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CASE REPORT

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Fetal ultrasound diagnosis allows effective early postnatal treatment of hematometrocolpos

Iliya Kwache[1] | **Shireen Meher**[1,2] | **Moji Balogun**[1] | **Andrew K. Ewer**[1,2] | **Gergely Toldi**[1,2]

[1]Birmingham Women's and Children's Hospital, Birmingham, UK

[2]University of Birmingham, Birmingham, UK

Correspondence
Iliya Kwache, Mindelsohn Way, B15 2TG Birmingham, UK.
Email: iliya.kwache@nhs.net

Abstract

Fetal hematometrocolpos is a rare finding with an incidence of 1 in 16 000 female births. We present a case of fetal hematometrocolpos managed exclusively by prenatal and postnatal ultrasound scans allowing for effective immediate postnatal surgical treatment.

KEYWORDS

abdominal mass, imperforate hymen, prenatal diagnosis

1 | INTRODUCTION

Hematometrocolpos is defined as the accumulation of blood or menstrual fluid in the uterus and vagina due to obstruction. While obstruction can be caused by various pathologies in adulthood, such as malignancies or adhesions secondary to infection or surgical procedures, the most common cause in childhood and adolescence is congenital anomalies, such as imperforate hymen or a transverse vaginal septum.[1] Occasionally, the accumulation of fluid in the uterine cavity begins in fetal life and can be identified prenatally. Fetal hematometrocolpos is a rare finding with a reported incidence of 1 in 16 000 female births.[2]

Timely diagnosis before delivery is crucial as it enables clinicians to formulate an appropriate management plan for the newborn, avoiding unnecessary investigations and enabling surgical intervention within the first few days of life. This is advantageous for early resolution of the lesion and significantly reduces the chances of complications resulting from delayed diagnosis and treatment.

Here we present a case of fetal hematometrocolpos diagnosed and followed up exclusively by prenatal and postnatal ultrasound scans allowing for effective immediate postnatal surgical treatment, evidenced by full resolution by 3 months of age.

2 | CASE PRESENTATION

We present a term baby girl born to a 35-year-old Caucasian woman in her first pregnancy with an uneventful medical history. Informed consent was obtained prior to publication.

Dating (12 weeks of gestation) and anomaly (20 weeks of gestation) scans were reported as normal. A growth scan was requested at 35 weeks 6 days of gestation due to a low maternal BMI of 17.84 kg/m^2. Normal fetal movements were reported, and there were no maternal concerns at the time of this scan.

The growth scan revealed that although the umbilical artery Doppler was normal, the estimated fetal weight was below the fifth centile. The liquor volume was adequate with a maximum pool depth of 7 cm, and satisfactory fetal movements were seen. A well-rounded mass containing low level echoes was identified in the fetal pelvis superior and posterior to the urinary bladder. The fetal urinary bladder, kidneys, and the stomach were demonstrated and appeared normal. No obvious mass pressure effect was seen in the fetal abdomen.

As per hospital protocol, the woman was referred to the Fetal Medicine Department for a further scan which identified a 3.5 × 3.7 × 8 cm solid mass in the abdomen behind the bladder and in the midline, most likely representing an enlarged uterus in this female fetus. The external genitalia, renal tract, and bladder appeared normal. The scan confirmed that the fetus was small for gestational age. No other structural abnormalities were seen within limits of late gestational age, and a probable diagnosis of a fetal hematometrocolpos was made (Figure 1A).

The woman was counseled about the findings, and a plan was made for the baby to have a postnatal abdominal ultrasound scan to confirm the diagnosis and to be transferred to the surgical center at the Birmingham Children's Hospital for intervention. Since these findings are usually not associated with underlying chromosomal or genetic problems, amniocentesis was not offered. Increased surveillance was arranged because of the growth restriction with serial growth scans.

The baby was born in good condition vaginally by forceps assisted delivery following induction of labor at 39 weeks of gestation with a birthweight of 2625 g and was self-ventilating in air. Although the baby was not anticipated to be needing resuscitation at birth, a neonatologist was present at delivery for initial assessment and stabilization. On physical examination, a protruding vaginal mass was noted, with no signs of ulceration or infection. Both femoral pulses were felt with difficulty, but there was good distal perfusion to both legs. The rest of the physical examination was unremarkable. The baby was passing urine and opening her bowels normally. Her renal function parameters were normal. The pediatric surgical team was informed that the baby was born and was awaiting transfer to the surgical center, and however, no immediate surgical or urological intervention was performed after delivery.

An ultrasound of the baby's abdomen and pelvis was performed on the day of birth confirming a thin-walled cystic structure filling the pelvis and extending up to the umbilicus and bilaterally into both adnexae (Figure 1B). The structure measured 7.3 × 3.1 × 6 cm and contained echogenic fluid. There was no internal vascularity demonstrated. At the superior border of the structure, a lobulated, more solid-looking focus measuring 16 × 8 × 13 mm with elements of shadowing was described, suggested to be possible calcification, also with no internal vascularity. It was not possible to identify a vagina. The liver, spleen, and kidneys had normal appearances, and there was no hydronephrosis. The urinary bladder was virtually empty and only seen low in the pelvis and anterior to the cystic mass. The femoral vessels were patent. Overall, appearances were suggestive of a hematometrocolpos with a possible small clot at the fundal aspect.

