

FETAL CENTRAL OBESITY MEASURED BY V.O.C.A.L. IN DIABETIC AND NON-DIABETIC PATIENTS IN SECOND TRIMESTER.

LYSIKIEWICZ A. PETRYGA M. ROSEN B. JAFFE R. LANGER O.

ST. LUKE'S-ROOSEVELT HOSP, COLUMBIA UNIV., COLLEGE OF PHYSICIANS AND SURGEONS, NY, NY.

AIM AND HYPOTHESIS

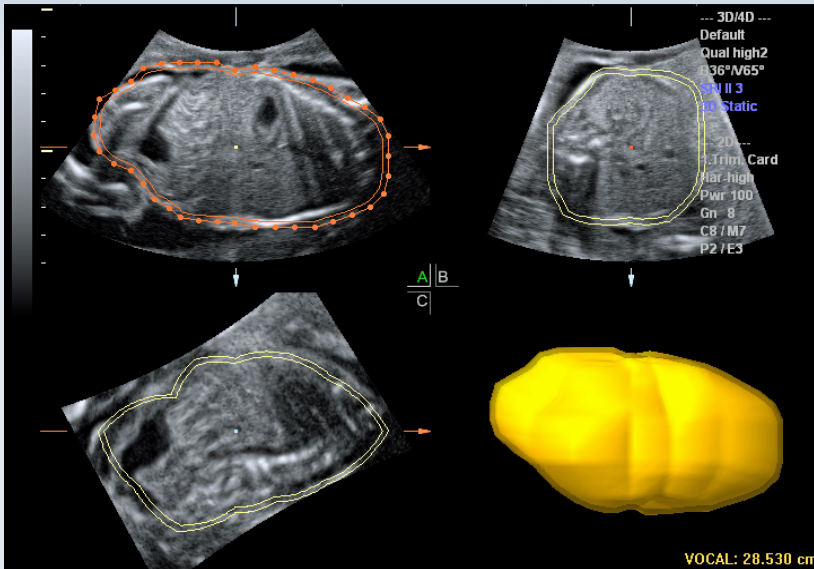
AIM

To test volume measurements by V.O.C.A.L for fetal fat estimation in diabetic pregnancy.

HYPOTHESIS

Fetal central fat accumulation is accelerated in diabetic pregnancy .

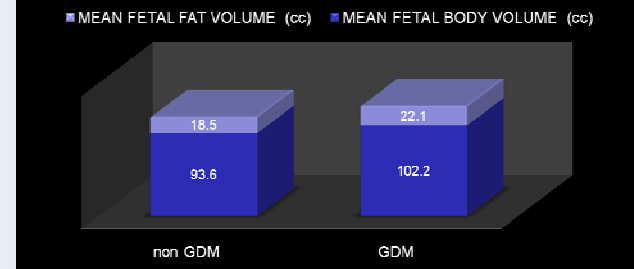
MATERIALS AND METHODS



Volume scans of 332 patients were obtained at gestational age 18 – 22 weeks, prior to diabetic screening. Within this group, 17 diabetic patients (16 GDM + 1 pre gestational) were identified and compared with 20 randomly selected non-diabetic controls. 4D view software was used to measure fat layer volume of the fetal trunk. Fetal trunk volumes were obtained using Virtual Organ Computer Analysis (VOCAL) and fetal abdominal subcutaneous (fat) layer volumes were obtained using the VOCAL surface thickness feature (Fig.1). The index of fetal central obesity was defined as the ratio of fetal subcutaneous fat volume to the total fetal trunk volume.

RESULTS

Mean fetal trunk volume was 93.6cc +- 18.7cc in non diabetic patients and 102.2cc +-22.3cc in diabetic. Fetal abdominal fat volume was 18.5cc +- 4.0cc in non diabetic and 22.1cc +- 4.9cc in GDM. Fetal central adiposity mean index was 19.4%+-4.5% (non diabetic) and 22.3% +- 5.1% in GDM.



CONCLUSIONS

1. Fetal central obesity can be measured by VOCAL with consistent results and expressed as fetal central obesity index.
2. In second trimester a trend of increased fetal central obesity in GDM fetuses was noted.
3. We speculate that increased fetal central obesity may identify future metabolic syndrome.



V.O.C.A.L. SURFACE WIRE RENDERING

BACKGROUND

FETAL BODY VOLUME BY VIRTUAL ORGAN COMPUTER ANALYSIS

FETAL BODY VOLUME CAN BE MEASURED USING MULTIPLANAR ROTATIONAL V.O.C.A.L. TECHNIQUE. WITH BETTER ACCURACY THAN USING TRADITIONAL LENGTH, WIDTH AND DEPTH MEASUREMENTS.

FETAL CENTRAL FAT

- INDICATOR OF FETAL ADIPOSITY
- IS INCREASED IN MATERNAL DIABETES