

**Materials & Methods:** Twenty-Four infertile women having a history  $\geq 3$  failed IVF trials despite embryo transfer of at least two good quality embryos and 30 infertile controls referred for routine assessment before their first IVF trial were recruited for the study. All Candidates had a normal ovarian reserve, and a normal uterus, with no history of endocrine disorders and autoimmune diseases. TVD Examination was done by the same examiner, who was blinded to the result of the diagnostic chart, during the mid---luteal phase of untreated cycles. The uterine artery blood flow waveform velocity was obtained by placing the Doppler gate on the vessel. The PI and RI of both the left and right arteries were calculated.

**Results:** The mean PI Values for uterine arteries were significantly higher ( $2.88 \pm 0.45$ ) in women with RIF in comparison to control infertile group ( $1.92 \pm 0.62$ ), ( $P$  value = 0.03). The Mean RI values showed no statistical difference between the study and control groups ( $0.90 \pm 0.04$ ) vs ( $0.80 \pm 0.06$ ). Protodiastolic Notch were observed more frequently in uterine waveform (19 Out of 24=80%) of the study RIF group. The Uterine vessels were clearly demonstrated in all women and no significant differences in the PI and RI Values of the right and left uterine arteries were found in any women.

**Conclusions:** Impaired Uterine receptivity secondary to increased resistance to uterine blood flow may be an important contributing factor to RIF. TVD Examination of the uterine arteries represents a useful tool for screening women with a history of RIF and therefore, should be included in RIF Diagnostic chart. This test provides the opportunity to identify women in whom appropriate therapeutic protocols may effectively improve the possibility for a successful pregnancy.

**Abbreviations:** Trans---vaginal Color Doppler (TVD), Pulsatility index (PI), Resistance index (RI), Repeated IVF---implantation Failure (RIF).

## O-62 Assessment of endometrial thickness and volume by 3D ultrasound prior to embryo transfer: clues to pregnancy outcome

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**Introduction:** Determine if the investigation of endometrial thickness and volume on the day of HCG (human chorionic gonadotropin) administration could be predictor of pregnancy outcome in IVF (in vitro fertilization) outcome.

**Method and Material:** A prospective study was conducted in imaging department of Royan institute. Endometrial thickness and volume were evaluated by 3 dimensional ultrasound in 160 patients on the day of HCG administration in women undergoing ART (Assisted reproductive treatment) cycles. Endometrium thickness was divided to 3 subgroup:  $\leq 7$ mm, 8-14mm,  $> 14$ . Endometrial volume was divided to 3 subgroup:  $< 2$ cc, 2-4.5cc,  $> 4.5$ cc.

**Result:** The overall pregnancy rate was 36.5%. Participant's age was 20-38 year old with the average age of  $29.20 \pm 4.37$ . There is no statistical significance in sagittal thickness of endometrium and pregnancy rate by using CHI square test ( $p=0.358$ ). There is no correlation between endometrial volume and pregnancy rate ( $p=0.122$ )

**Conclusion:** The findings of the present study suggest that endometrial parameter (thickness and volume) on the day of HCG is in limited value for predicting pregnancy outcome.

**Key words:** Three dimensional ultrasound; IVF outcome; Endometrial volume; Endometrial thickness

**Room: Roma 2**

**ORAL PRESENTATION SESSION 19: Embryology**

## O-63 New Integrated Advanced IVF Culture System - Where Complexity Meets Simplicity for Physiology's Sake

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Ever since Louise Brown birth, in 1978, IVF practice has improved considerably. Pregnancy rates have increased steadily. Pioneering works lead to the introduction of stimulation protocols, new insemination methods (ICSI), improvement of incubation conditions (temperature and hypoxic environment), vitrification, recent genetic testing and screening (PGD & PGS), time lapse imagery. Moreover, the development of simple media such as the two-step media proposed by Gardner and colleagues have contributed significantly to this advancement. Recently, the single-step media put forward by Biggers and colleagues are setting a new paradigm for embryo culture.

The first IVF baby born was derived from a blastocyst transfer from a natural cycle. IVF commercial media, at that time, were unavailable. Embryologists had to rely on culture media supplemented with serum, follicular fluid and/or co-culture cells. The somatic cell culture system was and still is the framework for *in vitro* production of human embryos. Today's media are well-defined and contain two dozen or so ingredients versus thousands of bioactive compounds found on FF and HTF (hormones, vitamins, cytokines, amino acids, proteins, lipids, carbohydrates, etc.) To make the *in vitro* milieu even more sub-optimal almost all commercial media are loaded with biologically unnecessary antibiotics. Sperm cells are individually handpicked based on morphology and motility. Worse, with the introduction of ICSI the natural occurring interaction between egg and sperm has been severed.

Have we neglected the tenets of human reproductive physiology? Are we moving towards a more natural and physiological *in vitro* culture or are we putting technical advance ahead of evolution? The "unnatural ICSI" has become a standard practice even for normospermic ejaculates in most labs worldwide. Does ICSI beget ICSI? The international consensus of a "good outcome" for an IVF cycle is the delivery of a "healthy singleton baby". Does that suffice on an evolutionary perspective? The baby health status is necessary but not sufficient for our species' survival. A "healthy and fertile human being" ought to be the "gold outcome for an IVF cycle." The IVF enterprise is an open experiment where the real outcome awaits 30 or more years due to delayed parenthood common on the so-called "civilized nations."

We remain ignorant on very simple physiological human embryo culture parameters. We do not know for example if constant 37°C is the optimal incubation temperature. The same uncertainty holds true for the real level of oxygen that embryos are exposed *in vivo*. The *Quietness Hypothesis* posits that we should leave embryos undisturbed as much as possible in order to minimize environmental stress. However, gametes/embryos have to endure unnatural centrifugation