

## **3D ULTRASOUND VS 3D SONOHYSTEROGRAPHY IN THE DIAGNOSIS OF UTERINE ANOMALIES: A PROSPECTIVE BLINDED STUDY OF 600 CONSECUTIVE INFERTILITY PATIENTS.**

M. R. Hartman, J. D. Hartman, C. Oprea, B. D. Hartman, A. Hartman. Obstetrics and Gynecology, Memorial University of Newfoundland, St. John's, NL, Canada; True North Imaging, Thornhill, ON, Canada. **OBJECTIVE:** New modalities and examinations have been introduced to examine the shape of the uterus and its contents, including 3D Sonohysterography (3D SHG) and 3D Ultrasound (3D US). The purpose of this study is to compare these two modalities in detecting uterine anomalies.

**DESIGN:** A prospective blinded study.

**MATERIALS AND METHODS:** 600 consecutive women being investigated for infertility were referred for SHG and sonohysterosalpingography. Each patient had evaluation of their uterus using both 3D US and 3D SHG on separate visits, in the same cycle, performed by sonographers with extensive experience. The studies were performed using General Electric Voluson730 Experts. Modified ASRM criteria were used in order to classify uterine anomalies, by an experienced radiologist blinded to each study's results.

The sensitivity, specificity, positive predictive value and negative predictive value were calculated for 3D US compared to 3D SHG. The Pearson's chi-square test for independence and McNemar-Bowker test for symmetry were used to compare the two samples.

**RESULTS:** 23.2% of patients (n = 139) were diagnosed by 3D US to have uterine anomalies. 18.7% of patients (n = 112) were diagnosed with an arcuate uterus, which was the most common anomaly found. 1.5% (n = 9) were diagnosed with partial septum, 1.2% (n = 7) had a complete septum and 1.8% (n = 11) were diagnosed as having a borderline arcuate/partial septum on 3D US. In the 3D SHG group, 34.2% of patients (n = 205) were found to have a uterine anomaly. 28.3% of patients (n = 170) were diagnosed to have an arcuate uterus using 3D SHG. In addition, 2.2% (n = 13) had a partial septum, 1.7% (n = 10) had a complete septum, 0.2% (n = 1) were found to have a bicornuate uterus and 1.8% (n = 11) were diagnosed with a borderline arcuate/partial septum. Using 3D SHG as the standard, 3D US had a sensitivity, specificity, positive predictive value and negative predictive value of 51.7%, 91.6%, 76.3% and 78.5% (Pearson Chi-square = 959.955; df = 20 p < 0.000, McNemar-Bowker = 40.174; df = 1; p < 0.000).

**CONCLUSIONS:** Both 3D US and 3D SHG are valuable in the diagnosis of uterine anomalies by visualizing the coronal plane of the endometrial cavity and uterine contour. More uterine anomalies are found using 3D SHG. This difference is more pronounced in detecting arcuate anomalies. Further investigations, including correlation with other modalities such as hysteroscopy, is warranted.