

Antenatal microcoil embolization of giant Chorioangioma- Exploring the prospects

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INTRODUCTION

- Giant placental chorioangiomas, although rare, are commonly associated with adverse perinatal outcome due to polyhydramnios, preterm birth, fetal anemia, high output cardiac failure, nonimmune hydrops fetalis, fetal consumptive coagulopathy, and growth restriction, with an overall estimated perinatal mortality of 30–40%.
- Early antenatal diagnosis, assessment and the possibility of intrauterine treatment could play a vital role in improving the pregnancy outcome.
- Traditional treatment options are amniocentesis to reduce the intrauterine pressure and intrauterine blood transfusion to correct the fetal anemia. With these treatments the underlying pathophysiology remains untackled.
- Interventions aimed at devascularising the tumor such as injection of alcohol or surgical glue, use of bipolar cautery, placement of vascular clips, interstitial laser and Radio frequency ablation have had mixed results due to their invasive nature and associated complications.
- Here we report a minimally invasive, extra-amniotic approach of microcoil embolization of the feeding vessel. The percutaneously placed intravascular microcoils initiate clot formation at the site of insertion and are unable to migrate through the tumor, thereby minimizing fetal harm by downstream embolic phenomena.

OBJECTIVE

To report the successful management of a giant placental chorioangioma by ultrasound guided percutaneous intravascular coil embolization of the feeder vessel.

CASE REPORT

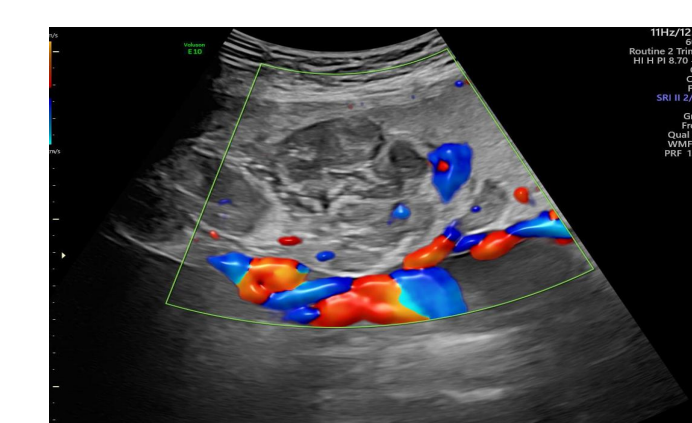
- 34-year-old second gravida, at 26wks gestation with a giant placental chorioangioma, and polyhydramnios was referred for prenatal therapy.
- On examination placenta was anterior with a giant chorioangioma 5.2 x 4.9cm with a large feeder vessel close to the umbilical cord insertion was noted with Middle cerebral artery showing evidence of anemia.
- The pros, cons and risks of different interventional methods were analysed.

- Under monitored anaesthesia care and ultrasound guidance, with the help of Interventional Radiologist, the feeder vessel to the chorioangioma was targeted using 18 G needle and an 8 mm Nestor fibred coil was deployed into the main feeder vessel, another 3mm coil was deployed to occlude a small branch of the feeder vessel, followed by amnio-drainage to reduce the pressure symptoms.
- Post coil embolization Doppler confirmed no vascularity within the tumor, the coils in place without any migration, and no evidence of anemia.
- Postprocedure close surveillance of the mother and fetus was done.
- She went on to deliver a live, term, healthy baby of weight 3650g by elective Cesarean Section with an optimal perinatal outcome.
- Microcoils cause vascular occlusion only at the point of insertion and because of their size cannot pass through the capillary bed of the tumor and is not associated with the risk of accidental ablation of the vessels which is a possible complication of Laser and RFA.
- Gross specimen of placenta confirmed placental chorioangioma with the coils. Histopathology examination of the placenta showed ghost outlines recapitulating fetal capillaries with extensive necrosis, compatible with chorioangioma with post coil embolization effect.

