

**O-0009 | ORAL** | Intra-uterine growth restriction: diagnosis, intra-uterine monitoring, timing of the delivery, and long-term follow-up

## **INTEGRATED STUDY OF FACTORS AFFECTING FETAL WEIGHT IN SINGLETON PREGNANCIES. NOMOGRAM AND DEVELOPMENT OF BASIC AND ADVANCED FETAL GROWTH CUSTOMIZED MODELS**

Savirón Cornudella, R. <sup>(1)</sup>; Cotaina Gracia, L. <sup>(1)</sup>; Esteban Escaño, L.M. <sup>(2)</sup>; De Diego Allué, E. <sup>(1)</sup>; Perez Perez, P. <sup>(1)</sup>; Garrido Fernández, P. <sup>(1)</sup>; Lerma Puerta, D. <sup>(1)</sup>; Castán Mateo, S. <sup>(2)</sup>

<sup>(1)</sup> *Hospital Universitario Miguel Servet, Zaragoza, Spain;* <sup>(2)</sup> *Departamento de Estadística Facultad de Matemáticas, Spain*

### Abstract:

We have performed a multivariate analysis to explore the influence on birth and ultrasound fetal weight estimation of traditional factors as biochemical data and maternal characteristics in combination with non- traditionally explored predictors as paternal height, Pregnancy-associated plasma protein A (PAPP-A), single umbilical artery or Free-beta Human Chorionic Gonadotropin (fβ-HCG). The study was performed for a Spanish population (region of Aragon) in singleton pregnancies at term (37-42 weeks). Also, we have created a nomogram and in order to predict the occurrence of SGA (small for gestational age) and LGA (large for gestational age) cases we provide a multivariate predictive model of fetal weight that have been compared with other models in the prediction of ultrasound and birth weights. After study we have created a software application for automated calculation of percentile fetal weight, adjusting the variables when they were significant.

**Objective:** To explore the influence on birth and ultrasound fetal weight estimation of traditional factors as biochemical data and maternal characteristics in combination with non-traditionally explored predictors. Construct a model of customized birthweight curves with all the variables, and study their adjustment in previous ultrasounds.

**Study design:** We have collected a total of 4577 cases of singleton pregnancies and jointly studied the parental, fetal and first trimester biochemical variables: gestational age (GA), parity, maternal age, maternal BMI (body mass index), maternal height, parental height, PAPPA, BHCG, single umbilical artery (SUA), region of origin, fetal sex, smoking and diabetes. Multiple regression analysis was performed, two model customized growth were created according Hadlock and Gardosi. After checking how our model behaves in term deliveries, was studied in the ultrasounds below, and also compared with other models (neonatal and in utero models) customized and non-customized to check if the models increased the accuracy of diagnosis of SGA or LGA.

**Results:** We have created a nomogram and two growth models (simple and an advanced) customized to all variables that have shown their effect on fetal weight, and we have reflected in a computer program for the simple calculation of percentile customized. After realizing it, we have found that our model fits well with our population, both weights of newborns and ultrasound weights below 37 weeks. It is also better than other models customized studied.

**Conclusion:** using a population model itself, and customized for new variables, optimally adjusts percentiles fetal weights, keeping the ratio of weights percentiles both delivery time as calculated by ultrasound.