

## Abstracts: Clinical

MP3.01: Novel transobturator sling fixation technique in male incontinence surgery .....	2
MP3.02: Long term observational follow up study of women with Fowler’s Syndrome undergoing transperineal urethral sphincter botulinum toxin injections for Urinary Retention .....	3
MP3.03: CATPUB – combined anterior transmembranous posterior urethral bulbar cuff placement of AUS AMS 800 .....	5
MP3.04: Optilume® drug coated balloon for urethral stricture treatment in neurogenic patient with CIC .....	6
MP3.05: Clinical bladder function after circumtrigonal AMS 800 cuff placement in patients with an absent urethra .....	7
MP3.06: Analysis of the onset of lower urinary tract symptoms in multiple sclerosis patients.....	8
MP3.07: Clinical predictors of neurogenic lower urinary tract dysfunction in persons with multiple sclerosis .....	10
MP3.08: Development of unfavorable urodynamic parameters within the first year after spinal cord injury .....	11
MP3.09: The importance of timely diagnose neurogenic bladder following spine fracture without or with minimal movement disorders: case report .....	12
MP3.10: Neurological injury from sacral Tarlov cysts and correlation with pelvic sensory and visceral symptoms.....	13
MP3.11: Higher susceptibility of urinary tract infections in patients with indwelling catheters compared to those relying on intermittent self-catheterization: myth or reality? .....	14
MP3.12: Urological management at discharge from acute spinal cord injury rehabilitation: a descriptive analysis from a population-based prospective cohort.....	15
MP3.13: Post COVID-19 demyelinating disease and the effect on lower urinary tract. A rare case of a 14-year-old man .....	16
MP3.14: Patient satisfaction on bladder irrigation with tap water to prevent and treat catheter-associated urinary tract infections with mild symptoms. ....	17
MP3.15: Local anaesthetic intra-detrusor OnaBotulinum Toxin A tolerability study .....	18
MP3.16: Cystatin C-creatinine based estimated glomerular filtration rate equation captures greater kidney dysfunction than creatinine alone equation in non-weight bearing patients .....	19
MP3.17: Sex differences in urological management during acute spinal cord injury rehabilitation: Results from a prospective multicenter longitudinal cohort study .....	20

### **MP3.01: Novel transobturator sling fixation technique in male incontinence surgery**

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**Introduction:** A stable fixation is critical for success of male slings, particularly in the early postoperative phase. Various techniques have been developed like sling tunneling, crossing, or suture fixation. We applied a novel fixation technique to a male transobturator sling.

**Methods:** DynaMesh®-PRM visible (DynaMesh, Germany) is made of PVDF (monofilament polyvinylidene fluoride) with integrated iron particles for MRI visibility. We used a single-incision technique and synthetic cyanoacrylate surgical glue (Glubran®2, Dahlhausen, Germany) to affix the tape to the lower branches of the pubic bone. 14 Patients (median age 67.3 years) with mild to severe stress urinary incontinence were treated from 11/2015 to 12/2019. Patient characteristics, patient reported outcomes, and complications were recorded. MRI studies were conducted in selected patients.

**Results:** The novel fixation technique was easily and safely feasible in all patients. After a median follow-up of 12.5 months 8/14 (57.1%) patients were dry, 5/14 (35.7%) improved, and 1 patient (7.1%) failed. We observed 1 transient hematuria (7.1%), 6 (42.9%) cases of transient local pain, but no inflammatory signs and no major complications. 4/14 patients (28.6%) reported de novo dysuria, 1 patient (7.1%) de novo urge incontinence. In the MRI studies the mesh structure, the course of the tape, and the relocation of the urethral bulb were well visualized.

**Conclusions:** With surgical glue an immediate and stable sling fixation could be achieved. The overall improvement rate was 92.8%. This novel fixation technique and the innovative PVDF sling facilitate this male incontinence procedure and make it more reliable. The visible mesh technology is an important step forward to illustrate the mode of action of male slings and offers the opportunity to visualize possible failures and complications.

