

Acute small bowel obstruction secondary to an infected urachal cyst in an adolescent: A case report

Naveen Prasad R*, Thiruvurul P V, Ezhilsundar V, Chengalvarayan G, Arunchander G

Institute of Urology, Madras Medical College, Chennai, Tamil Nadu, India

Corresponding Author: Naveen Prasad R

DOI: <https://doi.org/10.66856/ijmsr.2026.8.3.8029>

Abstract

Background: Urachal cysts are uncommon congenital anomalies that usually remain asymptomatic until complicated by infection. Presentation as acute small bowel obstruction is exceedingly rare and poses a diagnostic challenge.

Case Presentation: A 15-year-old boy with Arnold–Chiari type II malformation, repaired meningocele, ventriculoperitoneal shunt, and neurogenic bladder presented with fever, lower abdominal pain, abdominal distension, bilious vomiting, and constipation. Contrast-enhanced computed tomography demonstrated a 7 × 7 cm infected urachal cyst arising from the bladder dome with surrounding inflammatory changes causing acute small bowel obstruction. Emergency diagnostic laparoscopy was attempted but converted to an open procedure because of dense inflammatory adhesions. Complete excision of the infected urachal cyst with en bloc partial cystectomy was performed. Histopathological examination confirmed an infected urachal cyst without evidence of malignancy. The patient recovered uneventfully and remained asymptomatic on follow-up.

Conclusion: Although rare, infected urachal cyst should be considered in the differential diagnosis of acute small bowel obstruction in adolescents. Early cross-sectional imaging facilitates timely diagnosis, and complete surgical excision with partial cystectomy remains the definitive treatment.

Keywords: Urachal cyst, small bowel obstruction, Acute abdomen, partial cystectomy, adolescent, urachal remnant.

Introduction

The urachus is an embryological remnant that connects the fetal urinary bladder to the umbilicus and normally involutes before birth to form the median umbilical ligament. Failure of complete obliteration results in a spectrum of urachal anomalies, including patent urachus, urachal sinus, vesicourachal diverticulum, and urachal cyst. Among these, urachal cysts are usually asymptomatic until they become infected or, rarely, undergo malignant transformation [1, 8].

Infected urachal cysts commonly present with lower abdominal pain, fever, dysuria, umbilical discharge, or a tender infraumbilical mass [1, 2, 8]. Presentation as acute small bowel obstruction is exceptionally uncommon and may delay diagnosis because the clinical features mimic more common surgical causes of acute abdomen [3, 5]. Contrast-enhanced computed tomography (CECT) plays a pivotal role in establishing the diagnosis by accurately defining the urachal remnant, surrounding inflammatory changes, and involvement of adjacent bowel and urinary bladder.

We report a rare case of an infected urachal cyst presenting as acute small bowel obstruction in a 15-year-old adolescent with Arnold–Chiari type II malformation, repaired meningocele, ventriculoperitoneal shunt, and neurogenic bladder. The patient was successfully managed by complete excision of the infected urachal cyst with en bloc partial cystectomy. This case highlights the importance of early radiological diagnosis and definitive surgical management in this unusual presentation.

Case Report

A 15-year-old boy presented to the emergency department with a three-day history of fever, progressively worsening lower abdominal pain, abdominal distension, multiple episodes of bilious vomiting, and constipation. He had a past history of Arnold–Chiari type II malformation, repaired meningocele, ventriculoperitoneal (VP) shunt placement for congenital hydrocephalus with subsequent revision, and neurogenic bladder. Given his complex neurological history, VP shunt-related pathology was initially considered in the differential diagnosis. Neurological examination was unremarkable, and a non-contrast CT of the brain performed at the referring hospital confirmed the VP shunt to be in satisfactory position with no evidence of hydrocephalus, effectively ruling out shunt malfunction.

On examination, the patient appeared ill and was tachycardic. Abdominal examination revealed generalized distension with a tender, poorly defined infraumbilical mass. There were no signs of generalized peritonitis. Bowel sounds were exaggerated, and the clinical findings were consistent with acute small bowel obstruction. Laboratory investigations demonstrated leukocytosis with neutrophilic predominance and elevated inflammatory markers, suggestive of an acute infective process.

