tients were examined prior to and on the average of 11 weeks (range 7-16) after the operation with perineal ultrasound. Aloka SSD-2000 and Hitachi EUB-405 real-time scanning machines with sector scanner with a frequency of 3.5 Mhz were used for both transducers. An upright coughing test at standing to objectively demonstrate urinary leaking was performed every time. Such ultrasound parameters as bladder filling pre- and postoperatively, descending of UV-junction (urethrovesical junction) at Valsalva pre- and postoperatively, elevating of UV-junction when constricting pelvic muscles pre- and postoperatively, PUV (posterior urethrovesical) -angle both at rest and Valsalva pre- and postoperatively, and the change in degrees. Moreover, the funneling of vesical neck was ultrasonographically studied pre- and postoperatively. Bladder wall thickness was measured pre- and postoperatively, too.
The operative procedures were performed according to previously described by Ulmsten et al. Local anesthesia was used in all operations.

Results
All 34 women with symptoms of SUI presented clear objectively documented urinary leakage with coughing at upright position with the mean preoperative bladder filling of 253 ml. Postoperatively no women had urinary incontinence. Cough test with the mean postoperative bladder filling of 238 ml was negative in all the patients. The mean UV-junction rotatory descending detected by ultrasound was preoperatively significantly greater (16.2mm) than postoperatively (9.1mm) ($P < 0.05$). With straining the mean widening of PUV-angle was preoperatively significantly greater (41°) than postoperatively (14°) ($P < 0.05$). The mean preoperative PUV-angle itself at rest (119°) was greater than postoperative one (111°). Moreover, preoperative ultrasound detected the funneling of vesical neck in all the women whereas the funneling was present in only one patient at postoperative examination. There was no statistical difference in bladder wall thickness pre- and postoperatively (5.0mm vs. 5.7mm).
All 34 patients were doing well at follow-up examination. Only three of seven women who had suffered from urgency preoperatively had urgency postoperatively. No one had urge incontinence. Two women had slightly delayed bladder emptying in the mornings after operation. No postoperative hematomas, infections, bladder, urethral or ureteral perforations or lacerations had been encountered in this series.

Conclusions
We conclude that urogynecological perineal ultrasound examination at rest and at Valsalva including such parameters uv-juntion rotatory movement measurement and PUV-angle measurement as well as verifying preoperative vesical neck funneling, gives a strong support to an anamnestic diagnosis of genuine SUI, so to avoid the need of urodynamics. TVT proved to be a safe and effective ambulatory procedure for surgical treatment of genuine SUI, too.

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VISUAL ANALOGUE SCORE FOR URINARY INCONTINENCE

It is important for clinicians to be able to record both objective and subjective outcome measures and demonstrate the efficacy of their treatment. Simple visual analogue scales (VAS) have been used to assess patients' perception of severity of urinary symptoms (Frazer et al 1987) and urinary loss (Frazer et al 1989), but these have correlated poorly with objective measures such as cystometry or the two hour pad test. Simons and colleagues (1999) noted that a simple VAS measuring the impact of leakage on lifestyle correlated poorly with two disease specific Quality of Life tests ie IIQ (Kendall's rank correlation, tau=0.278, p=0.001) and UDI (tau =0.252, p=0.004) and with a single one hour pad test (tau =0.154, p=0.03). One reason for this inadequate correlation could be that some patients, particularly the elderly, find the VAS difficult to understand. Moreover, urinary incontinence is such a multi faceted problem that a single VAS may not be sufficiently sensitive. The reliability of the VAS may be improved by increasing the number of items on the scale (Streiner and Norman 1995).
Current urinary incontinence scoring systems which employ Likert type scales, such as the Lago-Janssen, tend to be restrictive in their nature. We wished to devise a robust assessment system which would allow patients latitude in expressing the severity of their incontinence. We have designed a composite VAS, comprising four 10 cms items (assessing the frequency of episodes of stress and urge leaks, the number of pads used and the impact on lifestyle disturbance) based on a faecal incontinence scoring system (Jagro and Wexner 1996).

We sought to investigate the following :

1) the test retest reliability of the composite VAS

2) the construct validity of the composite VAS by correlating it to the one hour pad test (mean and largest).

Methods

New referrals to the Pelvic Floor Unit were requested to fill in the VAS questionnaires at their initial visit and one week thereafter. All questionnaires were completed prior to commencement of treatment. Women complaining of significant incontinence also had two one hour pad tests performed one week apart.

The questionnaire consisted of four 10 cms VAS assessing the patients' perception of the frequency of episodes of stress and urge incontinence, the number of pads used and impact of incontinence upon lifestyle. The total of the individual four components was added and the composite VAS was expressed as a percentage. Construct validity of the VAS was assessed by correlating the composite scores to the mean of two one hour pad tests and to the larger of the two one hour pad tests. The test retest reliability of the VAS was assessed by the method as described by Bland and Altman (1986), where to achieve statistical repeatability, 95% of the difference between composite scores have to lie within 2 standard deviations (sd) of the mean difference. Spearman's correlation coefficient was used to examine the relationship between the composite VAS and the pad tests. Wilcoxon's signed rank test was used to compare data from the first and second composite VAS.