**MP3.02: Long term observational follow up study of women with Fowler's Syndrome undergoing transperineal urethral sphincter botulinum toxin injections for Urinary Retention**

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**Introduction:** Fowler's syndrome, characterized by a primary disorder of urethral sphincter relaxation, was firstly described in the 1980s and is characterized by urinary retention in young women and abnormal electromyographic activity of the urethral sphincter (decelerating bursts and complex repetitive discharges). The standard treatment is sacral neuromodulation which is generally effective in restoring voiding functions, however this is not suitable for all patients. An alternative treatment option is botulinum toxin injections into the urethral sphincter.

**Methods:** This was a prospective study to evaluate the long-term efficacy and safety of Botulinum toxin injections into the external urethral sphincter in women with Fowler's Syndrome who attended a tertiary referral centre between 2010 and 2019. All participants underwent investigations including urethral sphincter electromyography, urethral pressure profilometry, postvoid residual measurement and urodynamics to confirm the diagnosis.

The procedure was performed in an outpatient setting; 100 U of onabotulinum toxinA dissolved in 1 mL of 0.9% sodium chloride was injected into the striated urethral sphincter (0.5 mL [50 U] on either side).

Patients were classified as responders if there was a patient-reported improvement in at least one of the following parameters at 1 month after the treatment: catheterization requirement, number of episodes of urinary retention that required A&E visits, pain/discomfort during intermittent self-catheterization, lower urinary tract symptoms.

Data regarding number of injections and time interval between the injections was also collected.

**Results:** 28 women (mean age 37; range 19-72) with urinary retention due to Fowler's syndrome were included. 125 injection sessions were performed. 15 patients (54%) were classified as responders and 8 patients (28.6%) continued to return for injections.

In the 28 women who underwent 125 injection sessions an improvement in at least one of the patient-reported outcome measures was reported

following 97 (78%) injections: less catheterization requirement (n=89) (reduced daily catheterization frequency (n=24), only occasional requirement for catheterization (n=11), discontinued catheterization (n=54)), reduced pain during catheterization (n=24), less number of A&E visits because due to the inability to introduce catheters, improvement of the strength of urine flow (n=6), in particular, storage lower urinary tract symptoms (n=2), .

Mean interval between injections in women returning for repeat injections was 4.5 months.

No serious adverse events were reported. Adverse effects reported included: de novo transient mild stress urinary incontinence (n=3) lasting few days, and on day 1 of the procedure urinary retention (n=2), mild oozing of blood (n=1) and soreness (n=1) .

**Conclusions:** The results of this long-term observational follow up study suggests that botulinum toxin injections into the urethral sphincter are a safe and effective treatment option in a cohort of patients with urinary retention due to a primary disorder of urethral sphincter relaxation (Fowler's syndrome).

**MP3.03: CATPUB – combined anterior transmembranous posterior urethral bulbar cuff placement of AUS AMS 800**

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**Introduction:** The ideal artificial urinary sphincter (AUS) cuff placement for neurogenic patients is at the bladder neck. What to do after cuff erosion into the bladder neck/urethra? Is a new cuff placement feasible? We describe five cases of successful AUS placement (follow-up up to 14 years) using an alternative surgical approach, as part of a pilot study.

**Methods:** The placement of a bladder neck cuff after erosion is problematic with high re-erosion rates through the scar tissue. A combined suprapubic and perineal approach was selected to limit dissection alongside the inferior pubic rami. The cranial border of bladder dissection was above the level of the previous erosion. The distal border was below the membranous urethra around the urethral bulb. The cuff was inserted with the help of the measuring tape, combining the suprapubic and the perineal wounds, staying clear of the areas of previous erosion and scar tissue. Cuff sizes used were 8, 11, 11, 11 and 14.5(7+7.5)cm respectively.

**Results:** In four patients, there were no intraoperative or postoperative complications and all reached full continence, of which 2 remained deactivated. One patient with an initial bladder neck cuff placement failed due to trigonal perforation. A CATPUB placement was attempted during the same surgery, but the AMS 800 system needed to be removed because of infection one week post surgery.

**Conclusions:** The CATPUB cuff seems to be a viable alternative in some cases where a bladder neck cuff is not feasible. The alternative would have been a continent or incontinent urinary diversion.

