COMPARING DIFFERENT TYPES OF SUBURETHRAL SLINGS USING PERINEAL ULTRASOUND

Hypothesis / aims of study
Complications and malfunctioning after TOT can occur due to several factors, such as material and structure of the sling used. The aim of the present study is to evaluate morphology and functionality of two types of slings (PVDF, DynaMesh® SIS, Dahlhausen, right side of the picture; Polypropylene, Gynecare TVT™, Ethicon, left side of the picture) in vivo using perineal ultrasound.

Study design, materials and methods
In n=47 women with TOT four criteria for perineal sonographic measurement were taken: (1) Vertical stability of the sling position during Valsalva and contraction; (2) distance "sling – urethra"; (3) width of the sling; (4) condition of the selvedges. As two different types of slings were implanted (PVDF/Polypropylene), they were compared for sonographic visibility in gelantine and then checked for possible differences in the above mentioned four criteria.

Results
Visibility of the slings embedded in gelantine was equal. We observed (1) an increased vertical displacement of the PP-slings, a significantly smaller variance to the extent of the displacement in PVDF-slings (p < 0.01), (2) a significantly larger distance between sling and urethra (p<0.001) in PVDF-slings, (3) a significantly smaller width of the PP-slings (p < 0.0001). 10.5% of all PVDF-slings and 84.6% of all PP-slings were curled up. (4) In all PP-slings, sharp pointing selvedges were observed, all PVDF-slings had smooth selvedges.

Interpretation of results
This is the first study comparing PP and PVDF slings for sonographic behavior. Conditions for sonographic evaluation are equal in both slings. All four criteria could be assessed using perineal ultrasound and significant differences were found between the slings. Slings made of PP seem to be more elastic and lose their structure (curl up, decrease in width, show sharply-pointing selvedges) when under tension; PVDF slings provide better structural integrity. These points confirm the in vitro testing of a in
vitro material study [1], resulting in elasticity values of up to 46% for PP and up to 7.1% for PVDF as well as curled up PP-tapes with smaller width under pressure. PUS may help to link differences in the morphology and functionality of in vivo-slings to their material properties.

Concluding message
There are significant differences between sling types concerning structure and dynamic behaviour in vivo.

References

Disclosures
Funding: The Department of Urology (University Hospital, Aachen) has accepted payment for research from FEG Textiltechnik mbH (Aachen, Germany) to finance Julia Hennemann's work on this study. Clinical Trial: No Subjects: HUMAN Ethics Committee: Ethik-Kommission an der Medizinischen Fakultät der Rheinisch-Westfälischen Technischen Hochschule Aachen (RWTH Aachen) Helsinki: Yes Informed Consent: Yes