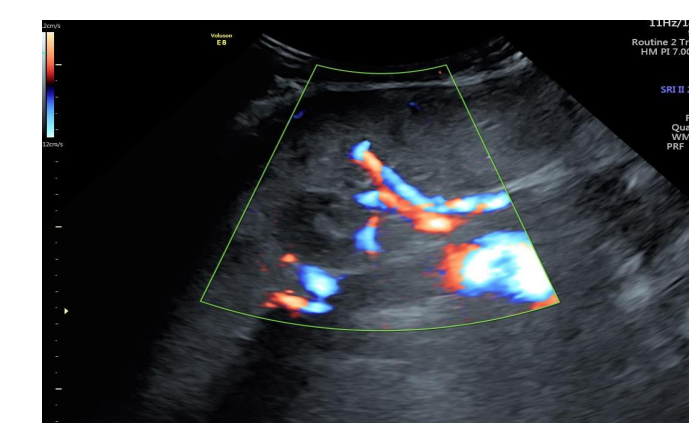
Pre- embolization



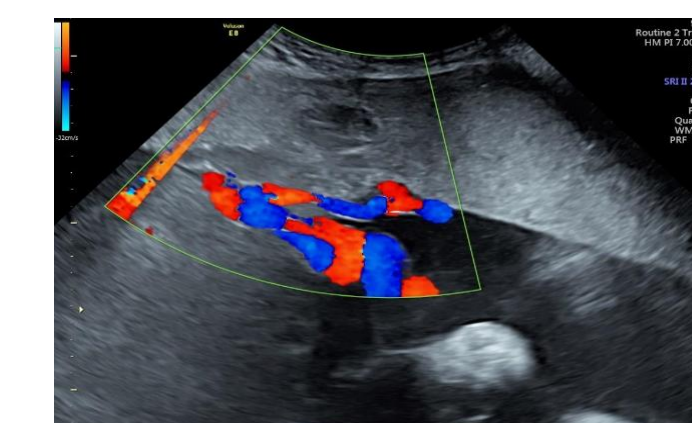
Placenta chorioangioma in Grey scale



Colour Doppler showing vascularity



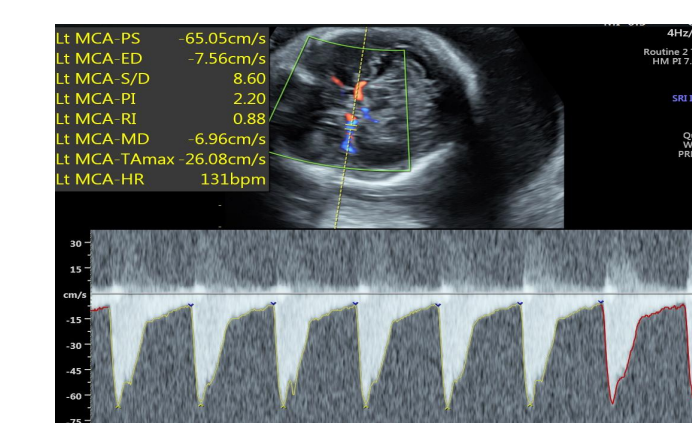
Colour Doppler showing the feeder vessel



