Table 1

MR imaging criteria	n	Actin (% of area)	Collagen III (% of area)	Vessels (nr. per fov*)	Veins (% of vessels)	Arteries (% of vessels)
All women	19	37,1	50,5	1,1	93,5	6,5
No FD**	9	**47**	45,2	1	95,3	**4,7**
Moderate FD	6	**39,2**	56,3	0,9	92	**8**
Pronounced FD	4	**11,5**	53,8	1,6	91,7	**8,3**

*fov = field of view; **FD = facial defect

Table 2

Histological criteria	Structure of actin			
MR imaging criteria	excellent (n)	good (n)	poor (n)	very poor (n)
No FD	**5**	**3**	1	0
Moderate FD	2	1	3	0
Pronounced FD	0	0	**1**	**3**

Conclusions

The terms "pubocervical fascia" and "tunica muscularis vaginae" are use synonymously. Histologically proven defects of the pubocervical fascia can be demonstrated by MR imaging but are difficult to identify by clinical examination. An enhanced arterial vascularization affects the MR image and may mimic fascial defects. Comment: MR imaging has become an indispensable tool for the scientific investigation of the pathomorphology of urinary incontinence.

References 1) Neurourol Urodynam 1998;17:579-589

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DO BLADDER NECK POSITION AND AMOUNT OF ELEVATION INFLUENCE THE SURGICAL OUTCOME OF COLPOSUSPENSION?.

Aims of Study:

To determine whether bladder neck position and amount of elevation influence the cure rate after colposuspension for genuine stress incontinence (GSI).

Methods:

77 women undergoing colposuspension were studied prospectively. The bladder neck was imaged pre-operatively and 1 week after surgery using MRI. The position of the bladder neck in relation to the pubic bone was determined using a system of co-ordinates (Dx and Dy) (1) and measuring the distance between bladder neck and posterior symphysis pubis (BN-pubis). The amount of bladder neck elevation achieved by surgery was determined by comparing pre and postoperative MRI. Measures of **elevation** and measures of **postoperative position** were correlated to subjective (symptoms) and objective (cystometry) evidence of **stress incontinence one year after surgery.** As postoperative voiding dysfunction does not seem to occur when the bladder neck is elevated by 26mm or less (2) and de novo detrusor instability may also be less common (3), surgical success in women with elevation of 26mm or less (group1, n=28) was compared to that of women with elevation > 26mm (group2, n=45).

Results:

MRI measures were obtained in 73 women. Mean values 1 week after surgery were: Dx=32.4mm, Dy=16.9mm, BN-pubis=5.7mm. When considering preoperative values, the mean bladder neck elevation achieved by surgery was 28.7mm (range 10-48mm). At 1 year follow-up, symptoms of stress incontinence were reported by 9/77 women (subjective 'failure': 11.6%). Objective testing was performed in 76 women (cystometry: n=74, pad test in women who declined cystometry: n=2): there were 8 objective 'failures' (10.5%).
The mean **elevation** of patients with objective 'success' (28.7mm) and those with objective 'failure' (30.7mm) was not found to be significantly different (p=0.53). However, the mean elevation of patients with subjective 'success' (28.1mm) was significantly lower than the mean elevation of patients with subjective 'failure' (33.2mm) (P=0.039).
The objective failure rate was 10.7% (n=3) in group 1 (elevation of 26 mm or less) and 11.1% (n=5) in group 2 (elevation > 26 mm). The subjective failure rate was 3.5% (n=1) in

group 1 and 15.5% (n=7) in group 2. The differences were not statistically significant. No association was found between surgical outcomes and postoperative (1 week) values of bladder neck **position** (Dx, Dy and BN-bone).

Conclusions:
The postoperative position of the bladder neck does not appear to influence the outcome of colposuspension for the treatment of GSI. However, if the preoperative bladder neck position is considered, increasing bladder neck elevation is associated with subjective failure (perhaps by causing tearing of the fascia due to excessive tension). Limited bladder neck elevation (26mm or less) is not associated with a greater chance of failure. This encouraging finding might have important implications in the prevention of postoperative voiding dyfunction and detrusor instability.

References

1- Perineal ultrasound for evaluating the bladder neck in urinary stress incontinence. *Obstet Gynecol* 1995; 85: 220-224.
2- Why do women have voiding dysfunction after colposuspension?. Proceedings of 22nd annual meeting of IUGA *Int Urogynecol J* 1997; s38
3- Why do women have detrusor instability after colposuspension?. Proceedings of 23rd annual meeting of IUGA. *Int Urogynecol J* 1998; p. 326.

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ULTRASOUND IMAGING OF URETHRAL FUNNELLING

AIMS OF THE STUDY
One of the factors participating in the etiology of genuine stress inontinence (GSI) are changes in the structure of muscle in and around urethra and pelvic floor. These cause the changes in the position of the bladder neck and proximal urethra and increase their mobility. Ultrasound is one of the methods for the monitoring of lower urinary tract and is an integral part of urogynecological examination. A limiting factor of ultrasound examination compared to urethrocystography is a significantly worse imaging of the urethra funnelling. Ultrasound contrast media(CM), which are used for Hysterosalpingocontrast sonography /HyCoSy/, overcome this disadvantage.
The aim of our study was to find optimal possibilities of ultrasound imaging of proximal urethra and its changes (funnelling).

PATIENTS AND METHODS
58 women with urodamically proved stress incontinence were included into our study. For the 1st stage, 28 women in supine position at rest, during Valsalva and squezing without Foley catheter, the bladder was filled to 300 ml, perineal ultrasound was perfomed. For the perineal examination a curved array probe 5 MHz and for the introital examination in the 2nd stage, sector probe 7 MHz (Acuson 128 XP 10) were used. We evaluated the mobility of urethra and funneling.
Funnelling was described as an enlarged distance between the inner edges of proximal urethra during Valsalva and we documented it by the measurement of the width of the inner orifice of the urethra at rest and during Valsalva.
The perineal examination was repeated, this time using contrast medium (Echovist 300, Schering) instilated into the bladder. Then, the funneling, defined as the leak of the contrast medium into proximal urethra during Valsalva and other parameters were examined by ultrasound.
In the 2nd stage , 30 women were examined. We began as in the first group but without the CM. We tried to diagnose the typical changes of the inner orifice of the urethra, as detected by examination using a contrast medium in the Ist stage of the study, this time using common ultrasound examination. Following perineal ultrasound, an additional introital examination, with higher magnification of the image was performed. We monitored changes in the proximal urethra (width of the inner orifice and change in its shape), at rest and during Valsalva.

RESULTS
Mobility of the urethra did not differ from values common in incontinent patients as published in previous studies. The values were also identical in examination with echo-contrast. In the 1st group of women, funnelling of the urethra was diagnosed 7x by examination without using contrast medium., and 25x using contrast medium Figure 1. If funnelling was diagnosed without using contrast medium, it was always subsequently confirmed by examination using contrast medium. If we compare both methods during perineal ultrasound examination, then the examination without a contrast substance has 100% specificity, but only 28% sensitivity compared to examination with contrast substance.
The width of the inner orifice of urethra was, on average, 6.9mm at rest and 9.3 mm during Valsalva for women with funneling Table 1. For patients without funneling, the width of the orifice at rest was the same, but the distance between the edges of urethra did not increase during Valsalva, in some cases they were even closer. In the 2nd group of women, funnelling was diagnosed 9x