

Acute chorioamnionitis following amnioreduction for polyhydramnios in placental chorioangioma complicating pregnancy: a case report

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Case presentation

In October 2022, a 29-year-old nulliparous woman at 30 weeks of gestation was found to have a larger-than-dates uterus with symphysial fundal height of 38 cm. Her previous antenatal course had been uneventful with scan at 20 weeks of gestation showing normal fetal morphology and liquor volume. Ultrasound revealed polyhydramnios with amniotic fluid index (AFI) of up to 42 cm but normal fetal growth and morphology. An echogenic lesion measuring 4.7×5.6×4.5 cm³ was seen in the placenta. The lesion had feeding vessels visible on colour flow Doppler and pulsatile flow on pulsed wave Doppler (Fig 1). There were no signs of fetal anaemia or hydrops fetalis. The diagnosis of placental chorioangioma

was made. A standard 75-g oral glucose tolerance test was performed due to polyhydramnios and revealed mild gestational diabetes mellitus with normal fasting level (4.7 mmol/L) and marginally raised 2-hour post-loading level of 8.6 mmol/L (normal range for pregnancy, <8.5).

In view of the severe maternal pressure symptoms with shortness of breath, amnioreduction was performed at 31 weeks of gestation under aseptic technique with continuous ultrasound guidance using a 22-gauge spinal needle connected to low-pressure wall suction. A total of 2280-mL amniotic fluid was drained over 3 hours with post-procedure AFI reduced to 16 cm. In view of the potential risk of preterm labour, a course of betamethasone (12 mg

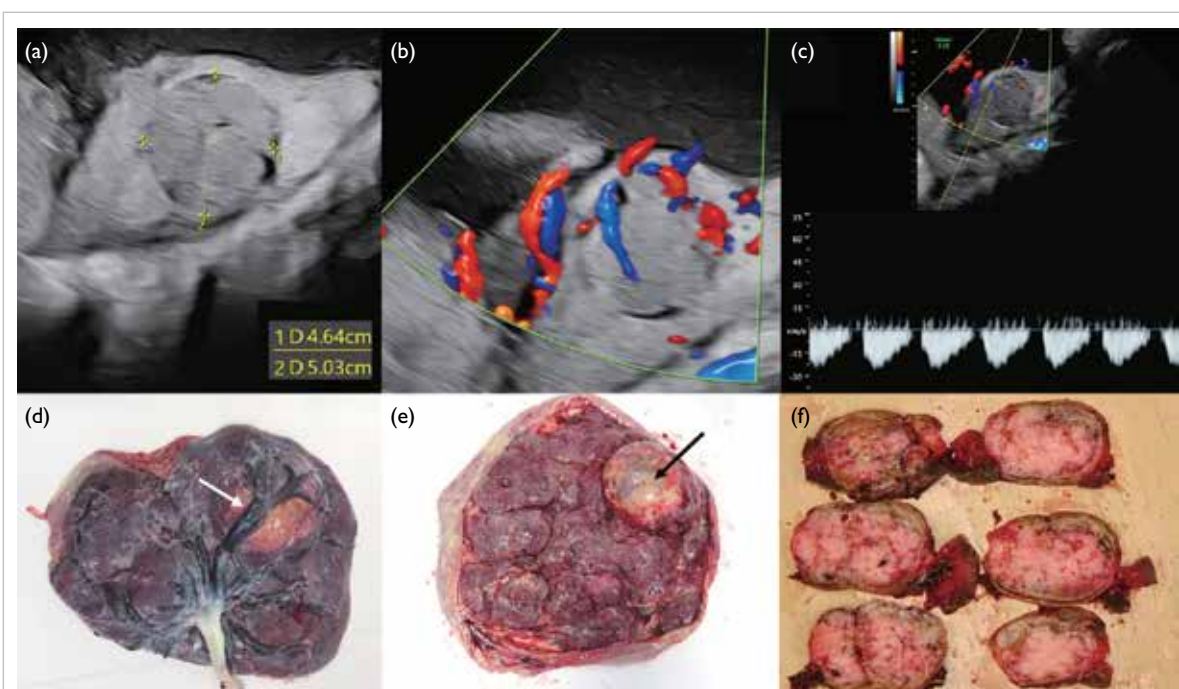


FIG 1. Ultrasound images and histological photos of the placental chorioangioma of the patient. (a) A chorioangioma measuring >4 cm inside the placenta. (b) Feeding vessels are seen in the chorioangioma on colour Doppler. (c) The feeding vessel has pulsatile flow on pulsed wave Doppler. (d) The fetal surface of the placenta after delivery showing feeding vessels (arrow) supplying the chorioangioma. (e) The chorioangioma (arrow) and the placental surface of the placenta after delivery. (f) Sectioning of the chorioangioma showing whitish and gelatinous cut surface

every 24 hours for two doses) was administered intramuscularly prior to amnioreduction to enhance fetal lung maturity. Results of chromosomal microarray studies of the amniotic fluid were normal. One week later, the polyhydramnios recurred with AFI measuring 40 cm. Amnioreduction was repeated at 32 weeks of gestation with 2600-mL amniotic fluid drained over 2.5 hours and AFI reduced to 18 cm. Prophylactic antibiotics were not given prior to either procedure.