Close proximity of feeder vessel & umbilical cord

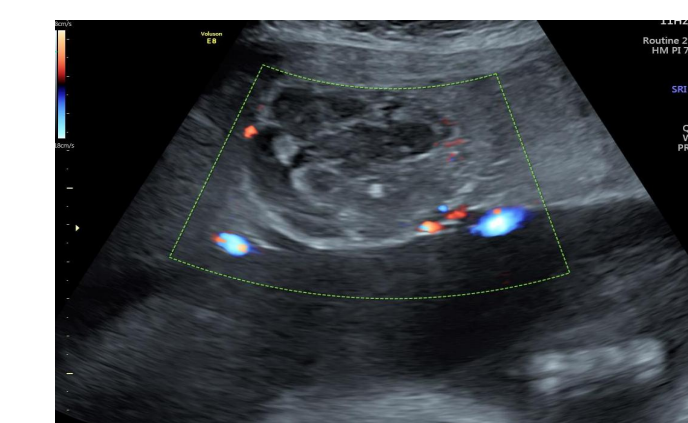


Polyhydramnios- SDP- 13.9cm

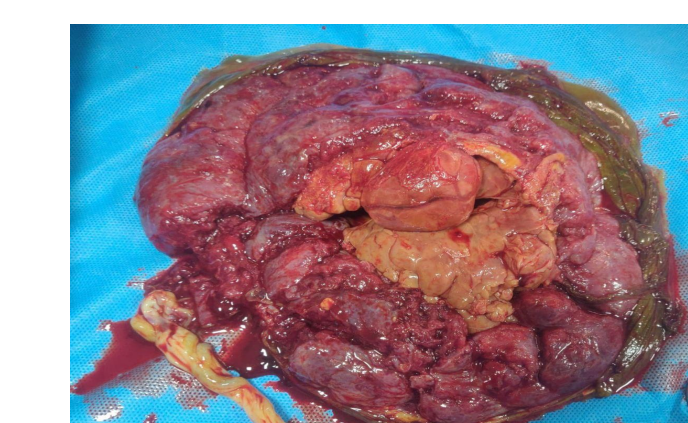


MCA PSV>1.5 MoM → suggestive of fetal anemia

Post- microcoil embolization



Colour Doppler showing no vascularity in feeder vessel



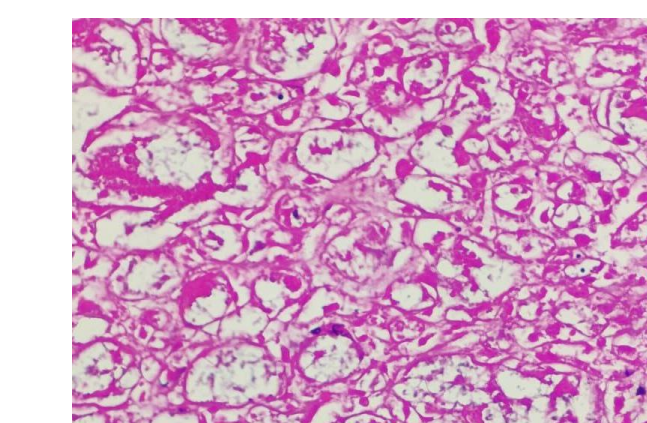
Placental examination showing placental chorioangioma



Cut section of placenta showing placental chorioangioma



Polyhydramnios reducing- SDP 10cm



Microscopy showing ghost outlines recapitulating foetal capillaries with extensive necrosis- suggestive of chorioangioma with post coil embolization effect

DISCUSSION

- Placental chorioangioma is also called as angiomyxoma, fibro-angio-myxoma, or fibroma.
- Giant chorioangiomas can cause maternal complications like symptomatic polyhydramnios (causing chest discomfort, PPRM, cord accidents, preeclampsia, and mirror syndrome & Fetal complications like high-output cardiac failure and fetal growth restriction.
- The optimal management of giant placental chorioangioma remains undetermined.
- Unlike the traditional interventions, novel treatment procedures (use of liquid agents for feeder vessel occlusion, bipolar cautery, placement of vascular clips, interstitial laser and Radio frequency ablation) aim to address the underlying pathophysiology by disrupting the tumor vascular blood supply and arresting the shunt physiology and steal phenomenon.
- However, using liquid agents for feeder vessel occlusion can cause accidental embolisation to the fetus. Radiofrequency & laser ablation procedures have the risk of accidental ablation of fetal cord vessels and heat transmission to nearby structures causing inadvertent side effects and even fetal death, thus precluding its widespread use .
- Ultrasound guided antenatal micro-coil embolization of the feeder vessels could emerge as a novel minimally invasive, potentially safe, and effective treatment option for symptomatic chorioangiomas- the advantages being-
 - Ease and familiarity of the technique (technically being similar to vascular access for percutaneous umbilical blood sampling/intrauterine blood transfusion)
 - Initiation of clot formation at the desired site only with no migration through the tumor, thereby minimizing fetal harm by downstream embolic phenomena.
 - Lack of collateral damage that can occur with thermal energy.
 - Its minimally invasive nature (percutaneous, ultrasound guided, 21-gauge needle, needing only intravenous sedation/ local anesthesia, and being entirely extra-amniotic in case of anterior, lateral or fundal placenta thus avoiding risk of iatrogenic amniorrhexis and consequences of preterm birth)

CONCLUSION

- There is paucity of data regarding the optimal management of giant, symptomatic placental chorioangiomas due to the associated side effects.
- Ultrasound guided antenatal micro-coil embolization could emerge as a novel, minimally invasive, cost effective, potentially safe and effective treatment option for symptomatic chorioangiomas and in selected cases.
- Though very few case reports are noted in literature, large prospective trials could unveil the potential of this effectual treatment for an optimal perinatal outcome.