Contrast-enhanced computed tomography (CECT) of the abdomen demonstrated a 7 × 7 cm thick-walled, peripherally enhancing cystic lesion arising from the urachal remnant between the dome of the urinary bladder and the umbilicus, consistent with an infected urachal cyst.

Marked surrounding inflammatory changes resulted in dense adhesions involving adjacent ileal loops, producing proximal small bowel dilatation with collapse of the distal bowel, confirming acute small bowel obstruction. No radiological features suggestive of malignancy were identified.

Considering the clinical and radiological findings, emergency diagnostic laparoscopy was undertaken. Dense inflammatory adhesions involving the anterior abdominal wall, bladder dome, and adjacent ileal loops prevented safe laparoscopic dissection, necessitating conversion to an open lower midline approach. Following meticulous adhesiolysis, the bowel obstruction was relieved, and a large infected urachal cyst densely adherent to the bladder dome was identified. Complete excision of the urachal cyst with en bloc partial cystectomy was performed to ensure complete removal of the urachal remnant. The bladder was closed in two layers after confirming a watertight repair, and both suprapubic and per-urethral catheters were placed for urinary drainage.

Gross examination of the surgical specimen revealed a thick-walled cyst containing purulent material. Histopathological examination confirmed an infected urachal cyst without evidence of dysplasia or malignancy.

The postoperative course was uneventful. Oral feeding was resumed after the return of bowel function, and the patient's abdominal pain and obstructive symptoms resolved completely. He was discharged in satisfactory condition. At [INSERT FOLLOW-UP DURATION, e.g., 3-month] follow-up, he remained asymptomatic, with no evidence of recurrence.

Discussion

The urachus is a fibromuscular embryological remnant extending from the dome of the urinary bladder to the umbilicus. Failure of complete obliteration results in a spectrum of congenital anomalies, including patent urachus, urachal sinus, vesicourachal diverticulum, and urachal cyst. Urachal cysts account for approximately one-third of all urachal anomalies and usually remain clinically silent until they become infected ^[1].

Infection is the most common complication of urachal cysts and is typically caused by enteric organisms such as *Escherichia coli*, *Enterococcus* species, *Proteus mirabilis*, and *Staphylococcus aureus* ^[1, 2, 8]. Patients generally present with fever, lower abdominal pain, dysuria, umbilical discharge, or a tender infraumbilical mass. Acute small bowel obstruction is an exceptionally rare presentation and is thought to result from inflammatory extension causing dense adhesions between the infected urachal cyst and adjacent small bowel loops, leading to mechanical obstruction ^[3, 7].

The present case posed a significant diagnostic challenge because the patient had Arnold–Chiari type II malformation, a ventriculoperitoneal shunt, and neurogenic bladder. These pre-existing conditions initially broadened the differential diagnosis to include shunt-related intra-abdominal complications. Careful clinical examination combined with

contrast-enhanced computed tomography was instrumental in establishing the correct diagnosis and guiding definitive surgical management.

Contrast-enhanced computed tomography remains the imaging modality of choice in complicated urachal disease because it accurately delineates the urachal remnant, its relationship to the urinary bladder, surrounding inflammatory changes, and involvement of adjacent bowel ^[2, 7]. In our patient, CECT clearly demonstrated an infected urachal cyst with inflammatory adhesions causing acute small bowel obstruction, allowing prompt operative intervention.

Complete surgical excision remains the definitive treatment for infected urachal cysts because it eradicates infection, prevents recurrence, and eliminates the potential risk of future malignant transformation ^[1, 2, 8]. Although percutaneous drainage may be considered in selected patients with localized infection, definitive excision of the entire urachal remnant is recommended once the acute infection is controlled or when emergency surgery is required. In our patient, dense inflammatory adherence of the cyst to the bladder dome necessitated en bloc partial cystectomy to achieve complete excision and minimize the risk of recurrence.

Only a limited number of cases describing infected urachal cyst presenting with acute small bowel obstruction have been reported in the literature ^[3, 7]. Similar to previously published reports, our patient required definitive surgical excision following radiological diagnosis. However, the coexistence of Arnold–Chiari type II malformation with a ventriculoperitoneal shunt, together with successful management by conversion from diagnostic laparoscopy to open excision with en bloc partial cystectomy, adds to the limited literature and highlights the importance of individualized surgical decision-making.

