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CASE REPORT

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Placental chorioangioma separation in third trimester after fetoscopic laser therapy: Report of a rare case

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Abstract

A primigravida received fetoscopic laser photocoagulation treatment at 25^{+1} weeks gestation as a chorioangioma enlarged to 61 × 46 × 52 mm. However, a cesarean section was performed due to the chorioangioma separated from the placenta at 32^{+2} weeks gestation. As the chorioangioma's blood supply were blocked, it was possible to provide expectant treatment.

KEYWORDS

fetoscopic photocoagulation, maternal and neonatal outcomes, placental abruption, placental chorioangioma

1 | BACKGROUND

Although pathological investigations have shown the presence of chorioangioma in 1% of pregnancies, symptoms are only apparent in 0.01%–0.03% of cases.[1] Fetal complications, such as heart failure, hydrops, hyperdynamic circulation, and intrauterine death, are more likely with large placental chorioangiomas. An 8.2% incidence of intrauterine death has been reported, with incidences of 3.8% and 11.1% of neonatal and perinatal death, respectively. Perinatal death is more likely in cases of fetal hydrops (40.5%) while preterm delivery occurs in approximately 68% of cases, with fetal anemia present in 21.0%.[2]

Previously, interventions included intrauterine blood transfusion and repeated amnioreduction but the outcomes were poor.[3] More recently, vascular occlusive therapy including alcohol injections,[4] embolization,[5] interstitial laser treatment,[6] and fetoscopic photocoagulation[7] have been used. Our center is the major fetal medical center in China and has extensive experience in the treatment of placental hemangioma. Here, a unique case in which fetoscopic photocoagulation was successful but the placental chorioangioma separated from the placenta in the third trimester is presented. To date, there have been no reports of similar cases.

2 | CASE PRESENTATION

A 31-year-old primigravida presented at our clinic as a placental chorioangioma had been suspected after ultrasound at 22 weeks gestation. The ultrasound performed at our clinic showed the presence of a 48 × 37 × 42 mm chorioangioma with high flow-rate vascularization. All the Doppler indices including the middle cerebral and umbilical arteries and the ductus venosus were normal.

Fetoscopic laser photocoagulation was performed at 25^{+1} weeks gestation as the chorioangioma had enlarged to 61 × 46 × 52 mm. A small incision in the abdomen was made under general anesthesia. Three large veins and one medium superficial vein of the chorioangioma were coagulated using a YAG laser with 20–40 W of power. No blood flow was seen within the mass on color Doppler. One liter of fluid was exchanged at the end of the procedure. An

amniocentesis was performed concurrently and the copy number variation results revealed that the child harbored a 0.75-Mb deletion on chr15 that was inherited from the mother.

Follow-up ultrasound examinations were initially performed 1, 3, and 7 days after surgery, with progressive spacing to fortnightly follow-ups. No flow signal was detected in the chorioangioma after surgery and the Doppler indices of the fetus were normal during the follow-up period. The patient returned to our department at 32^{+2} weeks with a complaint of a small amount of brown vaginal discharge. Ultrasound showed apparent separation of the chorioangioma from the placenta (Figure 1). The fetal heart rate was normal while frequent uterine contractions were observed. Due to the risk of placental abruption, an urgent cesarean section was performed with the delivery of a healthy female infant.

There was no retroplacental clot nor any other sign of placental abruption. Gross examination showed the presence of a separate mass, approximately 6 × 5 cm in area, on the fetal surface of the placenta to which the umbilical cord was connected (Figure 2). The mass had a soft consistency and appeared reddish-brown when cut.

The birth weight of the baby was 1600 g, and there was no asphyxia after birth. The premature infant was immediately transferred to pediatrics. The hemoglobin level of the newborn at birth was 156 g/L. The baby received ventilator support due to dyspnea, considered to be caused by neonatal wet lung, and the ventilator was withdrawn after 7 days. The baby grew well and was discharged 1 month after birth.