**MP3.04: Optilume® drug coated balloon for urethral stricture treatment in neurogenic patient with CIC**

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**Introduction:** Urethral fibrosis and stricture formation are problematic in neurogenic patients with clean intermittent catheterization (CIC). Paralysis combined with spastic pelvic floor dysfunction often leads to urethral injury during CIC. In due time a lead pipe urethra and recurrent stricture formation may result. We describe the application of Optilume® drug coated balloon dilatation for urethral stricture in a paraplegic patient needing CIC for bladder emptying.

**Methods:** A 22-year-old man suffered a diving accident 2006 resulting in an incomplete T4 spinal cord injury (SCI) with paralysis and detrusor sphincter dyssynergia (DSD) type 3. To empty his bladder CIC was needed. Constant sphincter spasm during CIC caused urethral injury, false routes and subsequent bulbopenile urethral strictures. During the past 14 years, the patient received annual Botox endoscopically to treat detrusor overactivity. Furthermore, the patient performed regular urethral self-dilatation. Progressive fibrosis lead to tight stricture formation in the proximal bulbous urethra, causing difficulty in CIC. With full informed consent, the urethral stricture was treated by paclitaxel coated balloon dilatation up to 30 French (F) through ten minutes at ten bar pressure (Optilume®). A 14F transurethral catheter was placed for 14 days, followed by reuptake of CIC.

**Results:** The procedure and follow-up were uneventful. CIC was much easier, although the DSD still remains.

**Conclusions:** Early results are promising in terms of alleviating the symptoms and signs of the tight proximal urethral stricture. Future treatment of the patient depends on bladder function and DSD. Even though the urethral stricture was treated, the patient still might need a bladder augmentation with the configuration of a Mitrofanoff stoma.

**MP3.05: Clinical bladder function after circumtrigonal AMS 800 cuff placement in patients with an absent urethra**

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**Introduction:** The trigone seems to play an essential role during micturition by assisting opening of the bladder neck. Tubularization of the trigone to recreate a neourethra changes the way of bladder emptying. We evaluate six female patients that underwent trigonal tubularization with the implantation of an artificial urinary sphincter (AUS) and circumtrigonal cuff placement.

**Methods:** A neourethra was recreated because of an absent anatomical urethra secondary to trauma or erosion of a previous AUS cuff. For continence, an AUS cuff was placed around the tubularized trigone. This was combined with an ureteroneostomy when needed. Three patients suffered from spina bifida and three patients from severe pelvic trauma with peripheral motor neuron lesions (2 complete, 1 incomplete).

**Results:** Median follow up ten years: Two patients after pelvic trauma could learn to void by abdominal pressure alone. One of these patients developed near to normal detrusor contraction during micturition (incomplete lesion) over time. All other patients needed clean intermittent self-catheterization (CISC). All patients were continent (0-1 safety pad per day). All three patients with spina bifida also needed bladder ileum augmentation after which no spontaneous voiding was neither possible nor recommendable.

**Conclusions:** Trigonal tubularization enables neourethra formation. Combined with a circumtrigonal cuff and AUS placement continence is attained. In one patient with near normal detrusor function spontaneous micturition was possible after opening of the cuff. Trigonal tubularization in this case did not interfere with detrusor function. CISC was otherwise easily performed. Trigonal tubularization seems a feasible alternative for urethral replacement.

