

LONG TERM RESULTS OF RECONSTRUCTIVE BLADDER SURGERY IN MULTIPLE SCLEROSIS PATIENTS WITH REFRACTORY NEUROGENIC DETRUSOR OVERACTIVITY

Hypothesis / aims of study

The prevalence rates for Multiple Sclerosis (MS) are estimated to be 1/1000 for Americans and 2/1000 for northern Europeans. [1] 50-90% complain of LUTS and the incontinence prevalence is between 37% and 72%. [2] Neurogenic detrusor overactivity (NDO) is the most common urodynamic diagnosis (34-99%) and concurrent detrusor external sphincter dyssynergia (DESD) is seen in 30-65%. Low bladder compliance is much less common, but important to consider since 45-65% of those patients develop upper tract complications. [3]

There is little data on the long-term management of NDO refractory to pharmacologic therapy in MS patients. The aim of this study was to evaluate the efficacy, morbidity and long term outcomes of reconstructive surgery intended to provide the patient with a large capacity, low pressure bladder managed by either intermittent self catheterization or an incontinent abdominal stoma.

Study design, materials and methods

This is a retrospective observational study of one surgeon's experience with 19 consecutive patients (1984-2008) with MS and NDO who underwent augmentation enterocystoplasty (EC) +/- a continent or incontinent abdominal stoma (ileo-vesicostomy). Chart review and telephone interview were the main methods of data collection. Preoperative evaluation included history and physical examination, routine labs, vitamin B12 levels, videourodynamic study (VUDS), cystoscopy, and upper-tract imaging (sonogram or CT).

The primary indication for EC was incontinence due to NDO refractory to treatment for >2 years. Patients had to be willing and able to catheterize the urethra. A continent abdominal stoma was recommended to patients unable to catheterize the urethra (eg wheelchair bound women with adductor spasticity) and an ileovesicostomy was reserved for those unable to catheterize at all.

Recommended follow-up was every 3 months for the first year and then bi-annually thereafter and was comprised of focused history and exam with alternating VUDS and renal/bladder ultrasound with routine labs. Vitamin B12 levels were performed yearly. Cystoscopy was performed as needed for hematuria, lithiasis and recurrent UTI. Long-term outcomes and complications were assessed by validated questionnaires and chart review including pre and post op VUDS.

Results

19 subjects (14 women, 5 men) with chronic progressive MS underwent EC. Mean age was 53 years (26-70) with a median follow-up of 6.5 years (3-28). Thirteen were wheelchair bound (10 quadriplegic, 3 paraplegic). Indications included NDO (15) and low bladder compliance (6), occurring in combination in 2 patients. 10 of the NDO, and 2 of the low bladder compliance patients had concurrent DESD. Additional preoperative diagnosis included urinary incontinence (19), lithiasis (4), reflux (1), hydronephrosis (4) and pyonephrosis (1). A colonic segment was used in 3 patients, an ileocecal in 7 and an ileal in 9. Five patients had a continent stoma, 5 had an ileovesicostomy, 2 underwent pubovaginal sling, 2 had a bladder neck closure and one had a synchronous nephrectomy (for pyonephrosis). All, except those with ileovesicostomy, required intermittent self-catheterization.

One patient was later excluded because it was determined that she did not have MS and two patients did not attend post op visits because of distance and were followed by telephone. Two patients died in the perioperative period, one patient committed suicide 3 months post-operatively and one patient suffered a pulmonary embolus as an outpatient 2 weeks post-op. 7 patients died during follow-up of unrelated causes at a mean 10.8 years after surgery (6-21 years).

15/16 (93%) had a successful outcome on a modified PGI-I with 12 (75%) as very much improved, 3 (19%) improved, and 1 (6%) worse. All patients had normal B12 levels on follow-up and 15/16 had normal creatinine levels. Urodynamic parameter results are presented in Table 1. Two patients developed small bowel obstruction 3 and 7 years after surgery, with one undergoing lysis of adhesions. Two patients underwent stomal stenosis 4 and 6 years after surgery, both undergoing operative revision. 2 patients had recurrent febrile UTI and one patient developed a bladder stone 5 years after EC. No patients developed hydronephrosis, troublesome diarrhea or cancer in the augmented bowel, although 1 patient had nephrogenic adenoma.

Table 1: Urodynamic Parameter Results

	Pre-op mean(range)	Post-op mean(range)	P value
Bladder Capacity	190 ml (58-486)	699 ml (105-955)	<.0001
Max detrusor Pressure	62 cm H ₂ O (10-123)	13 cm H ₂ O (3-28)	<.0001
Bladder compliance	30.9 ml/cm H ₂ O (1.4-42.5)	62.2 ml/cm H ₂ O (13-93)	<.0001

Interpretation of results

Augmentation EC +/- continent abdominal stoma or ileovesicostomy is a major surgical procedure to consider in these high risk patients. Although this study is limited by its small series of patients with advanced MS undergoing different surgical procedures, EC was effective in resolving incontinence and protecting the upper tracts. Furthermore, the procedure significantly improved all urodynamic parameters and all but one patient, the treatment failure, had an acceptable bladder capacity and compliance post-operatively.

One patient died in the peri-operative period from a PE as an outpatient 3 weeks post-op in 1984, before the time of anticoagulation prophylaxis. Most patients who died in the followup period succumbed from complications of their MS/quadruplegia – none had renal failure or urosepsis except for the single treatment failure, who had stone disease pre-operatively that did not resolve after surgery, experienced recurrent febrile UTIs and ultimately passed away from sepsis secondary to stones 6 years post-operatively.

We believe the morbidity and mortality was acceptable for this procedure in this patient population. Unfortunately, immediate post-operative documentation was not available for chart review, and any minor complications during the inpatient hospital course are not known. During outpatient follow-up, most complications arose years after surgery and only one patient required an emergent procedure.

Concluding message

Augmentation EC is a major surgical procedure with high potential morbidity, but these data suggest that is efficacious in the long term with acceptable morbidity and mortality. We believe it is an underutilized procedure for refractory NDO in MS patients.

References

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