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Trophoblastic vascularization study through angiopowerdoppler at week 9 of spontaneous pregnancies and after assisted reproduction techniques.

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Objectives

The aim of the study was to check if there are differences in the volume and trophoblastic vascularization at early stages of pregnancy between spontaneous pregnancies and the ones achieved after assisted reproduction techniques

Methods

A cross- sectional study was performed in week 9 of single pregnancies, through three-dimensional ultrasound scan using power Doppler. The acquired volumes were analyzed using the image program VOCAL (Virtual Organ Computer Aided Analysis), to evaluate the volume of the placenta, the Vascularization Index, the Flow Index and the Vascularization Flow Index.

Results

Of 59 pregnant women included in the study, 32 of them went through fertility treatments and 27 were spontaneous pregnancies. A multivariate analysis has been performed using logistic regression. The measures of these values for the assisted reproduction techniques group were significantly lower with OR 0,93 (IC95: 0,86-0,99) in Volume, OR 0,92 (IC95:0,67-1,00) in Vascularization Index, OR 0,9 (IC95: 0,82-0,98) in Flow Index and OR 0,87 (IC95:0,75-0,98) in Vascularization-Flow Index.

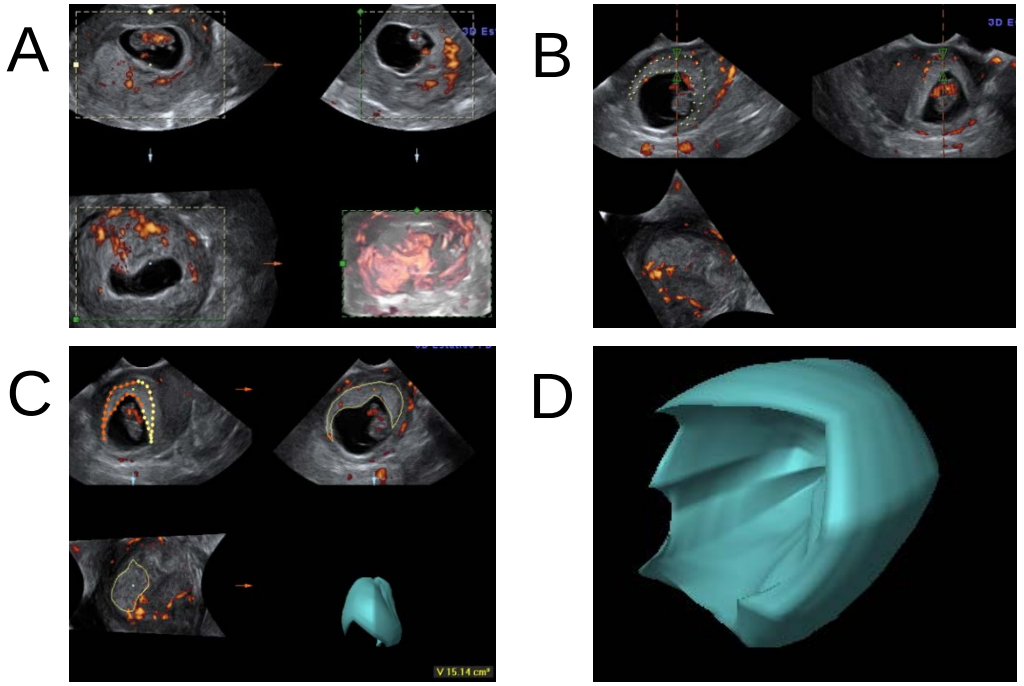

Figure 1. Images in three-dimensional power Doppler generated using VOCAL software in a week 9 pregnant patient. a) Obtaining a three-dimensional image of the pregnancy. b) Trophoblastic manual rotational analysis (30º). c) Automatic volume result. d) Three-dimensional representation of the obtained trophoblast.

Conclusions

In conclusion, the study of the volumetric and trophoblastic vascularization could be useful for understanding and preventing the placenta pathology most common in the assisted reproduction technique pregnancies and it would explain some adverse prenatal outcomes in those pregnancies.

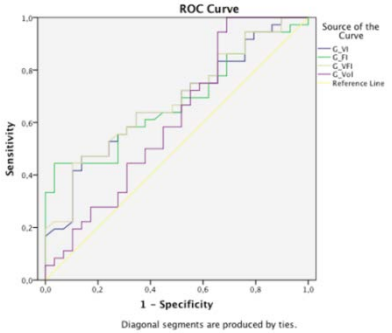

Figure 2. Area under the receiver operating characteristic curve for Vascularization parameters