**MP3.06: Analysis of the onset of lower urinary tract symptoms in multiple sclerosis patients**

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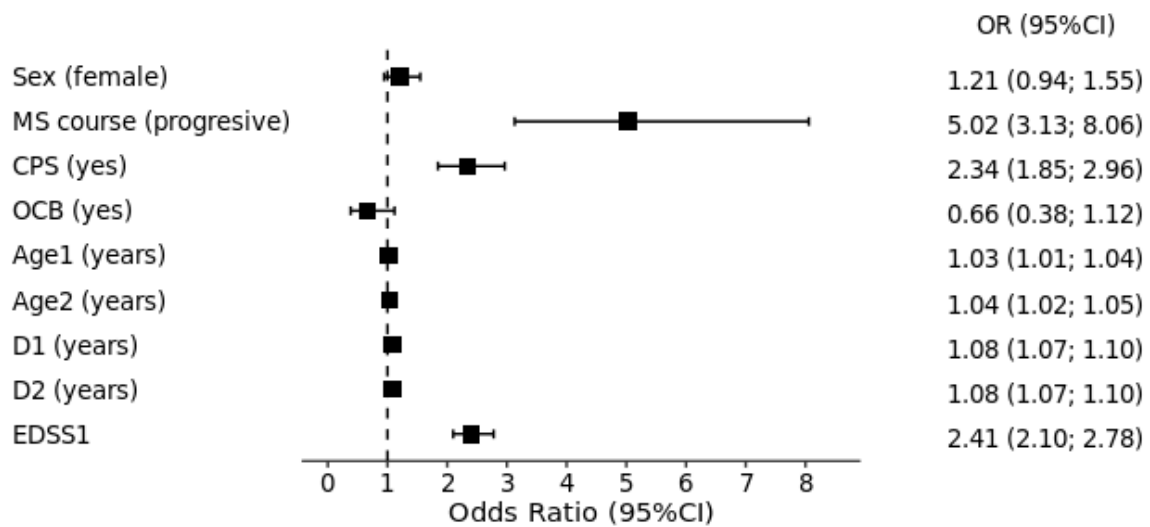
**Introduction:** Lower urinary tract symptoms (LUTS) represent one of the most common consequences of multiple sclerosis (MS). Goal of this study was to estimate the timepoint of onset of the LUTS over the course of MS. In addition, we aimed to determine which of the LUTS develops the first and what are the risk factors for early development of LUTS.

**Methods:** This retrospective non-interventional case-control study included 1355 MS patients. During their routine follow-up visit a structured in-person interview was performed. The data were cross-checked with the medical records. We obtained following data: age at the onset of MS; age at the time of diagnosis of MS; age at the time of data collection; MS course; disability; presence of cerebellar and/or pyramidal symptoms (CPS); presence of LUTS at the time of the structured interview. For statistical analysis we used: the Mann-Whitney test, the Kruskal-Wallis test, the Chi-square test of independence for contingency tables, the univariate logistic regression, the Kaplan-Meier curve and the Cox proportional-hazards model.

**Results:** The prevalence of LUTS in our cohort was 63.6%. The median time elapsed between MS diagnosis and the onset of first LUTS was 3.0 years (IR 1.0 - 8.0). LUTS was a first manifestation of MS in 2% of patients. Storage symptoms (78%) including urgency (49%) were the most frequently reported first LUTS. Voiding symptoms were reported as first LUTS in 17.6% patients. Cumulative relative frequency of patients, who developed LUTS over course of MS was 34.3.% after 1 year duration of MS, 62.7.% after 5 years, 80.7% after 10 years, 91.3.% after 15 years, 96.6% after 20 years and 99.4.% after 30 years. Using the univariate logistic regression the MS course, presence of CPS and disability were identified as factors that significantly increase the odds of LUTS development (Figure 1).



**Conclusions:** Our data suggest, that urgency is the most frequently reported first LUTS, occurring after median time of 3.0 years after MS diagnosis. We identified the progressive course of MS, the presence of cerebellar and/or pyramidal symptoms, higher age and disability at the time of the MS diagnosis as risk factors for early onset of LUTS.



**Figure 1.** The forest plot of odds ratios and their corresponding 95% confidence intervals for the development of LUTS.

OR: Odds ratio, CI: confidence interval, MS course: multiple sclerosis course, CPS: „CPS yes“ group included patients who experienced cerebellar and/or pyramidal symptoms (CPS) as the first manifestation of MS, OCB: „OCB yes“ group included patients with presence of oligoclonal bands (OCB) in the cerebrospinal fluid at the time of diagnosis of MS, Age1: age at onset of first symptoms of MS rounded to nearest whole year, Age2: age at the time of diagnosis of MS rounded to nearest whole year, D1: duration of MS symptoms, i.e. time elapsed since the onset first symptoms attributable to MS rounded to nearest whole year, D2: MS duration, i.e. time elapsed since the diagnosis of MS was made rounded to nearest whole year, EDSS1: Expanded disability status scale total score at the initiation of disease-specific treatment, EDSS1 was collected after stabilization after first MS relapse

