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Differentiating mimicking cystic ventral masses in the early second trimester by pattern recognition of fetal abdominal vasculature on color Doppler

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Introduction: Bladder exstrophy (BE) rarely presents as a cloacal membrane cyst (CMC) which may mimic an umbilical cord cyst (UCC) abutting the abdomen since both are outlined by umbilical vessels. A precise diagnosis can be substantiated by color Doppler (CD) which reveals altered intrafetal course of umbilical arteries (UAs) in bladder exstrophy compared to normal intrafetal vasculature in UCC.

Case study: A case of 24 years primigravida at 17 weeks presenting with a ventral cystic mass suspected to be CMC in view of absent urinary bladder (UB), was compared with mimicking umbilical cystic mass at 18 weeks by CD.

Comparative ultrasound findings in a normal fetal abdomen, a case of CMC and UCC at 17-18 wks.

Normal (Fig. A,B)	Bladder exstrophy (CMC) (Fig. C-E)	Umbilical cord cyst (Fig. F-H)
Grey scale and color Doppler Sagittal view		
Normal cord insertion	Large ventral cystic mass at site of cord insertion which is low placed	Large ventral cystic mass at site of normally located cord insertion
Urinary bladder (UB) present	Urinary bladder not seen	Urinary bladder present
Normal obliquely ascending intrafetal course of UA beneath anterior abdominal wall.	Altered upright intrafetal course of UA with caudal emergence from pelvis along lower margin of cloacal membrane cyst	Normal obliquely ascending intrafetal course of UA beneath anterior abdominal wall.
Normal “K angle” ¹ between UA and aorta (AO)	Wide “K angle”	Normal “K angle” ¹ between UA and aorta (AO)
Equilateral triangle between UA, UV, AO	Distorted equilateral triangle	Equilateral triangle between UA, UV, AO
Emergence of UA at umbilicus forming “X” configuration intersection with umbilical vein (UV) at cord insertion -“X- sign” ²	Caudal emergence of UA below umbilicus, thereby not intersecting with umbilical vein at the umbilicus : broken “X-sign” (*)	Emergence of UA at umbilicus forming “X” configuration with UV (X-sign) before umbilical vessels drape the umbilical cord cyst.
Color Doppler axial view		
UAs converging across UB in the pelvis to travel together upto the umbilicus – “Y- sign” ²	Parallel emergence of UAs from pelvis flanking alongside cloacal membrane cyst.	UAs converging across UB in the pelvis to emerge at the umbilicus – “Y- sign” ²

Conclusion: The altered course of intrafetal UAs on CD in a case of ventral cystic mass could point to the diagnosis of CMC because of caudal emergence of UAs along bladder exstrophy, thus differentiating it from mimicking umbilical cord cyst where the UAs emerge normally at the umbilicus and the intrafetal course of UAs remain normal.

