

PAPER REF: 6998

## EARLY STUDY OF THE FACE AND ITS POTENTIAL IMPORTANCE FOR DENTISTRY

Inês Côrte-Real<sup>1(\*)</sup>, Rosete Nogueira<sup>2</sup>, Ana Cristina Braga<sup>3</sup>, J.C. Reis Campos<sup>1</sup>, M.H. Figueiral<sup>1</sup>,  
Francisco Valente<sup>4</sup>, Paula Vaz<sup>1</sup>

<sup>1</sup>Faculty of Dental Medicine, University of Porto, Porto, Portugal

<sup>2</sup>CGC Genetics/Centro de Genética Clínica - Laboratory of Pathology, Porto, Portugal, Life and Health Sciences Research Institute (ICVS), School of Health Sciences (ECS), Campus of Gualtar, University of Minho, Braga, Portugal, ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal

<sup>3</sup>Division of Statistics, Department of Production and Systems Engineering, University of Minho, Portugal

<sup>4</sup>Prenatal Diagnosis Centre, Centro Hospitalar de Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

(\*)Email: corterealines@gmail.com

### ABSTRACT

This study presents two clinical cases in which a more detailed evaluation of the fetal face by ultrasound was proposed. These cases were integrated into a study group for determining the growth patterns of different facial structures and, consequently, to detect potential anomalies that could support an early prenatal diagnosis of facial anomalies. The identification of a dysmorphic craniofacial phenotype by prenatal ultrasound may assist in the future the dentist in the postnatal application of therapies that may improve the existent physical disabilities.

**Keywords:** orofacial abnormalities; dentistry; prenatal diagnosis; prenatal ultrasonography.

### INTRODUCTION

The detection of facial anomalies by prenatal diagnosis may be relevant as a diagnostic indicator for many chromosomal anomalies or syndromes (Rotten, 2004). These anomalies include, among others, an atypical profile, maxillary hypoplasia, retrognathia and micrognathia (Rotten, 2004; Jones, 1997; Merz, 1997). Studying the fetal face is part of the routine ultrasound examination during pregnancy (Goldstein, 2010).

The sonographic evaluation of the fetal face should be performed in the three views of the two-dimensional (2D) ultrasound - axial, sagittal and coronal - for obtaining better detection rates of facial anomalies (Rotten, 2004). It may also be performed by three-dimensional (3D) ultrasound, but the 2D sonographic images can be acquired more easily, quickly, efficiently and accurately (Goldstein, 2010).

The sonographic assessment of the fetal face allows recognizing the growth pattern of facial structures during pregnancy and their alterations, when present. For that reason, different nomograms have been proposed for the alveolar ridge (Goldstein, 1999), mandible (Chitty, 1993), philtrum and chin (Gull, 2005), between others. These data may contribute to the prenatal diagnosis of syndromes or chromosomal anomalies and support decisions concerning the management of the pregnancy.

The detection of fetal facial anomalies, either isolated or associated with polymalformative states of longer survival, allow the planning of specific perinatal and postnatal measures by a multidisciplinary team for improving potential physical disabilities (Rotten, 2004).

## RESULTS AND CONCLUSIONS

A more detailed ultrasound evaluation of the fetal face was proposed in these cases and conducted after informed consent. Both cases presented healthy fetuses with a normal facial anatomy, with no subjective anomalies on the shape or size of the facial structures. For that study, the midsagittal, coronal and axial planes were acquired by ultrasound to analyze the fetal facial profile and measure some facial parameters, such as the maxilla, mandible, nasal bone and the philtrum (Figure 1).

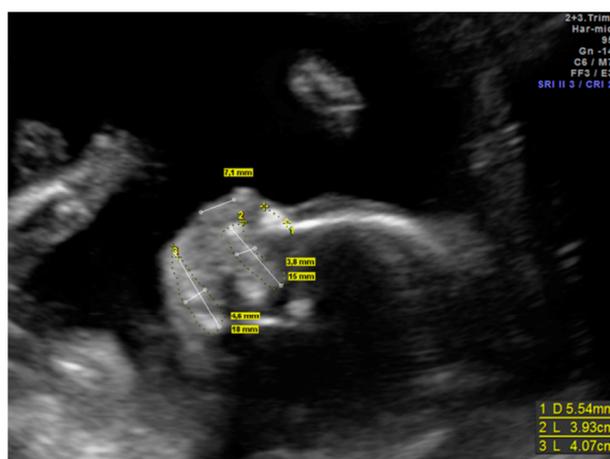


Fig. 1 - Two-dimensional ultrasound at 20 weeks of gestation. Midsagittal view of the fetal face with an evaluation of the facial profile.

These clinical cases alert for the relevance of this kind of evaluation for diagnosing facial anomalies that can be associated with later problems in speaking, feeding, breathing, and the facial profile. An early prenatal diagnosis of these facial anomalies may allow planning an adequate multidisciplinary treatment including not only prenatal care and neonatology, but also dentistry in early postnatal stages.

## REFERENCES

- [1]-Rotten D *et al.*, Two- and three-dimensional sonographic assessment of the fetal face. 1. A systematic analysis of the normal face. *Ultrasound Obstet Gynecol*, 2004, 23, p. 224-31.
- [2]-Jones KL. *Smith's Recognizable Patterns of Human Malformations*. Saunders, Philadelphia, 1997.
- [3]-Merz E, Weber G, Bahlmann F, Miric-Tesanic D. Application of transvaginal and abdominal three-dimensional ultrasound for the detection or exclusion of malformations of the fetal face. *Ultrasound Obstet Gynecol*, 1997, 9, p. 237-43.
- [4]-Goldstein I, Tamir A, Weiner Z, Jakobi P. Dimensions of the fetal facial profile in normal pregnancy. *Ultrasound Obstet Gynecol*, 2010, 35, p. 191-4.
- [5]-Goldstein I *et al.*, Nomogram of the fetal alveolar ridge: a possible screening tool for the detection of primary cleft palate. *Ultrasound Obstet Gynecol*, 1999, 14, p. 333-7.
- [6]-Chitty LS, Campbell S, Altman DG. Measurement of the fetal mandible--feasibility and construction of a centile chart. *Prenat Diagn*, 1993, 13, p. 749-56.
- [7]-Gull I *et al.*, Nomograms for the sonographic measurement of the fetal philtrum and chin. *Fetal Diagn Ther*, 2005, 20, p. 127-31.