**MP3.07: Clinical predictors of neurogenic lower urinary tract dysfunction in persons with multiple sclerosis**

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**Introduction:** Persons with multiple sclerosis often develop neurogenic lower urinary tract dysfunction and have a potential risk of upper urinary tract damage. Common diagnostic tools are urodynamics, bladder diary, uroflowmetry, and post-void residual, but recommendations for their use are controversial. We aimed to identify clinical parameters indicative of neurogenic lower urinary tract dysfunction in persons with multiple sclerosis.

**Methods:** 207 patients were prospectively assessed in 6 clinics specializing in neuro-urology independent of the presence of lower urinary tract symptoms. We analyzed Expanded Disability Status Scale scores, uroflowmetry, post-void residual, rate of urinary tract infections, standardized voiding frequency, and voided volume in correlation with urodynamic findings.

**Results:** We found a significant correlation between post-void residual (odds ratio (OR) 4.17, confidence interval (CI) 1.20 – 22.46)), urinary tract infection rate (OR 3.91, CI 1.13 – 21.0), voided volume (OR 4.53, CI 1.85 – 11.99), increased standardized voiding frequency (OR 7.40, CI 2.15 – 39.66) and urodynamic findings indicative of neurogenic lower urinary tract dysfunction.

Voided volume (OR 3.91, CI 1.22 – 16.56), urinary tract infections (OR 2.52, CI 1.03 – 6.10) and increased standardized voiding frequency (OR 3.70, CI 1.51 – 9.61) are associated with reduced bladder compliance, which is a potential risk for kidney damage.

**Conclusions:** Increased standardized voiding frequency, reduced voided volume, and urinary tract infections are indicative of neurogenic urinary tract dysfunction in multiple sclerosis. Expanded Disability Status Scale is not. Therefore, bladder diary and urinary tract infection rate should be routinely assessed to identify persons who require urodynamics.

**MP3.08: Development of unfavorable urodynamic parameters within the first year after spinal cord injury**

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**Introduction:** In patients with spinal cord injury (SCI), early diagnosis and treatment of neurogenic lower urinary tract dysfunction (NLUTD) play a pivotal role in long-term urological outcomes. Urodynamic investigations are the gold standard to identify NLUTD. Detrusor overactivity (DO), detrusor-sphincter dyssynergia (DSD), maximum storage detrusor pressure greater than 40 cmH<sub>2</sub>O, vesicoureteral reflux and bladder compliance less than 20 mL/cmH<sub>2</sub>O are considered to be unfavorable urodynamic parameters because they are associated with urological morbidity. Until now, no studies have examined the development of unfavorable urodynamic parameters within the first year after SCI. Therefore, we performed urodynamic investigations at four predefined timepoints up to 12 months after SCI.

**Methods:** Using a standardized analysis plan we investigated 97 consecutive patients with NLUTD due to acute traumatic or ischemic SCI that participated in the European Multicenter Study about Spinal Cord Injury (EMSCI) and underwent urodynamic investigations at predefined timepoints after SCI (up to 40 days, 3 months, 6 months and 12 months) from January 2014 to December 2019. The patients were treated according to the EAU Guidelines on Neuro-Urology. Neurological information and patient characteristics were extracted from EMSCI and patient records.

**Results:** Of the 97 patients analyzed (75 traumatic, 22 ischemic), 33 were women. Mean age at SCI was 57 years. Overall, 45% had a cervical lesion, 38% a thoracic, and 17% a lumbar lesion and 21 patients suffered from complete SCI. 91 patients had at least 2 urodynamic investigations during the observation period. Within the first year after SCI, 85 patients developed DO and 38 patients presented with a maximum storage detrusor pressure greater than 40 cmH<sub>2</sub>O. DSD was found in 77 patients and vesicoureteral reflux in 7. Low bladder compliance was not present.

