

Bladder management, patient satisfaction and complications in spinal cord injured patients after augmentation enterocystoplasty – A long-term follow-up



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Aims of study

To investigate the real world outcome after augmentation enterocystoplasty (AE) in spinal cord injured (SCI) patients with refractory neurogenic lower urinary tract dysfunction.

Results

Seventy-nine patients (62 men and 17 women) were included. The mean age at operation was 39.4 ± 11.5 years and the mean follow-up period was 128 ± 85.2 months (range, 0-293 months). At follow-up, 5 (6.7%) patients had spontaneous voiding, 60 (80%) had to perform CIC, and 10 (13.3%) chose to keep the indwelling urethral catheter or cystostomy. The catheter dependent rate was 93.3%, complete catheter dependent rate was 76%. The renal function showed no much different after the operation. Three patients developed end-stage renal disease postoperatively. Four patients had renal function drop of more than 20%. The incontinence score showed much improved symptoms as 2.58 ± 0.95 preoperatively vs. 0.39 ± 0.81 postoperatively ($p=0.000$). A total of 41.8% patients experienced recurrent urinary tract infection needing medical treatment; 21.5% of patients suffered from chronic diarrhea. Overall, 45.6% of patients had experienced complications needing surgical interventions, most for bladder stones. Life-threatening complications like bowel obstruction, bladder cancer also appeared. The majority (86.8%) of patients reported moderate to excellent satisfaction with the outcome. The urodynamic parameters showed much improved in voiding and storage function (**Table 1**). The incontinence grade was also much improved. Most patients depend on catheterization to void.

Table 2. The numbers of patients with major complications requiring further surgical interventions (including mortality)

Complications	Operation	Patient Num
Poorly compliant bladder & Urine extravasation	Revision	7
Bladder neck contracture	Transurethral bladder neck incision	5
Urethral stricture	Optic urethrotomy	6
Bladder stones	Cystolithotripsy	23
Upper urinary tract stone	Percutaneous nephroscopic lithotomy	2
Recurrent pyelonephritis	Nephrectomy	1
Incontinence	Suburethral sling procedure	2
Detrusor overactivity/ Autonomic dysreflexia	IntradetrusorobotulinumtoxinA injection	6
Difficult catheterization	Urethral onabotulinumtoxinA injection	2
Urethral fistula	Urethral fistula repair	2
Bladder cancer	Transurethral tumor resection	3
Adhesion ileus	Small bowel segmental resection	1

Materials and methods

Retrospective follow-up investigation in a single center. In 79 patients, urodynamic data, renal function, incontinence before and after AE, voiding types, clinical outcome and complications were evaluated.

Table 1. Baseline and follow-up urodynamic results in the patients who received augmentation enterocystoplasty

	baseline	follow-up	P value
Cystometric Bladder capacity (mL)	145.4 ± 88.8	472.7 ± 125.6	<0.0001
Compliance (mL/cmH ₂ O)	8.21 ± 5.96	58.1 ± 51.1	<0.0001
Maximal voided volume (mL)	52.7 ± 56.4	84.7 ± 151.6	0.104
Qmax (mL/s)	3.69 ± 3.38	2.05 ± 4.78	0011
PVR (mL)	92.3 ± 86.3	425.1 ± 189.3	<0.0001

The reason for the high rate of catheter usage is most likely because the majority of patients was neurogenic in nature (spinal cord injury or myelomenigocele), which impaired their bladder sensation or decreased voiding efficiency, thereby making it necessary for them to perform CIC or long-term catheterization after AE. Due to the high rate of catheterization, associated high rate of recurrent urinary tract infection may happen. The renal function change was controversial. Severe renal function decreasing was rarely noted. Several long-term complications might happen and required surgical interventions. Including life-threatening complications such as ileus and bladder cancer. The majority of surgical intervention comes from treatment of urinary stones. The complications and subsequent operations were list in **Table 2**.

Conclusion

AE is a procedure with long-term durability and high rates of patient satisfaction. However, many bothersome complications could happen and impact on life quality. Patients might experience life-threatening complications. Both the patients and doctors need to consider the advantage and disadvantage carefully before performing the operation.

Disclosures Statement: None