AMSER Case of the Month

October 2025

6-week-old boy presents to the ED with fussiness, crying, and a non-tender umbilical granuloma

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Patient Presentation

- Born at 37 weeks gestational age with a brief NICU admission due to poor respiratory effort.
- At 6-weeks-old the patient presents to the ED with inconsolable fussiness and crying for 3 hours. Found to have a large umbilical granuloma on exam.
- Granuloma treated with silver nitrate and dressed in a gauze. An renal and bladder ultrasound was then ordered.

Differential Diagnosis

- Umbilical mucosal polyp
- Patent omaphalomesenteric duct
- Patent urachus
- Urachal remnant
- Umbilical cyst
- Omphalitis
- Pyogenic granuloma

Patient Presentation (unlabeled)

Patient Presentation (labeled)

- US demonstrates a tubular anechoic structure measuring 4 mm extending from the dome of the bladder to the level of the umbilicus.

What Imaging Should We Order Next?

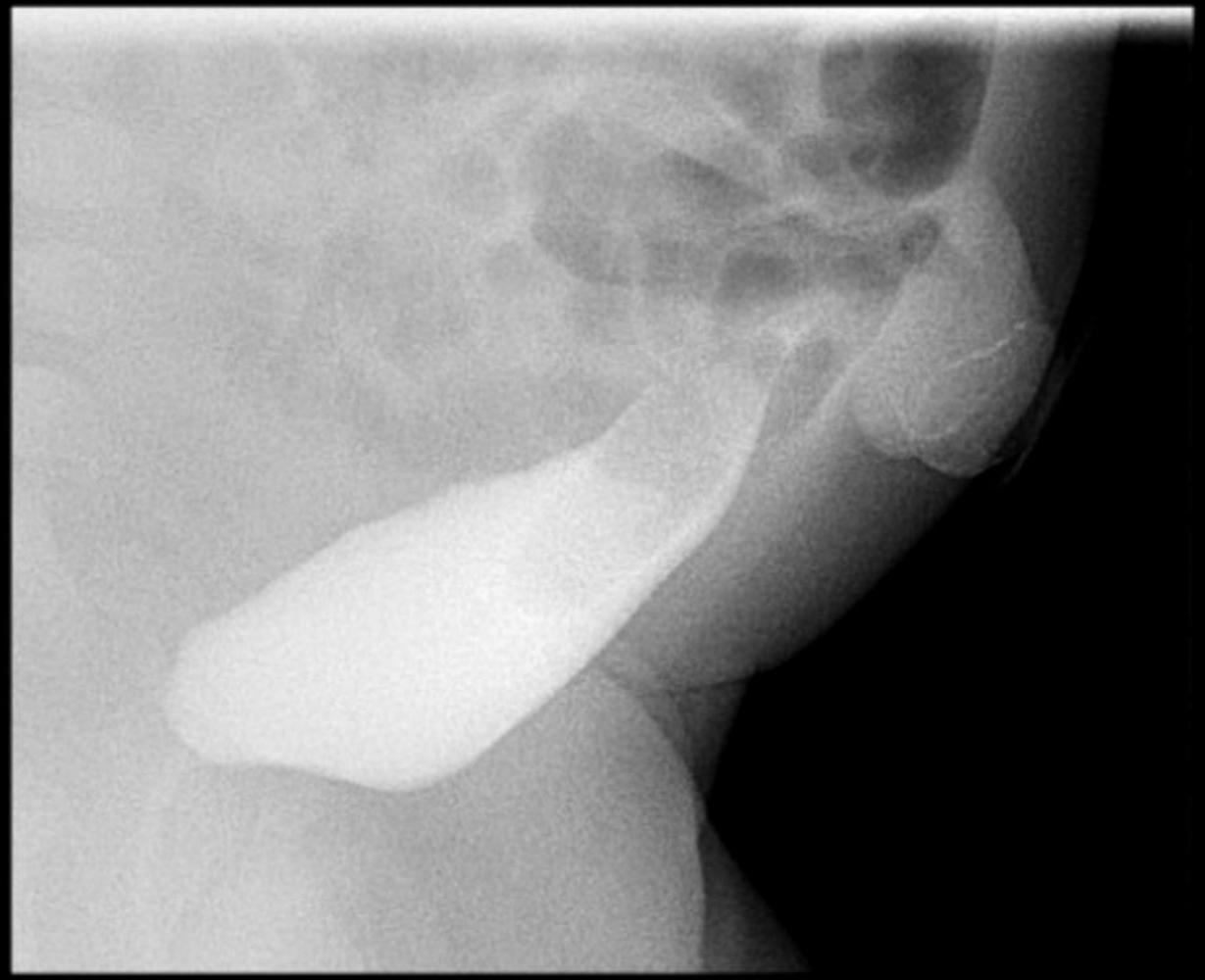
Select the applicable ACR Appropriateness Criteria