Three days after amnioreduction, the patient developed signs of sepsis with fever, fetal tachycardia, and abdominal tenderness. Maternal white cell count and C-reactive protein level were elevated. The clinical picture was compatible with acute chorioamnionitis and intravenous antibiotics were commenced. Emergency caesarean section was performed and a baby weighing 2080 g was born with good Apgar score. Septic workup including blood culture, high vaginal swabs, amniotic fluid and placental swabs did not yield any bacterial growth. Both the mother and the baby subsequently recovered well. Histological examination of the placenta confirmed the diagnosis of chorioangioma (Fig 2).

Discussion

There are numerous causes for polyhydramnios in singleton pregnancies including gestational diabetes, chromosomal abnormalities, fetal structural abnormalities such as bowel atresia, and placental causes such as chorioangioma. As mild gestational diabetes should not lead to severe polyhydramnios, the most likely primary diagnosis in our patient was chorioangioma. The pathophysiology of polyhydramnios in placental chorioangioma is not completely known. One of the proposed mechanisms is transudation of fluid from the surface of the chorioangioma adjacent to the placental surface. The incidence of placental chorioangioma is estimated to be around 1%. As chorioangiomas >4 cm can lead to complications including polyhydramnios, preterm delivery, intrauterine growth restriction, hydrops fetalis and even fetal demise, close ultrasound surveillance, intrauterine interventions or even early delivery may be necessary.¹ Careful ultrasound examination of the placenta is warranted for all cases of gross polyhydramnios.