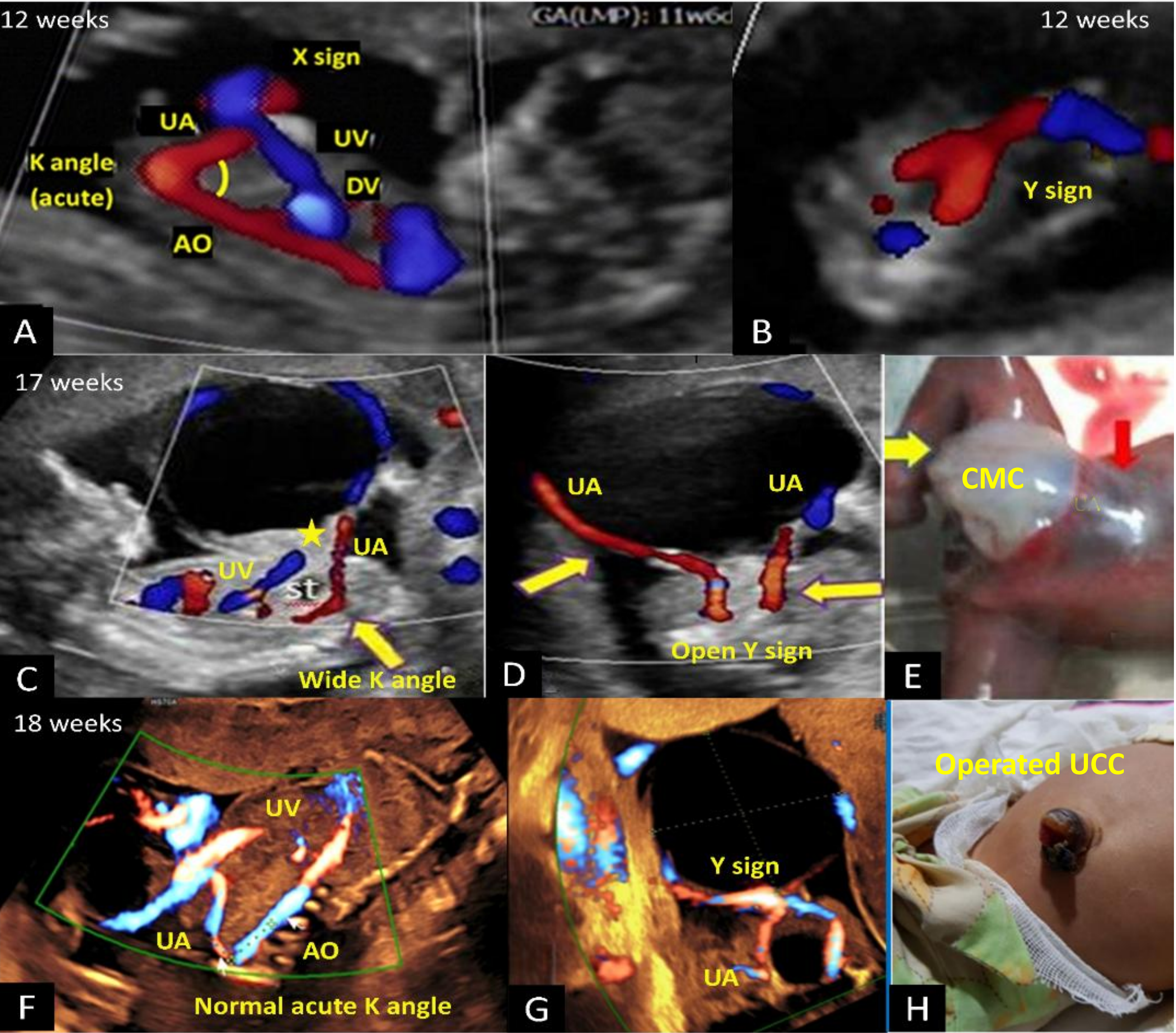


Fig 1 Comparative color Doppler sagittal and axial pelvic views in normal fetus (A , B), Bladder exstrophy (C – E), Umbilical cord cyst (F – H).

Discussion: BE rarely presents as CMC until mid trimester, which takes into account the evolution of the anomaly. It may mimic umbilical cord cyst abutting the abdomen. The differentiation of CMC from UCC is crucial because of the vast difference in the prognosis and management implications in these conditions. This can be achieved by use of CD where B mode ultrasound remains inconclusive. The altered intrafetal course of UAs in CMC is consequent to the low emergence of UAs from pelvis along exteriorized bladder. In UCC the UAs emerge normally at the umbilicus and the intrafetal course of UAs remain normal.

1. Aneja, K., 2017. A rare case of OEIS complex – newer approach to diagnosis of exstrophy bladder by color Doppler and its differentiation from simple omphalocele. Indian Journal of Radiology and Imaging, 27(04), pp.436-440.

2. Aneja K, Gandhi S, Deka JB, Deshmukh MS. Pattern Recognition of Abdominal Vasculature on Color Doppler in the Fetus as a Tool for Early Diagnosis of Bladder Exstrophy in the First and Early-Second Trimester: Initial Observations. Indian Journal of Radiology and Imaging. 2022;32(03):403-407. doi:10.1055/s-0042-1754363