**Conclusions:** The majority of our study population presented unfavorable urodynamic parameters already within the first year after SCI needing initiation of treatment in order to improve long-term urological outcomes. Therefore, it is urgent to establish a close follow-up schedule for urodynamic investigations within the first year after SCI.

### **MP3.09: The importance of timely diagnose neurogenic bladder following spine fracture without or with minimal movement disorders: case report**

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**Introduction:** Neurogenic bladder dysfunction due to spinal cord injury (SCI) poses a significant threat to the well-being of patients. Incontinence, urinary tract infection (UTI), stones, kidney injury, and poor quality of life are some complications of this condition. Most patients require personalized management to ensure low pressure reservoir function of the bladder, complete emptying, and continence.

**Methods:** **CASE PRESENTATION:** A 18-years old male with L2 spine fracture, due to traffic accident was admitted at ER. He presented cauda equina syndrome with sensory impairment of L2 to S5 dermatomes and minimal motor impairment (4/5) of L2 and L3 myotomes.

Three days post-surgical management he was discharged, without motor dysfunction and the transurethral catheter was removed; the patient referred "normal" urination. In the following days patient presented UTI and urine retention. During follow-up (one month later), he was referred to our clinic, with transurethral catheter and under antibiotic treatment for UTI. He did not present any movement disorders but he had abnormal sacral reflexes, impaired anal contraction, sensory impairment of S3 to S5 dermatomes and neurogenic bladder dysfunction. When the UTI subsided, he was educated to perform intermittent self-catheterizations 5 times/day under prophylactic antibiotic treatment. Further examinations took place: Ultrasound showed bladder lithiasis. (3 stones with a max diameter of 2-3 cm). He was referred to urologist and lithotripsy was performed. Urodynamic studies revealed: at filling phase, urgency at 200ml but normal compliance up to 400ml; at emptying phase, inability to empty due to non-contractile detrusor. Acontractile detrusor could be the consequence of L2 fracture or due to myogenic injury of bladder following retention or due to both. During his last visit (11months post SCI), patient continues intermittent self-catheterizations for bladder emptying. Patient did not improve with a-blockers or betanechol.

**Conclusions:** SCI to either conus medullaris or cauda equina may result in detrusor underactivity or areflexia with external sphincter weakness. If overt motor dysfunction is not present, existing bladder dysfunction may be misdiagnosed. Timely diagnosis of neurogenic bladder dysfunction is important to avoid urinary tract complications and improve the health-related quality of life.

**MP3.10: Neurological injury from sacral Tarlov cysts and correlation with pelvic sensory and visceral symptoms**

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**Introduction:** Tarlov cysts (TC) are generally considered to be incidental radiological findings. Recent studies however suggest their possible association with neurological symptoms such as pain, numbness and urogenital complaints. The aim of this study was to explore the relationship between TC and sacral nerve root functions using pelvic neurophysiology tests, and to correlate changes with clinical symptoms and magnetic resonance imaging (MRI) findings.

**Methods:** Consecutive patients with sacral TC, presenting with at least one symptom related to the pelvic area and undergoing neurophysiology testing, participated in a cross-sectional review of symptoms using validated questionnaires. Findings of pelvic neurophysiology (pudendal sensory evoked potentials (SEPs), S2 and S3 dermatomal SEPs, external anal sphincter electromyography) and urodynamics testing were collected retrospectively. Relationship between neurophysiology, MRI findings, and patients' symptoms were assessed using Fischer and ANOVA tests.

**Results:** Sixty-five females were included (mean age  $51.2 \pm 12.1$ y). The commonest symptom was pain (92%). Urinary (91%), bowel (71%) and sexual (80%) symptoms were also frequently reported. Thirty-seven patients (57%) had abnormal neurophysiology findings reflecting sacral root dysfunction. No association was seen between MRI findings (size, location of the cysts, severity of compression) and neurophysiology. A negative association was observed between neurophysiology abnormalities and occurrence of urgency urinary incontinence ( $p=0.03$ ), detrusor overactivity ( $p<0.01$ ) and stress urinary incontinence ( $p=0.04$ ).