The baby was transferred to the Birmingham Children's Hospital and had surgery under general anesthesia on the third day of life which involved incision of the imperforate hymen and drainage of the hematometrocolpos, followed by a cystovaginoscopy which was normal. She was discharged home the following day. A repeat abdominal ultrasound scan was performed at 3 months of age, showing no recurrence (Figure 1C). The prepubertal uterus was normal with no fluid seen, as were the ovaries and bladder.

3 | DISCUSSION

Fetal hematometrocolpos is usually an incidental finding during routine antenatal ultrasound scans. There are no known risk factors, and the diagnosis usually becomes more apparent at later stages of pregnancy, with the increasing size of the lesion.

Most reports of fetal hematometrocolpos describe a pear-shaped cystic mass with fluid-debris level in the fetal pelvis posterior to the bladder and anterior to the rectum and most are diagnosed after 32 weeks of gestation,[3,4] and however, Winderl et al reported a case at 25 weeks of gestation which appears to be the earliest fetal diagnosis in the literature.[5]

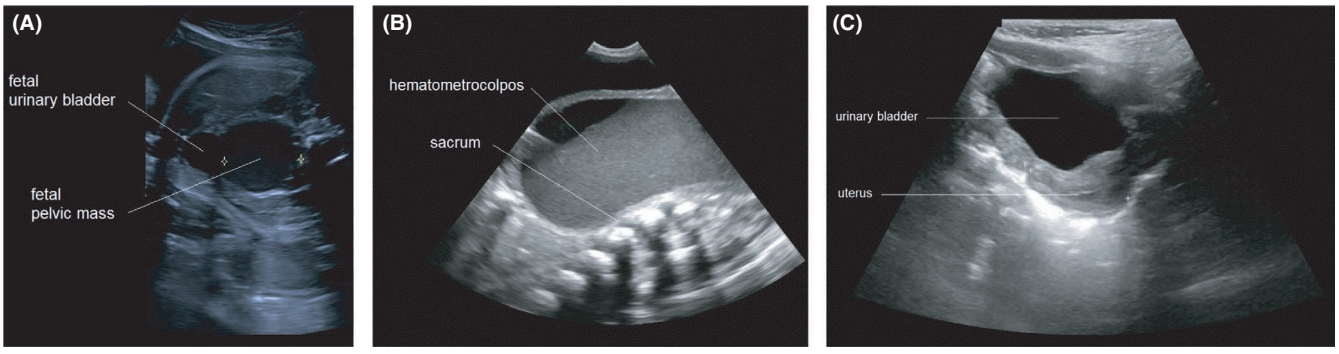

FIGURE 1 Hematometrocolpos diagnosed in a fetus at 35 wk of gestation. A, Antenatal transverse ultrasound scan showing the fetal pelvic mass between the calipers (3.67 cm). B, Postnatal longitudinal ultrasound scan of the baby's pelvis confirming the hematometrocolpos on the day of birth. C, Longitudinal ultrasound scan of the baby's pelvis at 3 mo of age showing normal anatomy and complete resolution of the hematometrocolpos. The uterus is shown between the calipers (2.57 cm)

Besides an imperforate hymen, the obstruction of the uterovaginal tract causing fetal hematometrocolpos or hematometra can be higher and may include a transverse vaginal septum or complete vaginal agenesis, which may be associated with other developmental anomalies, such as Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome. While type I MRKH syndrome is characterized by vaginal and/or uterine underdevelopment, type II is also associated with vertebral, cardiac, and upper urinary tract findings. Further differentials of our case include cystic lymphangiomas and cystic teratomas, and however, the latter may have some color flow. Furthermore, the antenatal presentation of hematometrocolpos may be related to a cloacal malformation. Therefore, in such cases it is crucial to rule out anal atresia by visualization of the target sign at the level of the fetal perineum, as this would have great impact on antenatal diagnosis, counseling, and perinatal care.

Due to the low incidence of fetal hematometrocolpos, the associated ultrasound findings often prompt clinicians to request further imaging, mostly fetal MR scans to clarify the diagnosis and the extent of the lesion.[4] However, this is not always feasible, particularly in low resource healthcare settings or at advanced gestational age. On the other hand, timely diagnosis, preferably before delivery, provides great advantage to the pediatrician to arrange for appropriate postnatal surgical management of the neonate in a pediatric surgical center with relevant experience.

While hematometrocolpos in the neonate is not life-threatening per se, delayed diagnosis and intervention can lead to unnecessary investigations and, depending on the size of the lesion, can cause obstruction in the urinary tract or compromise perfusion of the lower limbs due to the external pressure effect on surrounding tissues.

In our case, accurate ultrasound diagnosis allowed us to organize timely surgical management, resulting in full resolution of the hematometrocolpos with no reaccumulation at 3 months of age. Importantly, from the imaging point of view, this case was managed entirely aided by ultrasound scans, indicating that cross-sectional imaging is not mandatory for successful management of these patients. This is of great significance in low resource healthcare settings, where access to fetal MR may not be readily available.

CONFLICT OF INTEREST

The authors declare no relevant conflict of interest.

AUTHOR CONTRIBUTIONS

IK and MB: were responsible for imaging, SM: was responsible for antenatal counseling and management, and AKE and GT: were responsible for postnatal management. All authors contributed to drafting and critically reviewing the manuscript.

ETHICAL APPROVAL

Patient consent for publication was signed and collected in accordance with the journal's patient consent policy.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Gergely Toldi https://orcid.org/0000-0003-0178-1243

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