

significant statistical differences were observed except for the time-related procedure that was longer with 4D technique.

**Conclusions:** As with conventional 2D invasive procedure, 4D is an equally safe and reliable technique when performed by experienced operators. It can be used in training specialists in maternal-fetal medicine, it enhances the visualization of the fetus and its behavioral state and may be superior to 2D amniocentesis in selected cases such as increased maternal size and oligo-hydramnios.

## P19: FETAL GROWTH ASSESSMENT

### P19.01

#### Expanded singleton first trimester fetal biometry

L. D. Platt<sup>1,2</sup>, E. Bruckner<sup>1</sup>, D. Kahn<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Division Maternal Fetal Medicine David Geffen School of Medicine at UCLA, Los Angeles, CA, USA; <sup>2</sup>Center for Fetal Medicine and Women's Ultrasound, University of California, Los Angeles, CA, USA

**Objective:** To create reliable multiparameter fetal growth curves with high resolution ultrasound in the first trimester.

**Study Design:** Retrospective chart review of 317 singleton fetuses who had an ultrasound examination at the time of first trimester screening. All ultrasounds were performed by a single provider. Fetuses were screened between 11.0–13.9 weeks (from LMP). Biometric parameters included: CRL, BPD, OFD, HC, HL, AC, FL, and NT. Patients were excluded for abnormal outcome or if the gestational age by LMP differed from the ultrasound determined gestational age by more than 1 week.

**Results:** Standard biometric growth curves were established for fetuses in the first trimester with known normal outcome. In this cohort of late first trimester fetuses, composite gestational age as determined by full biometry had excellent correlation with that determined by CRL alone.

**Conclusions:** Evolving high resolution ultrasound technology permits ever more accurate biometric determinations at earlier gestational ages. This study provides normative biometric data on a wide range of parameters in a cohort of known normal fetuses. As further evidence of the improved precision that can be applied in the first trimester, the composite biometry determined gestational age is a good correlate with the CRL alone determination.

### P19.02

#### Placental volume calculations using XI VOCAL at 7 to 10 weeks

L. Nardoza, P. M. Nowak, E. Araujo Junior, L. C. Rolo, J. Bortoletti, A. Moron

São Paulo Federal University, São Paulo, Brazil

**Objectives:** The main aim of this study was to establish reference intervals for placental volume from 7 to 10 weeks' gestation using XI VOCAL.

**Methods:** Women with singleton pregnancies at the middle of the first trimester were included in this study. All volumetric measurements were performed by a single examiner using an endocavitary volumetric probe (3D5–8EK) and an ACCUVIX XQ system (Medison, Seoul). Volume measures were obtained using the XI VOCAL (eXtended Imaging Virtual Organ Computer-aided AnaLysis) technique with 10 sections of the placenta. The volume data of the placenta was correlated to the gestational age (GA) and to the crown-rump length (CRL).

**Results:** We analyzed a total of 70 pregnancies, with CRL ranging from 9 to 40 mm. Comparison between GA and placental volume (PV) proved a significant correlation with the GA ( $r^2 = 0.818$ ) and the CRL ( $r^2 = 0.804$ ). The distribution of the PV and the best fit equation to describe its growth between 7 and 10 weeks are shown

in figure 1. The reference intervals for placental volume are presented in table 1.

**Conclusions:** There is a significant correlation between GA, CRL and the placental volume. Recent studies already described correlation between a smaller placental volume later in the first trimester and pregnancy complications such as restricted intra uterine growth and small for gestational age newborns. The purpose of describing these reference intervals is to promote new studies relating placental volume in the first trimester with other pathologies of pregnancy.

P19.02: Table

Gestational age	P5	P25	P50	P75	P95
7–7 + 6 weeks	2.7	3.2	4.3	5.1	7.6
8–8 + 6 weeks	4.7	7.0	8.2	13.4	19.4
9–9 + 6 weeks	8.4	10.6	15.4	19.3	26.9
10–10 + 6 weeks	14.1	18.9	23.9	35.7	48.5

Volume measures presented in cm<sup>3</sup>

Supporting information can be found in the online version of this abstract.

### P19.03

#### The relationship between early first trimester PAPP-A and birthweight percentiles

O. Habayeb<sup>1</sup>, A. Daemen<sup>2</sup>, D. Timmerman<sup>2</sup>, B. De Moor<sup>2</sup>, T. Bourne<sup>4,3</sup>, G. Hackett<sup>1</sup>, C. Lees<sup>1</sup>

<sup>1</sup>Fetal Medicine Department, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom;

<sup>2</sup>Electrical Engineering – ESAT, Katholieke University, Leuven, Belgium; <sup>3</sup>Department of Obstetrics and Gynecology, University Hospitals of Leuven, Leuven, Belgium; <sup>4</sup>Department of Obstetrics & Gynaecology, Imperial College Hammersmith Campus, London, United Kingdom

**Objectives:** The association between low PAPP-A at 11–14 weeks and delivery of a small for gestational age (SGA) baby is well known. We collected data from women attending for early PAPP-A (offered from 9 weeks gestation) as part of a trisomy 21 screening program. We sought to establish the association between first trimester early PAPP-A and birthweight percentile.

**Methods:** All women attending the screening programme with September 2007–May 2008 were included in this clinical audit except where there was delayed miscarriage or major fetal ultrasound abnormality at presentation. Birthweight data were expressed as percentiles in relation to the gestational age. PAPP-A was expressed as multiple of median (MoM) for gestational age.

**Results:** 169 women fulfilled the inclusion criteria. There was a positive correlation between PAPP-A and birthweight percentile (Spearman correlation coefficient = 0.2755;  $p < 0.001$ ; figure).

**Conclusions:** We report a strong positive correlation between low early first trimester PAPP-A levels and low birthweight percentile, supporting earlier studies that indicate a relationship between low PAPP-A and SGA birth.

### P19.04

#### New automated quantitative measurement of PP13 from maternal serum

J. Vaarno, K. Sippola, P. Hurskainen, P. Kankaanpää

R&D, PerkinElmer, Wallac Oy, Turku, Finland

**Objective:** Decreased placental protein 13 (PP13) levels in the first trimester may predict an increased risk of complications later on