OP22.02

**Tumor volume calculation with VOCAL software in endometrial cancer patients: a reproducibility study**

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**Objectives:** To assess the reproducibility of tumor volume evaluation at three dimensional (3D) transvaginal ultrasound (TVUS) with virtual organ computer-aided analysis (VOCAL) software in patients with endometrial cancer.

**Methods:** Consecutive patients with confirmed histological diagnosis of endometrial cancer underwent TVUS performed by an experienced examiner (Observer A at the National Cancer Institute and B at the University of Milan Bicocca) with 3D volumes storage. Each tumor volume was independently calculated offline using VOCAL software and volume contrast imaging (VCI) enhancement by the two examiners. Finally, a beginner examiner (Observer C) independently re-calculated the tumor volumes. A consensus was defined for the analysis: box A was considered as reference image, the angle of rotation was 15°, VCI slice thickness was 2 mm. Reproducibility study was performed.

**Results:** 54 patients were enrolled and underwent TVUS within one week prior to surgery. Mean (SD) volume evaluated by Observer A, B and C were 20.52 (± 36.06), 20.38 (± 35.46) and 20.45 (± 35.7), respectively. No between-group difference in tumor volume was observed ($p = 0.94$, Kruskal-Wallis Test). No differences in tumor volumes was observed comparing results of the two skilled examiners ($p = 0.73$, Mann Whitney test). Interestingly, the beginner examiner detected similar tumor volumes than the experienced ones ($p = 0.97$). Similarly, no differences were observed comparing the beginner examiner with Observer A ($p = 0.94$) and Observer B ($p = 0.84$).

**Conclusions:** Our study suggests the reliability and reproducibility of tumor volume assessment during preoperative TVUS examination. Both beginner and skilled examiners experienced similar results, thus suggesting the feasibility of this technique. The relationship between tumor volume and intraoperative and histologic findings that might determine surgical and adjuvant treatments has to be investigated.

OP22.03

**Strain imaging on transvaginal ultrasound to measure contractions in non-pregnant uteri**

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**Objectives:** In fertility treatment the success rates have been stagnating at about 25–30%. The cause of failure remains unknown in a majority of cases. There are reasons to believe that uterine peristalsis-like contractions can influence implantation and pregnancy rates. Research on this subject and practical implementation are undermined by the lack of an objective and reliable measurement method. The use of strain imaging on transvaginal ultrasound might solve this problem.

**Methods:** A prospective observational study was performed in 14 women visiting the Fertility Clinic of the Catharina Hospital, who had no known fertility problems. Transvaginal ultrasound recordings were performed in 8 women during active pre-ovulatory phase and in 6 women during non-active mid luteal phase. Speckle tracking was used to estimate the frequency of myometrial movements in the fundal and cervical area of the uterus, by following the variation of distance of two areas visually selected on the US image. Discrimination was tested using a Mann–Whitney test for unpaired variables and a Wilcoxon test for paired variables.

**Results:** We found a significant difference between the number of movements in the cervical area (median: 0, range: 0–1) and the fundal area (3, 0–14) in the whole group ($p = 0.003$). Comparing cervix (0, 0–1) and fundus (7, 2–14) during active phase shows a significant difference ($p = 0.012$), while there is no difference in the non-active phase (cervix 0, 0–0 and fundus 0.5, 0–3, p0.102).

**Conclusions:** Quiescence of the cervix could be expected as it is not provided with muscular tissue. The cervix can therefore be considered a good control area in future use of strain analysis. Furthermore, the significant difference in activity between the cervix and the fundal area during the active phase and the non-significant difference in the non-active phase, supports the use of speckle tracking to discriminate between these phases.

OP22.04

**Use of elastography in the diagnosis of endometrial lesions**

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**Objectives:** To evaluate the use of electrography in cases with endometrial polyps and submucosal fibroids and to assess the intraobserver reproducibility of measurements.

**Methods:** 29 women (14 premenopausal and 15 postmenopausal) attending the gynecology ultrasound department for abnormal uterine bleeding were included in the study. All assessed by transvaginal scan and elastography. 25 cases with endometrial polys and 4 cases with submucous fibroids were diagnosed by transvaginal scan and as confirmed by hysteroscopy and histological examination. Three elastography measurements were performed by the same operator after identifying 3 regions of interest (endometrium, lesion and myometrium). The strain values and strain ratios using endometrium as the reference ROI were determined. The intraobserver repeatability of measurements at different ROI were evaluated using Bland-Altman analysis and ICC with 95% CI.

**Results:** There were no statistically significant differences or bias in any of elastography measurements made by the same examiner. The intraclass coefficient showed a significantly good level of measurement agreement in each ROI areas especially for the lesion with ICC of 0.9(95% CI 0.816–0.951). Our results show that the mean strain ratio for fibroids was higher than that for

polyps ($2.03 \pm 0.692$ versus $1.547 \pm 0.81$). Higher stain values were detected in cases of polyps (softer) with mean of $0.19 \pm 0.08$ and lower strain values in cases of fibroids (stiffer) with mean of $0.112 \pm 0.05$.

**Conclusions:** Elastography can be a reliable adjunct tool in diagnosis of intrauterine lesion. Further studies are needed to test for the accuracy of the quantitative method of elastography in the differentiation of malignant and benign uterine lesions.

## SUPPORTING INFORMATION ON THE INTERNET

Supporting information for OP03.03, OP04.04, OP04.06, OP04.09, OP05.02, OP05.05, OP08.06, OP09.09, OP09.11, OP10.02, OP10.06, OP10.07, OP10.08, OP12.06, OP14.05, OP15.06, OP17.04, OP18.01, OP18.08, OP19.03, OP19.11, OP20.01, OP20.05, OP21.07 can be found in the online version of these abstracts.