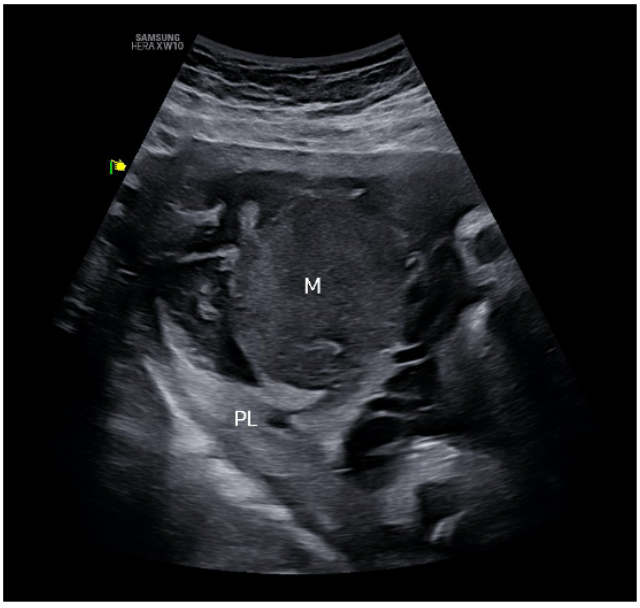

FIGURE 1 Ultrasound image showing chorioangioma separation. M, chorioangioma; PL, placenta.

3 | DISCUSSION

3.1 | Therapeutic strategies

Chorioangiomas are usually small and asymptomatic and are only identified after careful slicing of the placenta after delivery.[2] Signs of high-output cardiac failure, such as polyhydramnios, cardiomegaly, hydrops, and increased flow rates in the middle cerebral artery, may be apparent in severe cases.

To date, there have been no specific investigations, such as randomized controlled trials, on the advantages of intervention over expectant management in pregnancies with chorioangioma nor on comparisons between techniques for chorioangioma treatment in utero. Although perinatal survival may be improved by preventative antenatal therapy when hemodynamic decompensation is present, this runs the risk of obstetric complications and intrauterine fetal death.[8] Intrauterine treatment was found to resolve hydrops in 57.3% of cases, while hemodynamic compromise persisted in 28.9% of cases.[2] A variety of methods have been reported, including bipolar cautery, interstitial laser, radiofrequency ablation, and fetoscopic laser photocoagulation, each with specific advantages and disadvantages. The important consideration and goal of treatment is the disruption of the blood supply of the tumor, thus addressing the underlying pathology.

3.2 | Timing of the surgery

Various factors including gestational age, presence of fetal complications, risk of preterm birth, and vascularization of the chorioangioma require assessment and consideration.[9–11] The risk of fetal death after occlusive

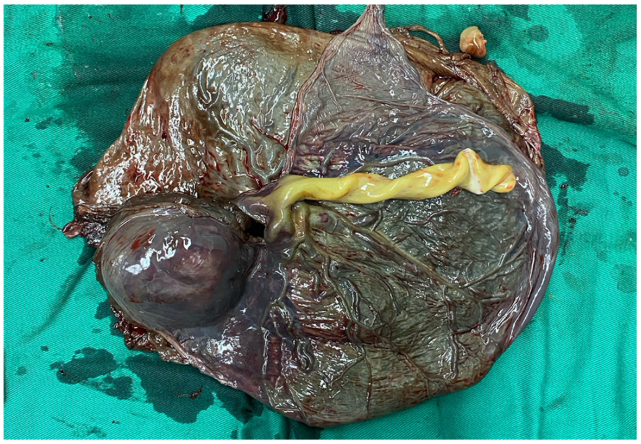

FIGURE 2 Gross examination of the placenta. The placenta is seen with central umbilical cord insertion; a capsulated round 5-cm mass is visible adjacent to the position of umbilical cord insertion.

therapy is increased in cases where the chorioangioma is large, the feeding vessels are both wider and closer to the umbilical vein, and at later gestational ages when there are signs of hemodynamic decompensation. Thus, intervention before the appearance of fetal hemodynamic signs is recommended.[8]

In our case, all the Doppler indices, including the middle cerebral and umbilical arteries and the ductus venosus, were normal. There were no signs of polyhydramnios, fetal hydrops, anemia, or heart failure. Expectant treatment was initially attempted but the chorioangioma had grown and thus surgery was performed.

3.3 | Surgical technique

Feeding vessels with large diameters can lead to an increased risk of uncontrollable hemorrhage should the vessels rupture.[10] Coagulation is difficult with laser fiber. Thus, it was proposed to initially induce coagulation in the numerous small superficial vessels, followed by coagulation in the larger vessels adjoining the umbilical vein.[8] This would be expected to reduce bleeding complications.