Variant 1: **Child assigned male at birth (AMAB). Younger than 2 months of age. First febrile urinary tract infection with appropriate response to medical management. Initial imaging.**

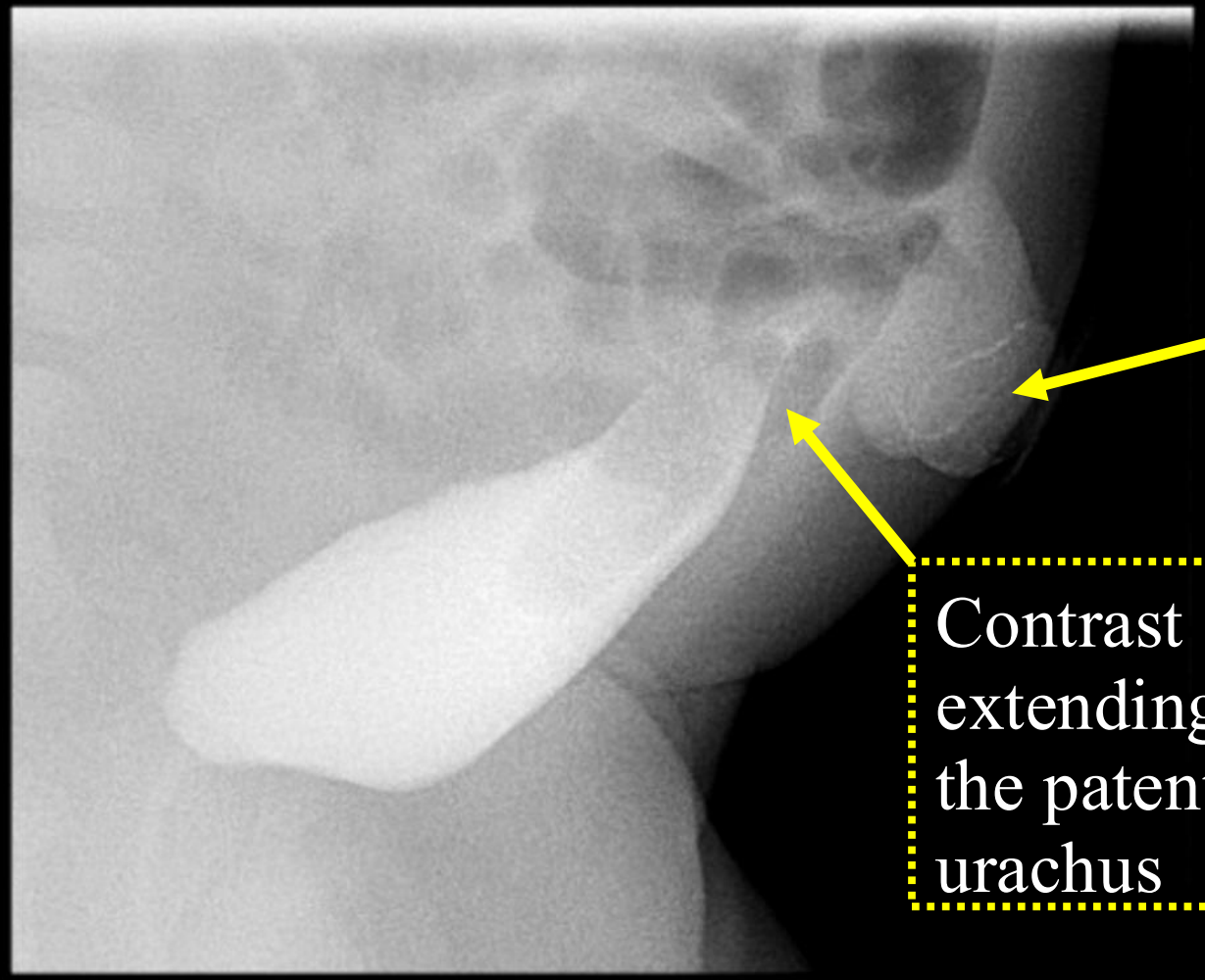
Procedure	Appropriateness Category	Relative Radiation Level
US kidneys and bladder	Usually Appropriate	O
Voiding urosonography	May Be Appropriate (Disagreement)	O
Fluoroscopy voiding cystourethrography	May Be Appropriate (Disagreement)	☢☢
Nuclear medicine cystography	Usually Not Appropriate	☢☢
MRI abdomen and pelvis with IV contrast	Usually Not Appropriate	O
MRI abdomen and pelvis without IV contrast	Usually Not Appropriate	O
MRU without and with IV contrast	Usually Not Appropriate	O
CT abdomen and pelvis with IV contrast	Usually Not Appropriate	☢☢☢☢
CT abdomen and pelvis without IV contrast	Usually Not Appropriate	☢☢☢☢
DMSA renal scan	Usually Not Appropriate	☢☢☢
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢☢
CTU without and with IV contrast	Usually Not Appropriate	☢☢☢☢☢

