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VALIATION OF ULTRA-SOUND ELASTOGRAPHY IN THE POSTOPERATIVE FOLLOW-UP OF MESH GRAFTS IN VAGINAL VAULT REPAIR

Hypothesis / aims of study
To characterize and analyze the elastographic images of mesh grafts used for vagnial vault repair in order to create a reproducible arithmetical datasets for longitudinal patient follow-up or group comparisons.

Study design, materials and methods
High definition endoluminal and linear ultrasound probes were used in Elastoscan®-mode (Accuvix V20-System, SonoAce / Samsung) to evaluate post operative image after mesh graft vaginal vault prolapse repair. The images of the mesh grafts were matched as B-scan mode and color-coded elastography using alpablending. With the use of the programm Stiffness Measuring Tool (StiffMeTool)“ the gained images (in B-scan mode ans as R-G-B-Elastoscan) were statistically and metrically analyzed. The gained histogramm of areas of region of intrests (ROI) beside the mesh graft supported the validation of homogeneity of two measurements in the region of interest. The ration of the two ROI’s leads to the diagnostically relevant elasticity index. Calibration was performed using the elastography standard CIRS, Model 049 & 049A.

Results
298 patients were included in the study. 126 patients had received TVT, 82 received TVTO and 96 received meshes for vault prolapse repair.
Pertinent measuremts of postoperative follow-up of mesh grafts are possible as early as 1 to 2 weeks after surgery. Wound healing or postoperative complications can be detected early. Beneficial are the display of the R-G-B histogramm of ROI’s and the ratio of ROI’s in the area of interst, as well as control regions. The creation of an elasticity index adds considerable information compared to the ultra sound B-mode and makes further follow-up measurements matchable. The used software tool (StiffMeTool) can be uploaded as add-in into any system software of any ultra sound elastography system.

Concluding message
B-mode images and the corresponding elastogramm represent a mertical, reproducable tool for mesh grafts after vaginal vault repair. Longitudinal and tranversal patient data can be documented and compared. The histogramm and the elasticity index allow an objective assesment of the “stiffness” of the mesh graft. To achieve reproducable results with differents ultra sound probes, calibration is essential. Ultra sound elastography presents a valuable new diagnostic tool for post operative patient follow-up.

Keywords: Elastography, ultrasonography, stiffness measuring, mesh detection, pelvic floor repair

Disclosures
Funding: non **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** postoperative ultrasound follow up will be done at every patient. elastography is a new imaging tool of ultrasound device. **Helsinki:** Yes **Informed Consent:** Yes