

LONG-TERM OUTCOME OF AUGMENTATION ILEOCYSTOPLASTY IN PATIENTS WITH NEUROGENIC LOWER URINARY TRACT DYSFUNCTION

Hypothesis / aims of study

Augmentation cystoplasty has long time been considered the golden standard in patients with neurogenic lower urinary tract dysfunction (nLUTD) refractory to other treatments. The goal of treatment is to protect the upper urinary tract as well as to improve bladder function and quality of life. The place of invasive therapy is being challenged by other therapies like botulinum toxine injections and neuromodulation. Our study describes the long-term outcome of patients with nLUTD who underwent ileocystoplasty.

Study design, materials and methods

We collected retrospective data of all patients who underwent ileocystoplasty between 1997 and 2011. We only included patients who underwent clamshell cystoplasty. We documented early postoperative (until day 30) and late postoperative (after day 30) complications. Pre- and postoperative evaluation contained history taking, clinical examination, urodynamic evaluation and biochemical analysis. We collected objective long-term outcome parameters: incontinence, need for further treatment, urinary infections requiring antibiotics, lithiasis and metabolic acidosis. We also analyzed the subjective overall satisfaction through standard questioning during history taking.

Results

We obtained data of 32 patients with an average age of 38 (16-59). The median follow-up was 51 months (range 2-173). Underlying neurogenic disorders were meningocele in 9 patients, spinal cord injury in 13, multiple sclerosis in 7, Guillain-Barré in 1, cerebrovascular accident in 1 and cerebral palsy in 1.

Average duration of the operation and the blood loss was respectively 136 minutes (65-300) and 242cc (100-700). In 16 patients, a continent stoma was constructed simultaneously. The median hospital stay was 20 days (7-109).

Table 1 summarizes the early and late complications:

Table 1: early and late complications of ileocystoplasty:

| Early complications | N = (%) |
|-------------------------------------|----------------|
| Bleeding with need for embolisation | 1 (3,1) |
| Abcedation at the level of incision | 1 (3,1) |
| Wound herniation | 1 (3,1) |
| Pneumonia | 1 (3,1) |
| Ileus | 1 (3,1) |
| Late complications | N = (%) |
| Vesico-intestinal fistula | 1 (3,1) |
| Vesico-vaginal fistula | 1 (3,1) |
| Subobstruction | 2 (6,2) |

Before the operation, 25 patients were incontinent and used pads. This decreased to 17 postoperative. Of these, 6 patients underwent additional incontinence surgery. In 3 of them, the incontinence persisted. One patient even underwent a cystectomy with Bricker derivation because of persistent urine loss.

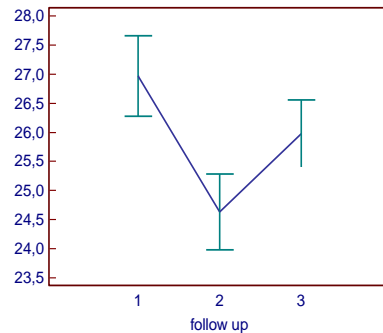
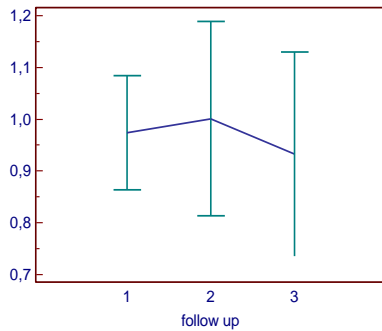
25 patients practiced clean intermittent self-catheterization (CICS) preoperatively. Postoperative, all 32 practiced CISC.

Preoperatively, 24 patients took antimuscarinic agents whereas after surgery 13 patients. In 3 of the cases, this was started initially postoperatively because of low capacity but could be stopped later. 9 patients took the agents because of urine loss in between catheterizations. Two of these nine still felt bladder contractions, seven had insensitive loss. One patient took antimuscarinic drugs because of frequent catheterization due to urgency.

22 patients suffered from recurrent urinary infections preoperatively and 4 from bladder lithiasis. Postoperatively, this was 17 and 2 respectively. Seven patients complained of diarrhea and 11 produced an important amount of mucus that required frequent bladder irrigations.

Urodynamic evaluation revealed a decreased compliance in 14 patients preoperatively, postoperatively in 2, noted respectively 2 and 4 years postoperatively. The average bladder capacity increased from 293 ml (79-615) to 499 ml (209-750). Video-urodynamics showed reflux in 11 patients. This was reduced to 3 after surgery.

Biochemical parameters consisted of serum creatinine and serum bicarbonate, which we documented preoperatively, 1 year postoperative and at last follow-up. These revealed a stable kidney function. Bicarbonate decreased the first year postoperative, at last follow-up the levels increased again.



Based on the biochemical results, 2 patients needed vitamin B12 substitution and 2 bicarbonate substitution. As to the subjective parameter, the overall satisfaction, 3 patients explicitly mentioned not being satisfied. Reason in the three cases were stoma related issues.

Interpretation of results

Clam Shell ileocystoplasty remains a definitive therapy for patients with refractory neurogenic detrusor overactivity or decreased compliance. It is a major operation with possible complications on short and long term.

Our results show indeed that the urodynamic parameters, compliance and capacity, increase. Biochemical results reveal a stable kidney function. Bicarbonate levels, as parameter of metabolic acidosis, know a nadir the first year postoperative but increase again afterwards.

However, we notice that this operation falls short in improving quality of life. Many patients still complain of urinary loss. Moreover, the need for antimuscarinic drugs remains high. This could be explained by the remaining presence of neuropathic bladder tissue after clam shell cystoplasty.

All patients catheterize postoperatively. Although bladder lithiasis is less common, a great part of them still develops frequent urinary infections.

Concluding message

Augmentation ileocystoplasty is an invasive treatment option with potential complications. This study reveals that kidney function can be protected without much additional metabolic side effects. It also has a positive impact on urodynamic parameters, creating a "safe" bladder.

Though, there still is incontinence in many cases and recurrent infections still occur. Long-term follow-up and further treatment of additional symptoms is necessary. The cost-benefit of this major surgery in this predominantly young, therapy resistant, neurogenic patient population needs thorough consideration in the light of new, less invasive treatment options like botulinum toxin injections and neuromodulation.

Disclosures

Funding: None **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** None needed **Helsinki:** Yes **Informed Consent:** Yes