Antenatal microcoil embolization of giant Chorioangioma- Exploring the prospects

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INTRODUCTION

- Giant placental choriangioma, although rare, are commonly associated with adverse perinatal outcome due to polyhydramnios, preterm birth, fetal anemia, high output cardiac failure, nonimmune hydrops fetalis, fetal consuming 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 amnioreduction to reduce the intrapericardial pressure and intrauterine transfusion to correct the fetal anemia. With these treatments the underlying pathophysiology remains untargeted.
- Interventions aimed at devascularising the tumor such as injection of alcohol or surgical glue, use of bipolar/ultrasonic/miniature 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 feeder vessel.

OBJECTIVE

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

CASE REPORT

- 34-year-old second grana, at 26 weeks gestation with a giant placental choriangioma, and polyhydramnios referred for prenatal therapy.
- On examination placenta was anterior with a giant choriangioma 5.2 x 4.9 cm 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 anesthesia care and ultrasound guidance, with the help of Interventional Radiologist, the feeder vessel to the choriangioma 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 3630g 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 choriangioma with the coils. Histopathology examination of the placenta showed ghost outlines recapitulating fetal capillaries with extensive necrosis, compatible with choriangioma with post coil embolisation effect.

CONCLUSION

- Placental choriangioma is also called as angiomysis, fibro-angio-myxoma, or fibroma.
- Giant choriangiomas can cause maternal complications like symptomatic polyhydramnios (causing chest discomfort, PPROM, cord accidents, pre-eclampsia, and mirror syndrome) & Fetal complications like high-output cardiac failure and fetal growth restriction.
- The optimal management of giant placental choriangioma 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 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 choriangiomas due to the associated side effects.
- Like solid tumors, fetal choriangiomas like choriangioma also called as angiomyxoma, fibro-angio-myxoma, or fibroma.
- The selective advantage is the effectual treatment for an optimal perinatal outcome. 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 vessel occlusion, thereby minimizing 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 close surveillance of the mother and fetus was done.

DISCUSSION

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- Giant choriangiomas can cause maternal complications like symptomatic polyhydramnios (causing chest discomfort, PPROM, cord accidents, pre-eclampsia, and mirror syndrome & Fetal complications like high-output cardiac failure and fetal growth restriction.
- The optimal management of giant placental choriangioma 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 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 choriangiomas—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 feeder 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.