

SPECIAL SONO-CASE

VACTERL Association: Ultrasound-Focused Neonatal Workup

Coordinating a neonatal ultrasound workup for multiple congenital anomalies

CLINICAL CHALLENGE A term newborn has an imperforate anus and a single umbilical artery. The clinical team requests imaging for associated anomalies.

Clinical context

Key element	Finding
Clinical detail 1	Imperforate anus
Clinical detail 2	Single umbilical artery
Clinical detail 3	Abnormal sacral dimple
Clinical detail 4	Prenatal cardiac views incomplete

Learning objectives

- Perform a safe, focused examination adapted to the altered anatomy or clinical context.
- Recognize the principal diagnostic pattern and its most important mimics.
- Document limitations and communicate a clinically actionable impression.

Scanning protocol

- Confirm that VACTERL is a clinical association: vertebral, anorectal, cardiac, tracheoesophageal, renal, and limb anomalies.
- Perform renal/bladder ultrasound for agenesis, dysplasia, ectopia, hydronephrosis, duplication, and bladder abnormality.
- Perform spinal ultrasound when age and posterior elements permit; evaluate conus level, filum, motion, and tract from the skin.
- Coordinate echocardiography for cardiac anomalies; ultrasound does not exclude tracheoesophageal fistula.
- Document liver, spleen, and pelvic anatomy when surgical planning or additional anomalies require it.

Sonographic findings

- Right kidney is absent from the renal fossa and pelvis; compensatory enlargement of the left kidney is present.
- Mild left urinary tract dilation is present without ureterocele.
- Conus terminates low at L3 with a thickened filum and reduced motion, concerning for tethering.

Diagnostic reasoning

The renal and spinal findings add two component anomalies to the known anorectal abnormality. VACTERL diagnosis and management require multidisciplinary clinical correlation and targeted evaluation of every component.

Suggested report

IMPRESSION Nonvisualization of the right kidney, compatible with unilateral renal agenesis. Mild left urinary tract dilation. Low-lying conus with thickened filum and diminished motion, suspicious for tethered cord; MRI correlation is recommended when clinically appropriate.

Pitfalls and quality checks

- Treating VACTERL as a single ultrasound diagnosis.
- Assuming an empty renal fossa means agenesis before searching for ectopia.
- Using spinal ultrasound beyond the age when ossification limits the acoustic window.

ARDMS-style review questions

Which study evaluates the cardiac component?

- A. Echocardiography
- B. Renal Doppler only
- C. HIDA scan
- D. Scrotal ultrasound

Answer: A

An empty renal fossa requires a search for:

- A. Ectopic kidney
- B. Gallstones
- C. Pyloric stenosis
- D. Appendicitis

Answer: A

Teaching takeaway

KEY POINT The renal and spinal findings add two component anomalies to the known anorectal abnormality. VACTERL diagnosis and management require multidisciplinary clinical correlation and

targeted evaluation of every component.

References and guidance

- American College of Radiology. Appropriateness Criteria for suspected spine anomaly in infants.
- AIUM Practice Parameter for Neonatal and Infant Spine Sonography.

This fictional, de-identified composite case is intended for professional education. It does not replace local protocols, qualified interpretation, specialist consultation, or patient-specific medical care. Rare procedures and research settings require institution-specific guidance.