

PLACENTAL MORPHOLOGIC AND MORPHOMETRIC CHANGES ASSOCIATED WITH PRETERM BIRTH IN OBESE PATIENTS

OJEDA L.I. M.D.(1) (2); FORNES M.W. PH.D.(3) ; OCCHIPINTI G.D. M.D.(1)

(1) Hospital Luis Carlos Lagomaggiore. Mendoza, Argentina.

(2) Unidad Docente Ginecología y Obstetricia- Facultad de Ciencias Médicas. Universidad Nacional de Cuyo. Mendoza, Argentina

(3) Instituto de Histología y Embriología de Mendoza (I.H.E.M.). Facultad de Ciencias Médicas. Universidad Nacional de Cuyo. CCT CONICET. Argentina

OBJECTIVES:

- Compare placental morphology of obese and non-obese women with preterm birth.
- Analyze the presence of distinctive placental morphologic and morphometric changes in obese compared to non-obese women with preterm birth.

METHODS:

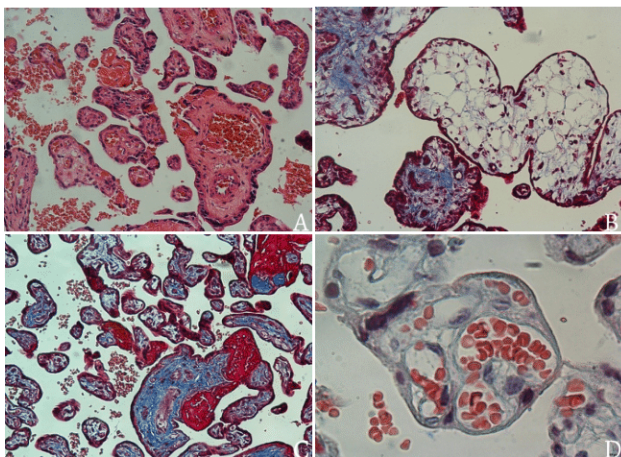
Non-experimental case-control pilot study on 28 randomly selected patients with preterm birth assisted in Hospital Luis Lagomaggiore Mendoza (Argentina) from 1/3/2022 to 1/3/2023, in which placental structural changes between pregestational obese (n=21) and non-obese women (n=7) are compared.

Fresh placenta samples obtained from the area next to the umbilical cord during the immediate postpartum period were fixed for optical microscopic observation and dyed with hematoxylin-eosin and trichromic techniques. Morphologic observations were made through a Nikon 80-I microscope (10, 20, 60, and 100 x). Morphometric analysis was made by applying Image J-NIH free software scales to digital images directly obtained from the microscope, recording average values of five measurements per sample. Statistical analysis was made through Student t-test

RESULTS:

A-Morphologic changes:

Placental villi are thicker in obese patients, with wider central vessels and a higher amount of connective tissue (Fig. A and C) Higher magnification shows dilated vessels, adipose-like tissue replacing part of the connective axis of the villi (Fig. B). Fibrous tissue is interposed between the vascular wall and the syncytium (Fig. D).



B-Morphometric changes:

Placentas from obese patients show significantly less number of villi per field ($p=0.04$), less number of vessels per villus ($p=0.0001$), and less number of alpha zones ($p=0.001$)

	Average		p
	BMI 19-25	BMI > 25	
Number of villi (per field)	70.00 (+/-14.24)	50.29 (+/-23.07)	0.04
Diameter (m)	40 (+/-14.14)	54.35 (+/-29.99)	0.22
Circumference (m)	125.60 (+/-44.41)	178.33 (+/-93.76)	0.16
Area (m2)	1334.50 (+/-888.13)	3283.60 (+/-3141.46)	0.12
Vessels per villus	5.00 (+/-1.41)	1.75 (+/-0.42)	0.0001
Diameter (m)	11.25 (+/-0.30)	15.23 (+/-12.24)	0.40
Capillary area per villus (m2)	551.90 (+/- 468.39)	552.84 (+/-1075.20)	0.99
Alpha zones	3.50 (+/-0.71)	1.86 (+/-0.80)	0.001
Beta zones	1.50 (+/-0.71)	1.43 (+/-0.53)	0.78
Maternal-fetal circulation distance (m)	7.00 (+/-1.41)	8.03 (+/-5.93)	0.65

CONCLUSIONS:

Placental morphology and morphometry seem to have distinctive alterations in obese compared to non-obese women with preterm birth. Though these findings may provide evidence to show an association between placental anomalies and preterm birth in obese patients, studies with a higher number of cases are needed to confirm this hypothesis.