

Urachal-Colo-Cutaneous Fistula in an Adult: Evolution to Spontaneous Closure after Conservative Management in a Hostile Abdomen

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ABSTRACT

Persistence of the urachus in adults is an uncommon condition^{1,2}, and progression to complications such as infection, fistulization, and communication with abdominal viscera is even rarer³. We present the case of an adult male with an infected urachal remnant that evolved into a colo-cutaneous fistula, managed without negative pressure therapy due to institutional unavailability⁸. Diagnostic, therapeutic, and follow-up aspects are described, along with a review of recent literature^{4,5}.

KEYWORDS: urachus; colo-cutaneous fistula; abdominal wall surgery; urachal infection; open surgical wound

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1. INTRODUCTION

The urachus is a fibroepithelial remnant of the allantois connecting the bladder dome with the umbilicus during fetal life^{1,2}. Complete obliteration usually occurs before birth; however, failure to close can result in anomalies such as cysts, sinuses, diverticula, or patent urachus³. These lesions may remain asymptomatic until adulthood, presenting as recurrent infection, umbilical discharge, abdominal pain, or fistula formation^{1,2}. Although rare, urachal infection can extend to adjacent organs, including the colon, increasing surgical complexity and risk^{3,4}.

2. CASE PRESENTATION

A 40-year-old previously healthy male with no prior abdominal surgeries presented with umbilical pain, purulent discharge, and foul odor of two weeks' duration. Contrast-enhanced CT revealed a tract compatible with an inflamed urachal remnant and an adjacent collection^{1,2}.

A midline infraumbilical laparotomy was performed, identifying a fibrous urachus with communication to the transverse colon through an inflammatory defect. Urachal resection, primary colonic closure, and surgical debridement were completed^{1,2}.

Second laparotomy: five days later, the patient developed fecal discharge through the wound, consistent with fistula recurrence. A repeat laparotomy confirmed colonic involvement; segmental resection and primary anastomosis were performed^{1,2}. Initial postoperative recovery was favorable, with discharge on postoperative day five, although ten days later an anastomotic leak developed^{6,7}.

Third laparotomy and conservative management: given a hostile abdomen with multiple adhesions and high risk of intestinal injury, surgical reintervention was deferred^{4,5,8}. Conservative management included daily irrigation with 0.9% saline and surgical soap, serial dressings, skin protection, nutritional support^{11,12}, and progressive partial abdominal wall closures⁸. Negative pressure therapy was not available⁸, prolonging the healing process.

Fistula output gradually decreased, with granulation tissue formation and infection control^{8,13}. After approximately three months, definitive wound closure was achieved, documented photographically at various stages (Figures 1–6). A ventral hernia developed due to prolonged open abdomen management, planned for second-stage repair^{9,14}. Follow-up

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showed a stable, asymptomatic patient with satisfactory healing.

3. DISCUSSION

Persistence of the urachus in adults is rare, and urachal-colo-cutaneous fistula represents an exceptional surgical challenge^{1,2,3}. Infection is the most common complication of persistent urachus, with typical symptoms of purulent discharge, periumbilical pain, and occasionally fever^{1,2}. Extension to visceral structures, such as the colon, increases management complexity and postoperative morbidity^{4,5}.

Diagnosis is generally supported by contrast-enhanced CT, demonstrating the relationship of the urachus with the bladder and adjacent structures^{1,2}. Classical management involves complete resection of the urachal remnant and repair of involved organs^{1,2}. However, a hostile abdomen with extensive adhesions and tissue inflammation poses significant risk for immediate rescue surgery, including visceral injury, dehiscence, and increased morbidity^{4,5}. Recent evidence on enterocutaneous fistulas indicates that a substantial proportion may close spontaneously if clinical stability, adequate nutritional support, infection control, and meticulous wound care are maintained, even in the absence of negative pressure therapy^{4,5,8}.

In this case, distal fistula, sustained clinical stability, absence of sepsis, and meticulous wound care were key to the success of the conservative approach^{4,5,8}. Open-wound management in a septic context is challenging⁸. Negative pressure therapy is an efficient option to stimulate angiogenesis, reduce bacterial load, and promote secondary-intention closure⁸. In resource-limited hospitals, serial irrigation and staged closures remain valid alternatives, albeit with prolonged duration and risk of complications such as ventral hernia^{8,13}. The resulting ventral hernia is an expected complication, requiring delayed repair^{9,14}. Multidisciplinary coordination—including surgery, nursing, and nutrition—is essential to optimize outcomes^{11,12}.

Partial abdominal wall closures were performed progressively over three months according to decreasing output and granulation tissue growth^{8,13}. Transient fecal drainage confirmed colo-cutaneous fistula, which resolved spontaneously without further intestinal resection^{4,5}.

This case emphasizes the importance of diagnostic suspicion in atypical periumbilical infections^{1,2}, complete resection of inflamed urachus^{1,2}, and therapeutic adaptation when institutional resources are limited^{4,5}. Close monitoring allowed prevention of sepsis, fistula control, and definitive closure without intestinal diversion^{4,5,8}.

4. CONCLUSIONS

Urachal-colo-cutaneous fistula in adults can be successfully managed conservatively, even in a hostile abdomen and without negative pressure systems^{4,5,8}. Key factors for success include close monitoring, meticulous wound care,

adequate nutritional support^{11,12}, and staged partial abdominal wall closures⁸. This approach allows spontaneous fistula closure, avoids major reintervention, and enables delayed correction of complications such as ventral hernia^{9,14}.

This report expands the evidence for conservative management of complex fistulas and highlights the feasibility of resource-adapted strategies^{4,5,8}, providing practical guidance for hospitals with limited infrastructure. Early identification, understanding of fistula pathophysiology, and careful follow-up planning are essential for satisfactory clinical outcomes^{4,5,8}.

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