Limitations

This report is limited by its description of a single case, which restricts generalizability. Microbiological culture of the urine and cyst contents was not performed given the emergency nature of the presentation, so the causative organism could not be confirmed; empirical management was guided by clinical and radiological findings. Follow-up duration was relatively short, and longer-term surveillance would help confirm sustained bladder function and the absence of recurrence.

Conclusion

Although uncommon, infected urachal cyst should be considered in the differential diagnosis of acute small bowel obstruction, particularly in children and adolescents presenting with fever, infraumbilical pain or mass, and features of acute abdomen. Contrast-enhanced computed tomography plays a pivotal role in establishing the diagnosis and guiding operative planning. Complete excision of the infected urachal remnant with partial cystectomy, when the bladder dome is involved, provides definitive treatment, prevents recurrence, and excludes underlying malignancy.

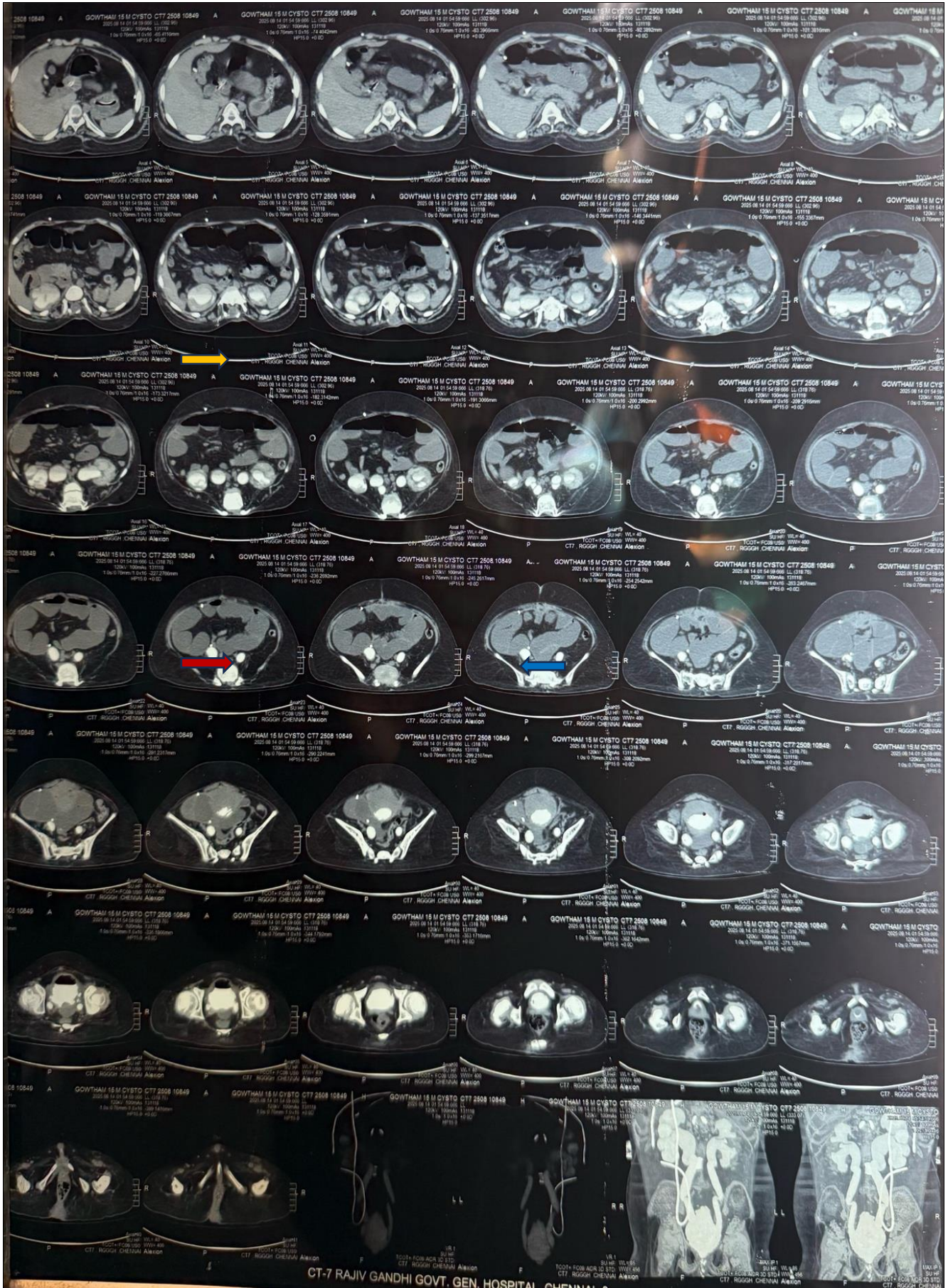


Fig 1

Red Arrow – Infected Urachal Cyst
 Blue Arrow – Bladder
 Yellow Arrow – Dilated small bowel loops

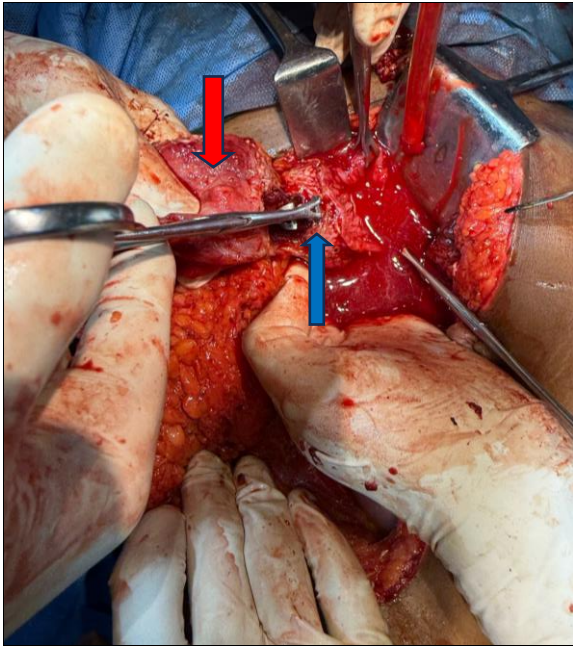


Fig 2

References

