First trimester prediction of uterine rupture in cesarean scar pregnancy

Nicole **Meogrossi**, Roberta **Paniello**, Danilo Italo Pio **Buca**, Francesca **Di Sebastiano**, Marco **Liberati**, Francesco **D'Antonio** *

Center For High-Risk Pregnancy and Fetal Care, Department of Obstetrics and Gynecology, University of Chieti, Chieti, Italy.

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Objective. To elucidate the predictive accuracy of first trimester ultrasound for uterine rupture in women with CSP.

Materials and Methods. Retrospective analysis of women with a prenatal diagnosis of CSP at 6-8 weeks gestation. We tested the hypothesis that the severity of CSP can predict the risk of uterine rupture in the first and early second trimester of pregnancy.

Results. 119 women with a prenatal diagnosis of CSP were included in the analysis. Uterine rupture occurred in 7.6% of women, while 92.4% progress to the third trimester and all were found to be affected by PAS. All cases complicated by uterine rupture showed COS1 sign or "in the niche" insertion of the gestational sac compared to 13% and 14% of COS2 and "on the scar" insertion ($p < 0.001$ for both), respectively. At multivariate logistic regression analysis, only COS1 or "in the niche" insertion was independently associated with the risk of uterine rupture. When these figures were translated into a predictive model, COS1 insertion had a sensitivity of 100%, a specificity of 88.18%, while the corresponding figures for "in the niche implantation" were 100% and 87.27%, respectively.

Conclusions. This is the first study reporting the (predictive) accuracy of first trimester ultrasound in predicting uterine rupture in women with CSP. Ultrasound assessment of the relationship between the gestational sac and the area of the prior CD scar can predict the risk of uterine rupture in women with CSP.