

Three-Dimensional Ultrasound for Routine Check-Up in *In Vitro* Fertilization Patients

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Aim. To determine whether three-dimensional ultrasound (3D US) improve diagnosis in patients undergoing *in vitro* fertilization (IVF).

Methods. Three-dimensional and power Doppler ultrasound were used in examination of 267 patients undergoing IVF on their first visit, during ovulation induction and aspiration of the oocytes. Patients with suspected uterine anomalies and/or abnormalities of the endometrium (N=108) were treated by operative hysteroscopy. On the day of oocyte collection, multiplanar imaging and 3D reconstruction demonstrated cumuli in follicles greater than 15 mm. Cumulus assessment inside the ovarian follicles was correlated to the number of mature oocytes. Power Doppler examination was performed when superposing vessels did not allow the puncture needle to be introduced correctly.

Results. The diagnosis was correct in all cases of endometrial polyp, submucous myoma, arcuate uteri, and septate uteri, as confirmed by an office hysteroscopy. Intrauterine synechiae was correctly diagnosed preoperatively in one out of the four cases. The mean (\pm SD) number of follicles >18 mm was 8.2 ± 5.8 , and the total number of follicles demonstrating cumulus in all three planes was 6.4 ± 5.1 . The ratio cumuli/retrieved oocytes, cumuli/fertilized oocytes, and cumuli/mature oocytes was 6.2 ± 4.2 , 5.4 ± 2.8 , and 5.9 ± 2.6 , respectively.

Conclusion. 3D US improved recognition of the uterine anatomy, characterization of the surface features, assessment of the ovaries during stimulation cycles, and morphologic and functional evaluation of the anatomic structures of the inner reproductive organs, thus avoiding the need of invasive diagnostic procedures. Puncturing procedures, such as oocyte collection, can be more precisely performed.

Key words: Doppler ultrasonography, color; fertilization *in vitro*; hysteroscopy; oocytes; ovulation induction; test-tube fertilization

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