1. Goldman IL, Caldamone AA, Gauderer MWL, Hampel N, Wesselhoeft CW Jr, Elder JS. Infected urachal cysts: a review of 10 cases. *J Urol.* 1988;140(2):375-378. doi:10.1016/S0022-5347(17)41612-0.
2. Yoo KH, Lee SJ, Chang SG. Treatment of infected urachal cysts. *Yonsei Med J.* 2006;47(3):423-427. doi:10.3349/ymj, 2006;47(3):423.
3. Cherukupalli C, Schein M. Urachal cyst causing intestinal obstruction. *Int Surg.* 2005;90(2):96-98. PMID: 16119714.
4. Vaziri K, Ponsky TA, White JC, Orkin BA. Urachal remnant causing small bowel obstruction: report of two cases. *South Med J.* 2005;98(8):825-826. doi: 10.1097/01.SMJ.0000157529.76350.E 9.
5. O'Leary MP, Ashman ZW, Plurad DS, Kim DY. Urachal cyst causing small bowel obstruction in an adult with a virgin abdomen. *Case Rep Surg.* 2016;2016:3247087. doi:10.1155/2016/3247087.
6. Song JY, Kim SH. A rare case of infected urachal cyst leading to intestinal obstruction in a 3-month-old boy with febrile urinary tract infection: a case report. *Medicine (Baltimore).* 2024;103(24). doi:10.1097/MD.00000000000038615.
7. Ly TM, Bui HMH, Bui PT, Ly N. Small bowel obstruction from urachal cyst abscess: a diagnostic challenge easily confused with invasive urachal cancer: a case report. *J Med Case Rep.* 2025;19:240. doi:10.1186/s13256-025-05265-4.
8. Guarnaccia SP, Mullins TL, Sant GR. Infected urachal cysts. *Urology.* 1990;36(1):61-65. doi:10.1016/0090-4295(90)80315-E.