Amnioreduction has been commonly

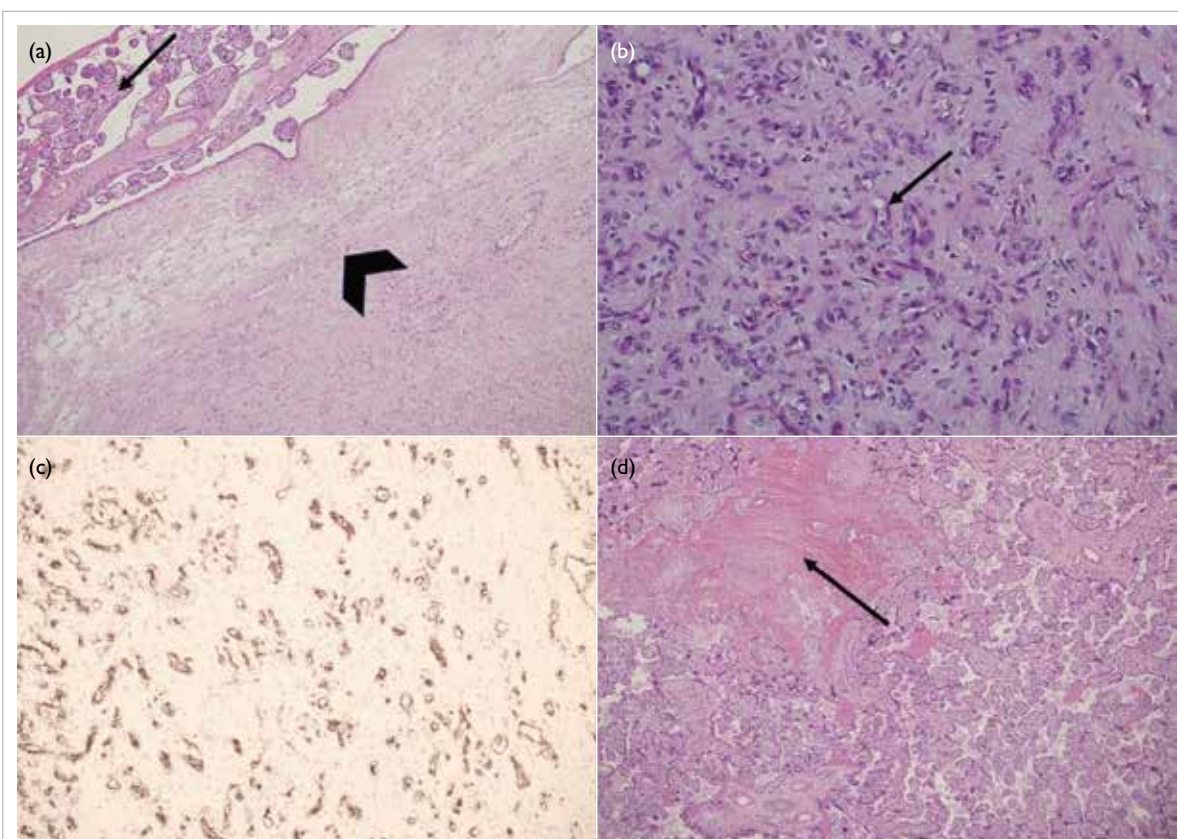


FIG 2. Histological slides of the chorioangioma of the patient. (a) Haematoxylin and eosin stain under low-power view ($\times 40$) showing nodular proliferation of anastomosing capillaries within a fibromyxoid stroma (arrow is chorionic villi and arrowhead is the chorioangioma). (b) Haematoxylin and eosin staining under high-power view ($\times 200$) showing proliferation of anastomosing capillaries lined with endothelial cells (arrow) which is typical for chorioangioma. (c) CD31 immunostaining (a sensitive and specific endothelial marker) under high-power view ($\times 200$) highlighting the endothelial cells of the capillaries of the chorioangioma. (d) Haematoxylin and eosin stain under low-power view ($\times 40$) showing pale platelet and fibrin deposits alternating with darker red cell-rich layers (arrow) in the chorioangioma

performed to relieve polyhydramnios in both singleton and multiple pregnancies. Traditionally, amniodrainage would be performed using an 18- to 22-gauge spinal needle with the amniotic fluid removed manually using a three-way tap and 50-mL syringe. The use of wall suction and a vacuum bottle aspiration system connected to a needle has been proposed in recent years to speed up the procedure and reduce operator fatigue.²

Different complications including preterm labour, prelabour rupture of membranes and placental abruption have been reported following amnioreduction. There is no consensus or guideline for the most appropriate size of needle or the rate at which amniotic fluid can be safely removed. Rapid drainage using an 18- or 20-gauge needle connected to the vacuum system with the fastest rate of drainage up to 178 mL/min has been advocated by Leung et al² since 2004. The overall complication rate for this rapid drainage, including placental abruption, prelabour rupture of membranes and fetal bradycardia in singleton and multiple pregnancies, was 3.1%.² Placental abruption has been reported following amnioreduction for polyhydramnios specifically caused by chorioangioma. One patient has been reported in whom two episodes of amnioreduction were performed a few days apart using an 18-gauge needle connected to a vacuum system.³ With an average drainage rate of 100 mL/min, 2500 mL and 2700 mL of amniotic fluid was removed. Placental abruption occurred 12 hours after the second amnioreduction. The authors concluded that caution should be exercised when performing large-volume or rapid amnioreductions in idiopathic or chorioangioma-associated polyhydramnios.³ We used a small needle (22-gauge) to drain the amniotic fluid slowly at a rate of 12.7 mL/min in our first amnioreduction and 17.3 mL/min in the second amnioreduction in an attempt to lower the risk of placental abruption and preterm prelabour rupture of membranes.

Erfani et al⁴ recently evaluated the complications following amnioreduction in singleton pregnancies without other interventions by combining their findings with those of six other studies. The incidence of preterm labour was 50.5% (48/95) and that of placental abruption was 1.3% (4/315), although there was no acute chorioamnionitis in a total of 244 patients.⁴ This implies that the role of prophylactic antibiotics is dubious. Nonetheless not all studies specified the duration of the amnioreductions. Only one case of acute chorioamnionitis following amnioreduction has been reported.⁵ That patient had a twin pregnancy with polyhydramnios not caused by twin-twin transfusion syndrome. Amnioreduction was performed at 31 weeks of gestation using an 18-gauge needle with a total of 1950-mL amniotic fluid removed at a rate of 65 mL/min. She developed acute chorioamnionitis 18 hours following the procedure.⁵ Although it is logical to deduce that the risk of chorioamnionitis will increase with the length of

procedure for amnioreduction, there are no relevant studies available in the literature to support this association due to the rarity of this complication.

As far as we are aware, this is the second case reported in the literature of acute chorioamnionitis following amnioreduction. As caesarean section was performed immediately under antibiotic cover when the patient developed signs of sepsis, the septic workup did not yield any bacterial growth.

It is crucial to maintain a high index of suspicion and search for placental chorioangioma in a fetus where there is no obvious cause for polyhydramnios to ensure prompt diagnosis and proper management. Amnioreduction carries risks of complications, including placental abruption and acute chorioamnionitis, and the optimal rate of drainage remains controversial.

Author contributions

Concept or design: JTC Leung, CW Kong.

Acquisition of data: JTC Leung.

Analysis or interpretation of data: All authors.

Drafting of the manuscript: JTC Leung, CW Kong.

Critical revision of the manuscript for important intellectual content: WWK To, CW Kong.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

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Ethics approval

The patient was treated in accordance with the Declaration of Helsinki. Written consent was obtained from the patient for publication of this article and the accompanying images.

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