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OBESITY AFFECTS ENDOMETRIAL RECEPTIVITY BY INDUCING A DISPLACEMENT OF THE PERSONALIZED WOI THAT AFTER CORRECTION BY PERSONALIZED EMBRYO TRANSFER NORMALIZE CLINICAL RESULTS.

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OBJECTIVE: Accumulated evidences demonstrated that higher body mass index (BMI) decreases implantation rate (IR), clinical pregnancy rate (PR) while increasing miscarriages (Bellver 2013; Provost 2016). We aim to investigate the effect of BMI in endometrial receptivity by comparatively assessing the displacement of the window of implantation (WOI) and the clinical impact of personalized embryo transfer (pET) in obese vs non-obese patients.

DESIGN: This is a prospective cohort study involving 176 infertile patients from different BMI (kg/m²) categories: normal weight: 18.5-24.9 (n¼48), overweight: 25-29.9 (n¼29) and obese: R30 (n¼99).

MATERIALS AND METHODS: Endometrial biopsies were collected using a pipelle catheter in hormone replacement therapy (HRT) cycles at progesterone P+5. Endometrial receptivity analysis (ERA) was performed to diagnose the personalized WOI in each patient. Normal and overweight groups were clustered as non-obese versus obese categories to identify the displacement of their WOI and to compare their clinical outcome after performing pET guided by ERA.

RESULTS: We identified an increase in displacement of the WOI rate as BMI increases: 4.2% for normal weight, 17.2% for overweight and 24.2% for obese patients with a significant difference (p<0.01) between normal weight and obese groups, as well as between non-obese (normal weight and overweight) versus obese categories (9.1% and 24.2% respectively) (p<0.01). The correlation between BMI and displaced WOI is also observed inside the obese category, being highest for patients with BMI R40 (38.5%) (Table 1). Interestingly, after the clinical correction of the displaced WOI using pET, no significant differences for clinical outcome in terms of pregnancy and implantation rates as well as similar pregnancy loss rate (6.7% versus 13.2%). were observed between non-obese and obese categories (Table 1).

CONCLUSIONS: Our results demonstrate that higher BMI is associated to an increase displacement of the personalized WOI. However, after their correction

by performing pET, no significant differences in the clinical outcome in obese vs non-obese patients can be found. Although the metabolic consequences of higher BMI remains to be understood, endometrial assessment for obese women might play a relevant role to increase their reproductive success in ART. References: Bellver J, Pellicer A, Garcia-Velasco JA, Ballesteros A, Remohí J, Meseguer M. Obesity reduces uterine receptivity: clinical experience from 9,587 first cycles of ovum donation with normal weight donors. *Fertil Steril*, 2013;100:1050-8. Provost MP, Acharya KS, Acharya CR, Yeh JS, Steward RG, Eaton JL, Goldfarb JM, Muasher SJ. Pregnancy outcomes decline with increasing recipient body mass index: an analysis of 22,317 fresh donor/recipient cycles from the 2008-2010 Society for Assisted Reproductive Technology Clinic Outcome Reporting System registry. *Fertil Steril*, 2016; 105:364-8.