Fetoscopic laser coagulation was performed on the visible feeding vessels. The operation was smooth and the postoperative monitoring indicators were normal.

3.4 | Case specificity

In this case, the chorioangioma separated from the placenta in the third trimester of pregnancy, possibly due to obstruction of the feeding vessels leading to interruption of the blood supply and tumor necrosis. An emergency cesarean section was performed with good outcomes for both mother and child. No signs of placental abruption, such as bloody amniotic fluid, retroplacental clots, or fetal anemia, were seen during the operation. Does an emergency cesarean have to be done? As the blood supply of the chorioangioma is blocked, is it feasible to use expectant treatment on the premise of inhibiting uterine contractions and preventing infection with antibiotics? There does not appear to be any relevant literature on these issues and it is hoped that there will be more medical reports in the future.

3.5 | Declarations

- Ethics approval and consent to participate

Written informed consent was obtained from the patients for publication of these case reports and any accompanying images. This article was approved by the Peking University Third Hospital Medical Science Research Ethics Committee (IRB00006761-2016145), Beijing, China.

AUTHOR CONTRIBUTIONS

Ying Wang: Conceptualization; investigation; writing – original draft. **Yuan Wei:** Funding acquisition; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this published article.

CONSENT TO PUBLISH

The authors confirm that the work described has not been published before.

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REFERENCES

1. Guschmann M, Henrich W, Dudenhausen JW. Chorioangiomas – new insights into a well-known problem. II. An immunohistochemical investigation of 136 cases. *J Perinat Med*. 2003;31(2):170-175. doi:10.1515/JPM.2003.023
2. Buca D, Iacovella C, Khalil A, et al. Perinatal outcome of pregnancies complicated by placental chorioangioma: systematic review and meta-analysis. *Ultrasound Obstet Gynecol*. 2020;55(4):441-449. doi:10.1002/uog.20304
3. Garcia-Diaz L, Carreto P, Costa-Pereira S, et al. Prenatal management and perinatal outcome in giant placental chorioangioma complicated with hydrops fetalis, fetal anemia and maternal mirror syndrome. *BMC Pregnancy Childbirth*. 2012;12:72. doi:10.1186/1471-2393-12-72
4. Nicolini U, Zuliani G, Caravelli E, Fogliani R, Poblete A, Roberts A. Alcohol injection: a new method of treating placental chorioangiomas. *Lancet*. 1999;353(9165):1674-1675. doi:10.1016/S0140-6736(99)00781-3
5. Lau TK, Leung TY, Yu SC, et al. Prenatal treatment of chorioangioma by microcoil embolisation. *BJOG*. 2003;110(1):70-73.
6. Bhide A, Prefumo F, Sairam S, Carvalho J, Thilaganathan B. Ultrasound-guided interstitial laser therapy for the treatment

of placental chorioangioma. *Obstet Gynecol*. 2003;102(5 Pt 2):1189-1191. doi:10.1016/s0029-7844(03)00706-3

7. Quarello E, Bernard JP, Leroy B, Ville Y. Prenatal laser treatment of a placental chorioangioma. *Ultrasound Obstet Gynecol*. 2005;25(3):299-301. doi:10.1002/uog.1848
8. Bouchghoul H, Benachi A, Senat MV. Prenatal percutaneous fetoscopic laser photocoagulation of chorioangioma: report of two cases and review of the literature. *Fetal Diagn Ther*. 2021;48(8):633-639. doi:10.1159/000517392
9. Lim FY, Coleman A, Polzin W, et al. Giant chorioangiomas: perinatal outcomes and techniques in fetoscopic devascularization. *Fetal Diagn Ther*. 2015;37(1):18-23. doi:10.1159/000363600
10. Papaioannou GK, Evangelinakis N, Kourtis P, Konstantinidou A, Papantoniou N. Giant chorioangioma treated with interstitial laser coagulation. *Ultrasound Obstet Gynecol*. 2018;52(2):280-281. doi:10.1002/uog.18941
11. Cheng YK, Yu SC, So PL, Leung TY. Ultrasound-guided percutaneous embolisation of placental chorioangioma using cyanoacrylate. *Fetal Diagn Ther*. 2017;41(1):76-79. doi:10.1159/000442586

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