%), umbilical-urachal sinus (16%), and vesicourachal diverticulum (3%) [2]. Only a few cases of urachal-sigmoid fistula due to diverticulitis have been reported in the literature. We report the first case of a laparoscopic resection of a sigmoid-urachal fistula in an immunosuppressed heart transplant patient. Informed consent was obtained from the patient to report this case.

2. Case Description

A 43-year-old man with a medical history of dilated cardiomyopathy and diverticulitis presented to the emergency room with a two-week history of localized left lower quadrant pain and abdominal distention. The patient underwent orthotopic heart transplant one month prior and was immunosuppressed on the following medications: prednisone, tacrolimus, and mycophenolatemofetil. He denied dysuria, pneumaturia, change in bowel habits, or fevers. Physical exam demonstrated a mildly distended abdomen and tenderness in the left lower quadrant, without peritoneal signs or skin changes.

The patient had a leukocytosis of 14,900 and a negative urinalysis. A computed tomography (CT) scan revealed diverticulosis of the descending colon, and an 8 × 5 cm pericolic fluid collection with a fistulous connection to a urachal cyst containing air and fecal material. The urachal cyst and its connection to the sigmoid colon was evident on 2 prior CT scans, however interval development of inflammatory changes and a rim enhancing fluid collection with foci of air suggested an acute perforation with abscess formation (**Figure 1**, **Figure 2**). Furthermore, the bladder appeared to be contiguous but not communicating with the urachal cyst.

A preliminary diagnosis of a urachal-sigmoid fistula with acute rupture of the urachal cyst and abscess formation was made. The abscess was not amenable to percutaneous drainage due to its location at the base of the mesentery between loops of bowel. Therefore, the decision was made to proceed with surgical treatment. A

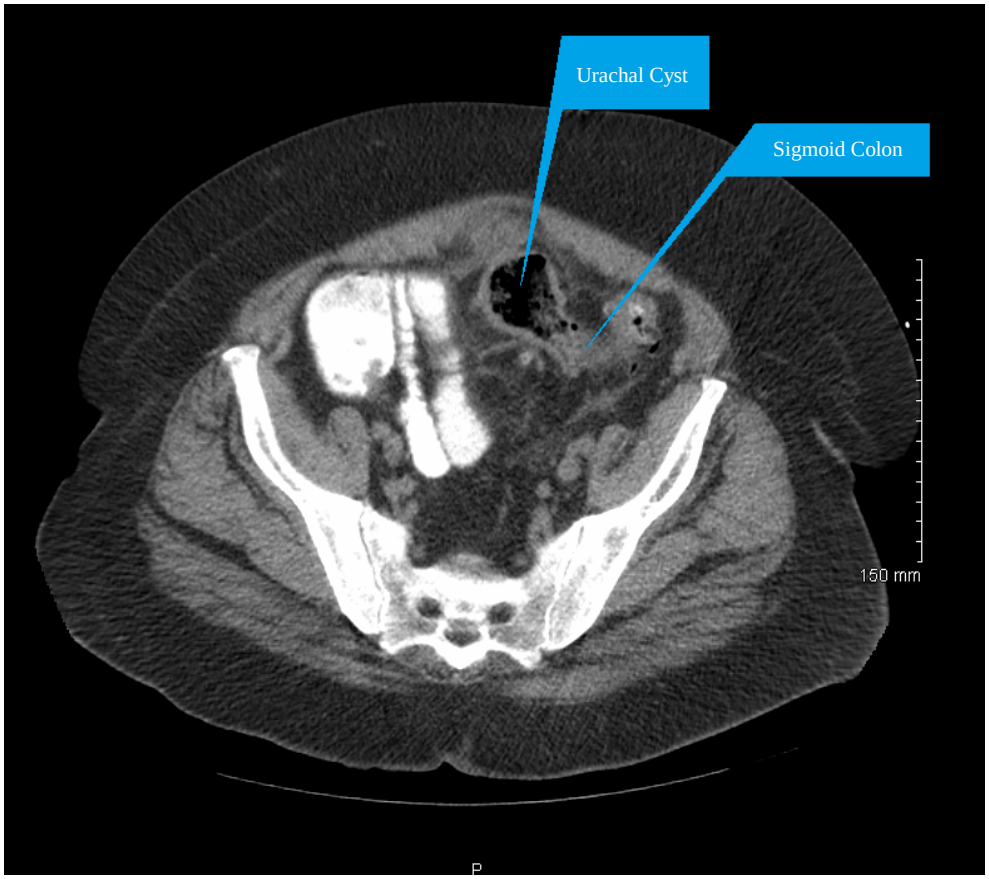

Figure 1. CT scan showing a urachal cyst containing air and stool in close proximity with the sigmoid colon.

