

RECONSTRUCTIVE UROLOGY

Free neurovascular transfer of latissimus dorsi muscle for the treatment of bladder acontractility: II. Clinical results

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Purpose: Until now patients with bladder acontractility were destined to lifelong clean intermittent catheterization with all of its inherent risks. Previous experimental studies demonstrated that voluntary voiding can be restored by microneurovascular free transfer of a carefully selected muscle flap. We present the selection criteria, modifications in technique, follow-up schedule and long-term results in 20 patients treated with transplantation of latissimus dorsi muscle to the bladder.

Materials and Methods: In 20 patients with bladder acontractility requiring intermittent catheterization for at least 2 years we performed latissimus dorsi detrusor myoplasty. Preoperative evaluation included urodynamic assessment, cystoscopy, upper tract imaging and electromyography of the rectus muscle. The procedure involves transfer of a free neurovascular latissimus dorsi muscle flap to the pelvis where it is anastomosed to the lowest motor branches of the intercostal nerve and deep inferior epigastric vessels. Patients were instructed to attempt voluntary voiding 3 months postoperatively. Follow-up included urodynamic evaluation, biannual Doppler ultrasonography and annual dynamic computerized tomography.

Results: Annual dynamic computerized tomography and/or biannual Doppler ultrasonography demonstrated vascularization and contractility of all transplanted muscle flaps. Mean follow-up is 44 months (range 18 to 74). Of the 20 patients, 14 were able to void spontaneously within 4 months postoperatively with post-void residual volumes of less than 100 cc, voluntary voiding was restored by bladder neck incision in 4, and 2 (10%) still require self-catheterization. Postoperative detrusor pressures ranged from 5 to 218 cm. H₂O (mean 72, median 55). None of the patients had morphological and functional changes of the upper tract, or de novo incontinence postoperatively.

Conclusions: Functioning free muscle transplantation was able to restore voluntary voiding in patients who had previously been dependent on long-term catheterization. Voluntary voiding has been maintained several years postoperatively without deterioration of upper tract function.

Editorial Comment

Previous work had shown that functional muscle transplantation may also be useful for the treatment of patients with bladder acontractility. This paper now shows for the first time a larger series of patients treated with free neurovascular transfer of latissimus dorsi muscle with a mean follow-up of 44 months, with a minimum follow-up of 18 months. This technique was successful in 90% of the patients who all were catheterizing themselves prior to surgery for at least 2 years. However, not all of them succeeded with the muscle transfer procedure alone. 20% of the patients needed a uni- or bilateral bladder neck incision to be able to void spontaneously with a residual volume of less than 100 cc. Is of note that none of the patients developed urinary incontinence.

The present study shows that restoration of intentionally voiding is possible in patients with bladder acontractility using careful selection criteria and with results which are persistent and do not lead to secondary complications in the long run.

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Comparison of clinical and urodynamic outcome in orthotopic ileocaecal and ileal neobladder

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Objective: Aim of this study was to evaluate the clinical and urodynamic results in patients who had undergone orthotopic bladder substitution with ileocaecal (Mainz pouch procedure) or ileal (Abol-Enein and Ghoneim procedure) segments and who had a minimum follow-up of 12 months.

Methods: Mainz pouch procedure (MP) was performed in 19 patients (mean age 62.4 years, median follow-up 36 months) and Abol-Enein and Ghoneim procedure (AG) in 36 patients (mean age 64.3 years, median follow-up 31 months). Complications and urodynamic findings were compared in both groups.

Results: Complications related to the pouch were (MP and AG groups, respectively) ureterointestinal anastomotic stenosis (10.5% versus 5.7%), pouch-urethral anastomosis stenosis (5.3% versus 5.5%), pouch-ureteral reflux (7.9% versus 4.2%), and pyelonephritis (15.8% versus 13.8%). At 12 months postoperatively, daytime incontinence rates were 5.3% versus 5.5% and nighttime incontinence (twice weekly or more) rates were 21% versus 8.4% in MP and AG groups. In urodynamic evaluation, which was performed in 39 patients at 12 months postoperatively, both groups showed adequate bladder capacity, the mean values of which were 426 ± 34 ml in MP group and 442 ± 27 ml in AG group ($p > 0.05$). The mean value of maximal flow rate was 19.6 ± 3.7 ml/s in MP group and 16 ± 6.1 ml/s in AG group ($p > 0.05$). The mean residual urinary volume was 37 ± 8.2 ml in MP group and 45 ± 7.1 ml in AG group ($p > 0.05$).

Conclusion: The comparison between two types of bladder substitution, namely ileocaecourethrostomy (Mainz pouch procedure) and ileal reservoir (Abol-Enein and Ghoneim procedure) has demonstrated that urodynamic findings showed no significant difference between two groups.

Editorial Comment

Several papers have tried to compare different gastrointestinal segments with regards to their use and possible complications in orthotopic neobladders. In this paper a group actually not so experienced with the technique of orthotopic neobladders as some centers of excellence have demonstrated that in their hands no real difference with regards to the outcome after a minimum follow up of 12 months could be detected. It is notable, however, that the incidence of ureterointestinal anastomotic stenoses was lower in patients with a subserosal technique. There was also a lower incidence of pouch-ureteral reflux with the ileal subserosal technique. The value of anti-refluxing techniques in orthotopic low pressure reservoirs is still under discussion. What we can learn from this paper is the fact that submucosal embedding of ureters is not only a more difficult way of inserting ureters but it is also probably more prone to complications. This may especially be true in those centers where the numbers of orthotopic neobladder procedures are not extremely high (1). Nevertheless, we must also consider other factors that are important to diminish a stenosis or stricture rate in ureterointestinal anastomosis such as the length of mobilized ureters, handling of the ureters during dissection, preservation of periureteral tissue and thus vascular anastomosis etc.

The last issue is also how we prepare ourselves for future instrumentation of the upper urinary tract in orthotopic neobladders. The location and angle at which ureters insert into the pouch may be factors for an easy or difficult access from below.

Reference

1. Stenzl A, Hobisch A, Strasser H, Bartsch G: Ureteroileal anastomosis in orthotopic urinary diversion: how much or how little is necessary? *Tech Urol.* 2001; 7: 188-95.

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