Results

Forty six women completed two consecutive VAS questionnaires one week apart and thirty two of them had two one hour pad tests performed. The mean difference between the first and second composite VAS was –4.8% with s.d. of 12.03 (median -2, IQR -10-6.5). As per Bland and Altman, 95% of the differences lay within 2 s.d.'s of the mean difference between the composite VAS (figure 1). The limits of agreement was –28.9% to 19.3%, ie the second composite VAS could be 28.9% lower or 19.3% higher than the first.

The test retest reliability of the four individual VAS components (/10 cms) was also assessed :

a) the mean difference in stress leaks was 0.054/10 (s.d. 1.81), limits of agreement -3.55 to 3.654.

b) the mean difference in urge leaks was 0.03/10 (s.d. 3.07), limits of agreement -6.11 to +6.17.

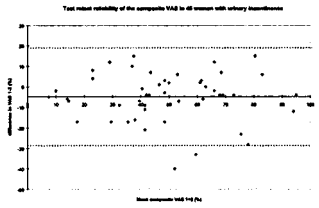
c) the mean difference in pad usage was -1.7/10 (s.d. 4.9), limits of agreement -11.5 to +8.1.

d) the mean difference in impact of incontinence on lifestyle was 0.44/10 (s.d. 2.09), limits of agreement -3.74 to +4.62.

The scores of the individual components (/10 cms) and composite VAS (%) did not differ significantly between the first and second VAS questionnaires, Wilcoxon signed rank test, $p<0.05$.

Construct validity for the composite VAS was good as evidenced by the significantly positive correlation between the composite VAS and the mean of the two pad tests (Spearman's rank correlation, $r=0.74$, $p<0.0001$) and the larger of the two pad tests ($r=0.74$, $p<0.0001$).

Figure 1 : Bland Altman test for reliability



Conclusion

The composite VAS has statistically satisfactory test retest reliability, but is clinically unacceptable as the second VAS may differ from the first by a factor of up to 30%. The individual components of the VAS also had poor clinical reproducibility from the first to the second test (particularly pad usage, which may vary by 100%). The construct validity of the composite VAS with regards to the mean of two pad tests and the larger of the two pad tests ($r=0.74$ and 0.73 respectively, $p<0.0001$) was good. Previous studies have shown poor correlation with a single one hour pad test and the fact that we demonstrated good correlation when using data from two pad tests highlights the inadequacy of using a single one hour test to assess the severity of incontinence.

The composite VAS has good construct validity and would be useful as a baseline measure of patients' perception

of severity of urinary incontinence. However, its' sensitivity is insufficient for it to used as an outcome measure for treatment.

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COMPARISON OF DETECTION OF URINE LEAKAGE WITH COLOUR DOPPLER WITH SOME OTHER ULTRASOUND PARAMETERS (FUNNELING).

Aims of study

The aim of our study was to objectify a leakage of urine during perineal ultrasound examination using a Colour Doppler (CDV), and to compare it with some other ultrasound parameters.

Methods

43 women with urodynamically proved stress incontinence were included in the study. The urinary bladder was filled to 300 ml with sterile saline. For the perineal examination a curved array probe 5 MHz and for the introital examination sector probe 7 MHz (Acuson 128 XP 10) were used. For all women, we assessed the position and mobility of the bladder neck. The measurements were taken in supine position at rest, during Valsalva and squezing without Foley catheter. We performed an examination using a Colour Doppler (CDV) to detect leakage during Valsalva and coughing. Thereafter, an introital examination followed to detect occurrence of funneling. Funneling was described as an enlarged distance between the inner edges of proximal urethra during Valsalva or as the leak of the urine or contrast medium into proximal urethra during Valsalva. We documented funneling by the measurement of the inner orifice of the urethra at rest and during Valsalva. Subsequently, we performed a perineal examination using an ultrasound contrast medium (Levovist, Shering) and the CDV to detect leakage, and we compared all examinations performed.

Results

Mobility of the urethra did not differ from values common in incontinent patients as published in previous studies. During examination without using a contrast medium, a leak of urine was diagnosed by CDV in 33 patients (77% sensitivity), and funneling in 38 women (88% sensitivity). During examination with a contrast medium (CM), funneling was present in 40 patients(93% sensitivity). In 41 cases, a leak was detected using CDV after filling with a contrast medium (95% sensitivity). In one case we detected leakage without funneling.

Conslusions

By a colour doppler imaging (CDV) we can objectify a leak of urine, determine the positi of urethra in which such leakage of urine occurs. A contrast medium significantly increas the sensitivity of doppler examination and we can exactly ascertain the onset of t leakage.