

## UROLOGIC MANAGEMENT OF ADULT PATIENTS WITH NEUROGENIC BLADDER AND MYELOMENINGOCELE

### Hypothesis / aims of study

The overwhelming majority of literature evaluating the management of neurogenic bladder (NGB) in the myelomeningocele (MMC) patient population focuses on pediatric patients. As care of these patients has improved over the years, and life expectancy has increased, this has now become a disease of adult patients as well. We sought to evaluate bladder management in these patients.

### Study design, materials and methods

IRB approved retrospective review of medical records of patients with diagnosis of MMC currently followed at our institution.

### Results

We identified 98 patients that are followed on an annual basis in the urology clinic (48 females, 50 males; mean age of 38, ranging 20 to 69 years). Mean follow up was 8 years. Bladder management in this population consisted of clean intermittent catheterization (CIC) in 67% of patients, volitional voiding in 9%, indwelling catheters in 7%, urostomy in 7%, adult diapers only in 5% and condom catheters are used by 3% of patients.

65 patients (65%) of this cohort underwent at least one surgical reconstruction of the lower urinary tract. 25 of these patients underwent bladder augmentation alone; 25 patients underwent augmentation with continent urinary stoma formation; nine patients underwent ileal conduit or ileovesicostomy formation; six patients had an artificial urinary sphincter placed. 11 out of 50 bladder reconstructions were performed before the age of 18 at the pediatric facility. Six patients also had a nephrectomy performed for various causes.

35% of this cohort never had any surgical interventions. Their bladder management consisted of CIC in 54% of patients, volitional emptying in 23%, indwelling catheters in 14%, and adult diaper in 8%.

Mean creatinine of all 98 patients is 0.73mg/dL, ranging from 0.2 to 3.8, with seven patients with creatinine > 1.1mg/dL. Patients in the bladder augmentation group with or without continent urinary stoma (50 patients) demonstrated mean creatinine of 0.78 mg/dL (range 0.24 -3.8).

Bladder stones requiring surgical intervention developed in 17 patients. 14 (82%) of these formed in the previously augmented bladders. In addition, 6 patients required stoma revision.

Urodynamic profile was available in 29 patients. Poor compliance was seen in 34%, sphincteric incontinence in 62% and neurogenic detrusor overactivity in 7%. The follow up evaluation was performed in patients that declined surgical intervention (15 patients); results in that group showed continued poor compliance in 46%, sphincteric incontinence in 73% and neurogenic detrusor overactivity in 15%. Repeat studies were also done in 14 patients that continued with urine leakage after bladder reconstruction. These studies revealed poor compliance in 14%, sphincteric incontinence in 50% and no neurogenic detrusor overactivity.

### Interpretation of results

Patients with MMC manage bladder in a variety of ways. Neurogenic bladder of adult patients with MMC is a dynamic entity that requires close follow up and management. Urodynamic profile, including compliance and sphincter function are not static and often worsen with time. Patients with prior reconstructions require close follow up as rates of stone formation are higher than non-reconstructed group.

### Concluding message

As MMC patients transition to adulthood, continuity of urologic care is often interrupted. Management of NGB in patients with MMC is clearly a major issue for the adult urologist. A multitude of options is available depending on the patient's functional status and motivation. Current literature lacks data on bladder management of adults with NGB secondary to MMC.

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<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>IRB at Los Amigos Research and Education Institute (LAREI)</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>No</b>