Prognostic factors of fetal demise after fetoscopic laser surgery for twin-twin transfusion syndrome at Hanoi Obstetrics and Gynecology Hospital

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Objective
To figure out the prognostic factors of fetal demise after fetoscopic laser surgery (FLS) for twin-twin transfusion syndrome (TTTS).

Methods
A prospective longitudinal study was done with 27 pregnant women with TTTS stage II-IV according to Quintero classification from 16 to 26 weeks of gestation undergoing FLS. Among them, 11 cases were carried out coagulation the placental vascular anastomoses, 16 cases were done ablation umbilical cord for the selective fetal reduction because of TTTS stage IV, selective intrauterine growth restriction (sIUGR) or proximate cord insertions. All the studies subject investigated the soluble levels of biomarkers. We quantified plasma levels of VEGF-R1, VEGF-R2, IL-6 and TNF-α in twin pregnant women before and one week after surgery by ELISA. Many factors included maternal age, gestational age at surgery, stage of TTTS, placental location, level of polyhydramnios, FLS methods, sIUGR, amount of amniotic fluid drawn, duration of surgery, change of maternal circulating biomarker levels were analyzed to find out the association with fetal demise after FLS.

Results
Mean of gestational age at surgery was 20.78 weeks, mean of gestational age at delivery was 32.13 weeks. There were 3 patients with fetal demises after FLS (11.11%). Statistics showed that VEGF-R1 levels were significantly decreased after surgery and change in soluble VEGF-R1 levels after surgery had a difference between the group of fetal demise and non-fetal demise. ROC curve showed that degree of VEGF-R1 levels reduction after surgery were higher, the risk of fetal demise was bigger (AUC: 0.8472), in which, cut-off point of degree of VEGF-R1 levels reduction after surgery was 36.5% (sensitivity: 66.67%, specificity: 95.83%).

Conclusion
Our data suggest that change in VEGF-R1 after surgery could play a prognostic role of fetal demise after fetoscopic laser surgery.