

SUCCESSFUL PROSTATE ADJUSTABLE CONTINENCE THERAPY FOR STRESS URINARY INCONTINENCE AFTER RADICAL PROSTATECTOMY: EFFECTS ON THE URETHRAL PRESSURE PROFILE

Hypothesis / aims of study

Implantation of the ProACT™ (Adjustable Continence Therapy, Uromedica, Plymouth, MN, USA) device is a minimally invasive procedure for the treatment of stress urinary incontinence (SUI) in men. The device consists of two balloons placed bilaterally para-urethrally just beneath the bladder neck. The balloon volume can be adjusted post-operatively. We previously demonstrated that on average urethral resistance during voiding considerably increased in men who were successfully treated for SUI after radical prostatectomy (RP). [1] We hypothesized that the increase of urethral resistance is caused by device induced changes of the static urethral pressure profile (UPP).

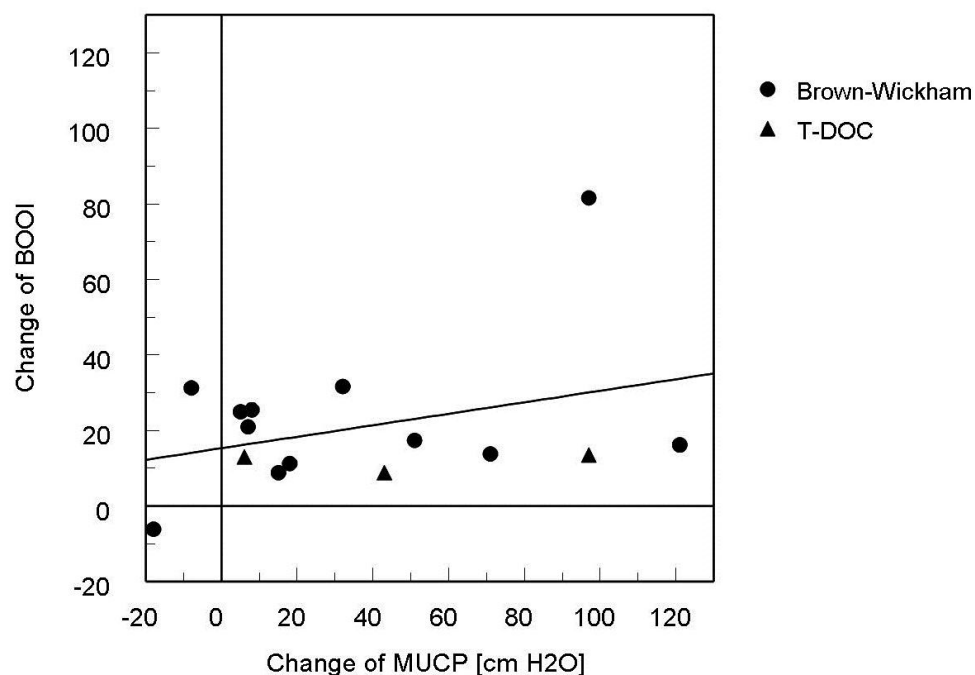
Study design, materials and methods

Urethral pressure profilometry was performed in addition to a multichannel urodynamic examination in men with post-RP SUI who were candidates for ProACT placement. Patients were invited to undergo these measurements again once a good clinical result was obtained after a series of balloon volume adjustments, that is, when they needed maximally one pad per day. The UPP's were initially done with the Brown-Wickham method using a side-hole 9F catheter oriented at the 12 o'clock position (perfusion rate 1 ml/minute). Rectal pressure was monitored with an 8F tube. T-DOC® Air-Charged™ 7F catheters were used in later patients. The bladder volume was 100 ml and the withdrawal speed 1 mm/second. The parameters derived from the UPP's were the functional profile length (FPL) and the maximum urethral closure pressure (MUCP). The urodynamic examinations were done with a 7F double lumen catheter. The bladder outlet obstruction index (BOOI) was derived from the pressure-flow studies to characterize urethral resistance during voiding.

Results are shown as mean value and standard deviation. The paired t-test was used for statistical comparison. The relationships between changes of the UPP parameters and changes of BOOI were examined with the Pearson correlation coefficient.

Results

Twenty men, with Stamey incontinence grade 2 or 3 at baseline, in whom a ProACT device was implanted successfully underwent pre-operative UPP. One man refused the post-operative urodynamic examination and catheterisation failed in four men (all from the Brown-Wickham group), so that pre- as well as post-operative examinations were done in 15 men: 12 from the Brown-Wickham group and 3 from the T-DOC group. MUCP changed significantly: from 63 ± 26 to 100 ± 51 cm H₂O ($p=0.005$). A negative change was seen in two men. FPL increased from 29 ± 13 to 36 ± 16 mm. This change, however, was not significant ($p=0.051$). BOOI increased significantly from 5 ± 15 to 25 ± 14 ($p=0.001$). Linear regression analysis demonstrated that the increase of BOOI only weakly correlated with the increase of MUCP: Pearson's $r = 0.334$ ($p=0.224$). The relationship is shown in the figure, that also demonstrates the regression line. The correlation between the changes of FPL and BOOI was even weaker: $r=-0.051$ ($p=0.855$).



Interpretation of results

On average, a statistically significant and clinically relevant increase of MUCP was found. MUCP however decreased in two men. This implies that this parameter cannot fully explain the improvement of continence in this group of men. No significant change of FPL was observed. In addition, no significant correlation was found between the change of BOOI and the changes of MUCP and FPL. This means that the increase of urethral resistance during voiding that is usually observed in men with post-RP SUI successfully treated with the ProACT device cannot be explained by changes of the UPP. It thus remains unclear which factors may account for the increased urethral resistance. Possibly the altered geometry of the urethra, in particular its ventrally directed curvature induced by the balloons that is often seen, plays a role. It should be noted that our results might be biased by the inability to catheterize four patients.

Concluding message

Successful treatment with the ProACT device on average resulted in an increase of MUCP, but not of FPL. The also observed increase of BOOI cannot be attributed to the increase of MUCP.

References

1. Neurourol. Urodyn. 29(6): 914-915, 2010 (abstract 73).

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** The procedures involved were part of routine diagnostic and evaluation tools **Helsinki:** Yes **Informed Consent:** No