

LONG TERM FOLLOW-UP AFTER TRANSURETHRAL TREATMENT OF INFRAVESICAL OBSTRUCTION IN BOYS.

Hypothesis / aims of study

Infravesical obstruction can be congenital or acquired. Posterior urethral valves (PUV) are the most common cause of congenital bladder outflow obstruction in boys and have a broad clinical spectrum, which may cause minor to severe urinary tract dysfunction. The treatment of choice is endoscopic resection of the obstructing structure. Previous research in this field has focused on short and long-term outcomes of boys with severe infravesical obstruction. Endpoints often reported are renal function and vesico-ureteral reflux (VUR). Contrary to severe infant cases which are mostly diagnosed prenatally, some authors have suggested that urinary tract infections (UTI's) or urge urinary incontinence (UUI) in boys presenting later in childhood may be due to mild valve disease. Although the long-term effects of mild valve disease are probably less severe, the exact prevalence of lower urinary tract symptoms (LUTS), UTI's and urinary incontinence (UI) is unknown.

Therefore, the aim of this observational cohort study is to investigate the prevalence of LUTS and UI in young adult men after transurethral treatment of infravesical obstruction during childhood and to study whether outcomes are comparable to men in a reference group.

Study design, materials and methods

All cystoscopic procedures were retrieved through the hospital surgical registration database and checked for patients who underwent transurethral treatment for infravesical obstruction between January 1987 and December 1996. Clinically, obstruction was suspected in boys with weak stream, straining, or abnormal findings at ultrasound or uroflowmetry. We included patients 18 years or older at the time of study, who had endoscopic resection of an infravesical obstruction as a child. Exclusion criteria were: syndromal disorders, neurogenic bladder disorder or a congenital anomaly of the penis, e.g. hypospadias or epispadias.

The following measurements were done: International Prostate Symptom Score (IPSS), the developmental International Consultation on Incontinence Modular Questionnaire on Urinary Incontinence (ICIQ-UI), frequency volume chart (FVC), uroflowmetry and post void residual (PVR). A group of 151 male students without urological history who completed IPSS and underwent uroflowmetry was used as reference group to compare with patients.

Results

Of 444 patients who underwent transurethral treatment for infravesical obstruction, 139 were traceable, 133 consented to participate, 92 men [median age 21.9 years; IQR:19.6-25.6] returned the questionnaires and 77 performed uroflowmetry. Of the included patients: 11 (12%) initially presented with hydronephrosis, 30 (33%) with UTI and 51 (55%) with UUI/LUTS. Forty-three patients underwent endoscopic valve resection (EVR), 33 EVR in combination with endoscopic incision of another infravesical obstruction (mohrman ring, meatal stenosis, obstructing bladder neck, urethral stricture, syringocele) and 16 treatment of infravesical obstruction, no EVR. Median age at initial treatment was 7.6 years [IQR:0.4-10.8]; median age at follow-up was 21.9 [IQR 19.6-25.6] years.

Compared to men in the reference group, patients had similar IPSS and QoL scores; median IPSS was 3 and IPSS-QOL 0 [IQR 0.0-2.0]. In the patient group 12.6% reported no symptoms, 72.4% mild symptoms and 14.9% moderate symptoms. Men in the reference group reported no or mild symptoms in 89.4% and 10.6% moderate symptoms. Severe symptoms were not reported in both groups.

Of those with significant incontinence (>1/3 of time), urge incontinence, stress incontinence, incontinence e.c.i and post micturition incontinence (PMI) were seen in 2.3%, 0%, 0% and 8.0% respectively.

Thirty-one patients returned the FVC. Median values of voided volumes were: total: 1700 mL [IQR 1200-2155], average: 293 mL [IQR 229-410] and maximal: 480 mL [IQR 300-600]. The median micturition frequency was six; in 7/31 patients <4 or >7. Six/31 patients voided at least once >600 mL. Three patients reported urgency; none of them reported pain or UI.

Seventy-four patients performed uroflowmetry. Median Q_{max} was 28.0 mL/sec [IQR 19.2-39.4], median voided volume 411 mL [IQR 231-554] and median voiding time 23.5 seconds [IQR 16.0-36.0]. Overall, Q_{max} , voided volume and voiding time in patients did not differ from the values in the reference group. A plateau-shaped pattern was seen in 3/74 patients (4.1%) and in 7/138 men in the reference group (5.1%), $p=0.74$ and a significant PVR was measured in 24 (30.8%) patients, median 100 mL [80.3-138.8].

Of 11 patients who showed significant complaints, abnormal flow pattern or significant PVR were advised to revisit our outpatient department for further analysis, three showed up for further consultation and investigation. One patient had urethral structuring, urethraplasty was proposed and one had a significant PVR, clean intermittent catheterisation was advised.

Interpretation of results

Most boys presented in infancy or in childhood with UTI, UI or LUTS instead of hydronephrosis. Therefore it is likely that they represent the mild end of the infravesical obstruction cases, and more in particular the mild end of the PUV spectrum. Although there is no reference standard for IPSS values in young asymptomatic men in our study we found that patients had the same median IPSS as men in the reference group.

In our group 2.3% reported significant urgency incontinence. Although this is slightly more than reported in literature for healthy young men [1], a review on outcome after endoscopic treatment of infravesical obstruction showed that post treatment 19% suffered from UI. [2] The fact that we found fewer patients with UI may be explained by the relatively high number of patients with mild infravesical obstruction. An unexpectedly relatively high number of patients reported PMI at follow-up. Though PMI is known to be more prevalent after hypospadias surgery, we have no explanation for the occurrence of PMI in boys treated for infravesical obstruction. The FVC's show predominantly normal results, with on average normal frequency and voided volumes.

A minority of patients had a too low or too high frequency or too large voided volumes, possibly fitting to long term bladder function after infravesical obstruction. Uroflowmetry results were likewise reassuring except for relatively large voided volumes in a few patients. Although average scores for LUTS and average uroflowmetry results were quite gratifying, there were a small number of patients with moderate symptoms or abnormal flow results. These patients were all invited for further consultation, however, only three signed up. The condition of the patients who did not show up is unknown. A shortcoming of this study is the lack of ultrasonography to check the upper tracts. The few patients who came for further investigation had normal upper tracts.

Concluding message

Most young adult men treated for mild urethral obstruction in childhood have few micturition symptoms and good uroflowmetry results at follow-up, similar to men in the reference group. Some report regular incontinence. Although complications were rarely seen, low threshold investigation of the urinary tract is recommended in patients with complaints.

References

1. Markland AD, Goode PS, Redden DT, Borrud LG, Burgio KL. (2010) Prevalence of urinary incontinence in men: Results from the national health and nutrition examination survey. J Urol 184: 1022-1027.
2. Hennis PM, van der Heijden GJ, Bosch JL, de Jong TP, de Kort LM. (2012) A systematic review on renal and bladder dysfunction after endoscopic treatment of infravesical obstruction in boys. PLoS One 7: e44663

Disclosures

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