This imaging modality was recommended by the radiologist

Findings (unlabeled)



Findings: (labeled)

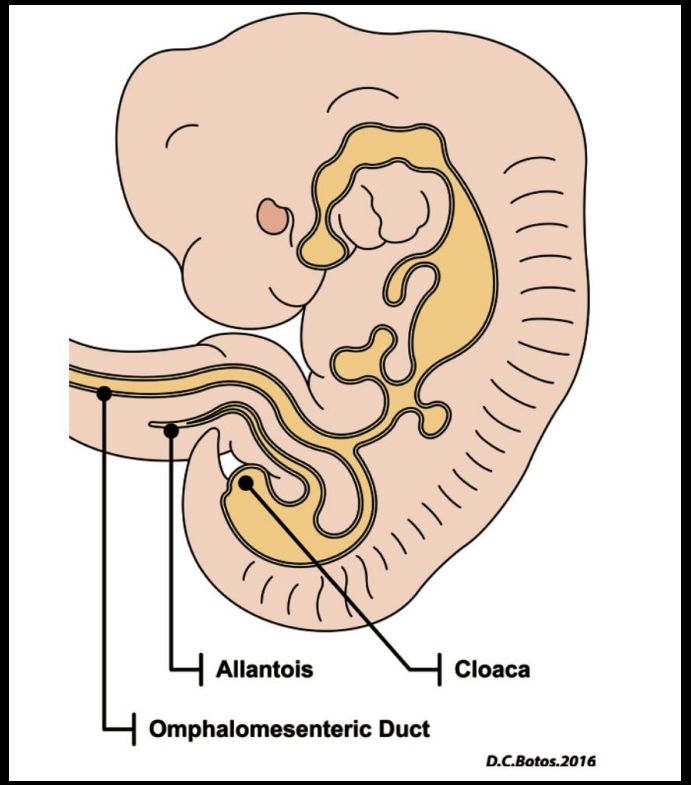


Final Diagnosis

Patent Urachus

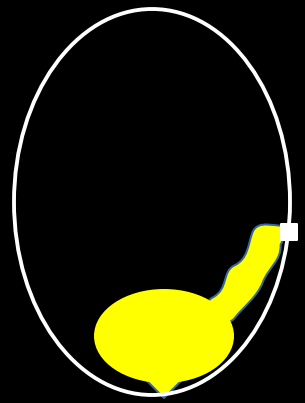
Case Discussion

- Urachal Remnants Embryology
  - The urachus is the fibrous remnant of the allantois which originates from the posterior wall of the yolk sac [1,3,4].
  - The allantois is responsible for placental development and contributes to the formation of umbilical vessels [7].
  - During the 1st trimester the urachus drains fetal urine and seals off by the 12th week of gestation [7].
  - What is left behind is a fibrous cord called the median umbilical ligament [7].
  - Failure of this closure results in urachal remnants [1,4,7,8].

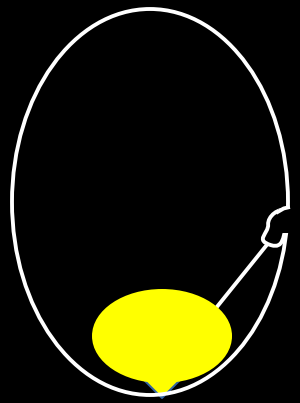


[9]

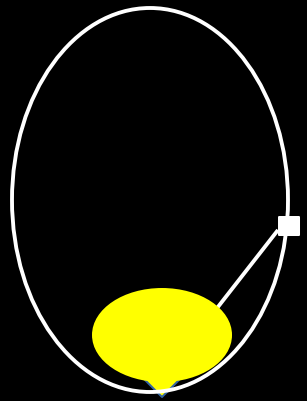
Types of Urachal Remnants



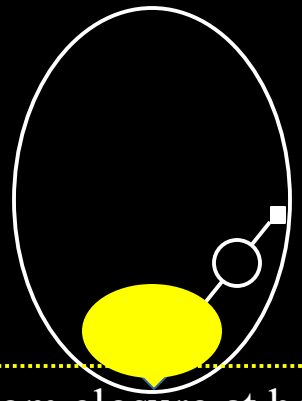
Patent urachus from completely failed closure



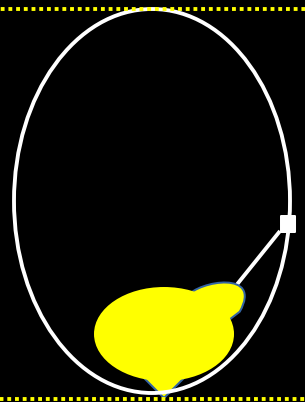
Urachal sinus from closure at the bladder but a blind sinus tract from the umbilicus



Normal



Urachal cyst from closure at both the umbilicus and bladder ends of the urachus with failure of closure between the two



Vesicourachal diverticulum from closure at the umbilicus without closure at the bladder

Case Discussion

- Urachal Remnants Epidemiology
  - Urachal anomaly prevalence is variable based on the current literature, from 1-35% depending on the source. There is a higher prevalence in males [1,8].
  - Patent urachus prevalence is estimated to be 1-2 cases per 100,000 deliveries, accounting for 10-15% of urachal anomalies [8].
  - Urachal anomalies are associated with recurrent urinary tract infections, sepsis, neoplastic transformation (adenocarcinoma), but most are asymptomatic [1,7,8].
  - These anomalies can coexist with posterior urethral valves [2].

Case Discussion

- Urachal Remnants Treatment/Prognosis
  - Treatment is surgical in symptomatic patients, however, due to high likelihood of spontaneous closure treatment can be conservative in patients without infection [4,7,8].
  - Urachal remnants typically spontaneously resolve in children < 6 months old [1].
  - There is a small increase in risk of adenocarcinoma but this is rare and the number needed to treat according to one study is 5,271 to prevent one case of adenocarcinoma [3].
  - The presence of epithelium is the major determinant of malignant transformation [1,8].
  - Currently there are limited long term studies on untreated urachal remnants and risk of malignancy [8].

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