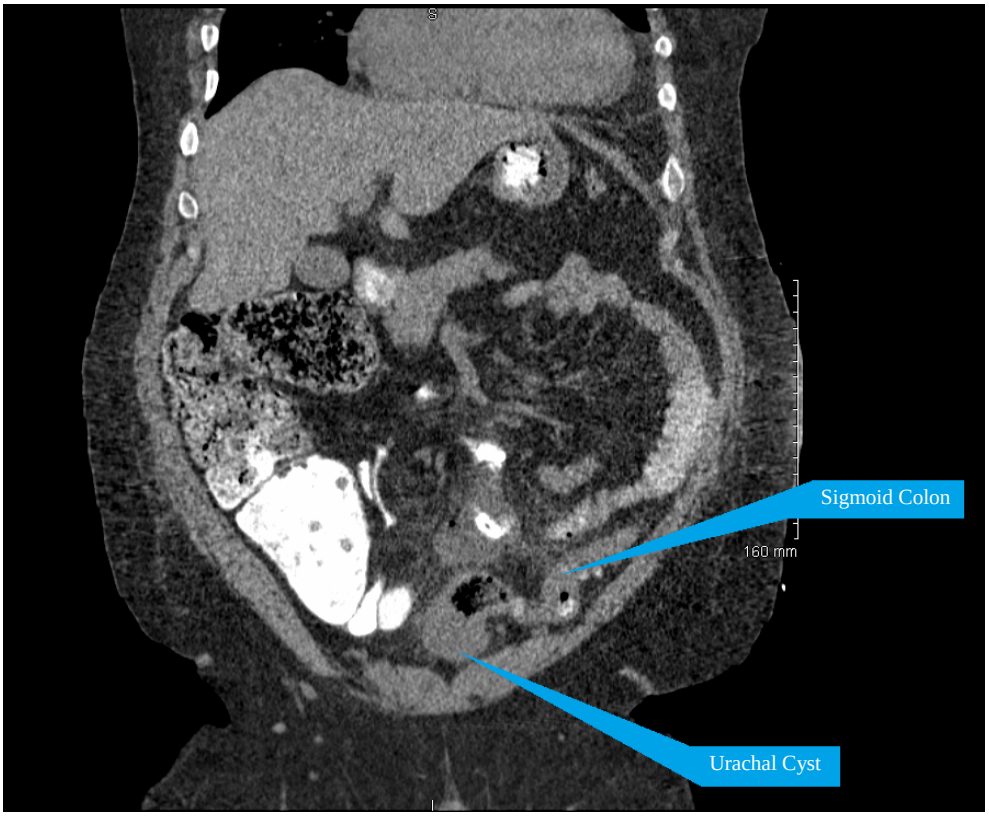

Figure 2. CT scan showing a fistula between the urachal cyst and the sigmoid colon.

laparoscopic sigmoidectomy with resection of the urachal cyst and drainage of pelvic abscess was performed. The cyst was found to be contiguous and inseparable from the bladder, and therefore a small cuff of bladder was included with the specimen followed by primary laparoscopic cystorrhaphy. A Jackson-Pratt (JP) drain was left in the pelvis. Pathology confirmed the presence of a urachal cyst with urachal-sigmoid fistula, perforation, and abscess formation.

The patient had an unremarkable postoperative course. He resumed bowel function and PO intake on post-operative day (POD) 3. Output from the JP drain remained low and serous, therefore it was removed on POD 10 prior to his discharge. A Foley catheter remained in place for 2 weeks after which point a negative cystogram prompted its removal. The patient remained symptom-free at his three-month follow up visit.

3. Discussion

Urachal remnants are exceedingly rare in adults, usually presenting with abdominal pain or palpable masses. The incidence of urachal abnormalities on autopsy studies is 1 in 5000 [3]. The urachal cyst has the most potential to present later in life, complicated by rupture, infection, or fistulization to adjacent viscera [1]. CT scan will usually reveal a midline supravesical mass extending toward the umbilicus.

Management of a urachal-sigmoid fistula involves sepsis control with broad-spectrum antibiotics followed by resection of the urachal cyst along with a hemicolectomy. Some authors advocate excision of the entire urachal remnant and its connected bladder cuff, reporting a recurrence rate of 31% with incision and drainage alone [2]. We elected to perform a complete excision of the urachal cyst including the bladder cuff, followed by a laparoscopic cystorrhaphy.

Our case contained several unique aspects that altered the ultimate care and hospital course of the patient. To our knowledge there is no reported case of a urachal-sigmoid fistula in an immunosuppressed heart transplant patient. These patients possess multiple risk factors predictive of poor surgical outcome—infection, bleeding, and hollow organ perforation [4]. Maintenance immunosuppression is the inciting factor and has also been linked with masking the presentation of general surgical conditions [4]. The patient in this study was on multiple

immunosuppressants and exhibited no peritoneal signs despite an elevated leukocytosis and some worrisome radiologic findings. Our decision to operate early was influenced by the abovementioned factors and led to an uncomplicated recovery.

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