**Conclusions:** Contrary to current understanding, TC indeed are associated with injury to the sacral somatic innervation in the majority of patients with presumed symptomatic cysts. The presence of urinary incontinence is unlikely to be related to TC-induced nerve damage.

### **MP3.11: Higher susceptibility of urinary tract infections in patients with indwelling catheters compared to those relying on intermittent self-catheterization: myth or reality?**

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**Introduction:** Patients with neurogenic lower urinary tract dysfunction (NLUTD) often rely on some type of catheterization for bladder emptying. Intermittent self-catheterization (ISC) is regarded as the gold standard and should be preferred over an indwelling catheter whenever possible. Besides many advantages, ISC is regarded to cause less urinary tract infections (UTIs) than indwelling catheterization, a fact often prioritized in patient counseling.

**Methods:** Between 02/2020-01/2021, we prospectively evaluated patients with NLUTD undergoing urinalysis and urine cultures for prophylactic reasons (i.e. prior invasive diagnostics or transurethral surgery) or due to UTI symptoms presenting at our tertiary university neuro-urology center. All patients underwent a standardized interview, including number of UTIs and antibiotic intake within the past year and current UTI symptoms. Patients relying on ISC (n=218) and managed with indwelling catheters (n=209) were included in this analysis.

**Results:** Patients performing ISC were younger (ISC vs. indwelling catheters: 52±16 vs. 63±17, p<0.001) and showed a lower Charlson comorbidity index (ISC vs. indwelling catheters: 1 (0-3) vs. 3 (1-4), p<0.001). No between group differences (p>0.05) could be found for sex and number of UTIs (ISC vs. indwelling catheters: 0.51±1.06 vs. 0.35±0.85) or antibiotic treatment within the past 12 months. Most patients presented with asymptomatic bacteriuria (ASB) (ISC vs. indwelling catheters: 91% (199/218) vs. 91% (190/209), p>0.05), few with symptomatic UTI (ISC vs. indwelling catheters: 9% (19/218) vs. 9% (19/209), p>0.05). In case of symptomatic UTIs, Escherichia coli (35%), Enterococcus faecalis (21%) and Klebsiella spp. (14%) were the leading uropathogens. No significant (p>0.05) differences in resistance pattern to commonly prescribed antibiotics (i.e. amoxicillin/clavulanic acid, quinolones (ciprofloxacin, levofloxacin and norfloxacin), nitrofurantoin and cotrimoxazole) could be found. Overall resistance rates for these antibiotics were moderate with 2%-34%. No relation between urinalysis and patients presenting with ASB or symptomatic UTI could be found.

**Conclusions:** In our patients with NLUTD, we could not find relevant differences in UTI frequency, antibiotic treatment or antibiotic sensitivity patterns for patients performing ISC compared to those relying on an indwelling catheter. These data indicate not to over emphasize UTI related issues counseling patients for catheter related bladder emptying methods.

### **MP3.12: Urological management at discharge from acute spinal cord injury rehabilitation: a descriptive analysis from a population-based prospective cohort**

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**Introduction:** Epidemiological evidence regarding contemporary neuro-urological management of persons with acute spinal cord injury (SCI) is limited. The present study objective is to describe the management of neurogenic lower urinary tract dysfunction (NLUTD) at discharge from SCI rehabilitation.

**Methods:** The population-based Swiss Spinal Cord Injury (SwiSCI) cohort study prospectively collected data from 602 adults undergoing specialized post-acute SCI rehabilitation from 2013-2020. The institutional urological management strategy was based on the EAU Guidelines on Neuro-Urology.

Data were collected at discharge using the International SCI Lower Urinary Tract Function Basic Data Set. Multivariable logistic regression adjusting for demographics, SCI characteristics, and center, with inverse probability weighting accounting for sampling bias, was used to produce prevalence estimates and identify predictors of lower urinary tract symptoms (LUTS) and NLUTD management outcomes.

**Results:** At discharge (median time after SCI: 5.0 months; Q1-Q3: 3.0-7.2), the prevalence of LUTS or managed NLUTD was 82% (95% CI: 79-85%). SCI completeness was the main predictor of LUTS and managed NLUTD. Risk of urinary incontinence was elevated in females (odds ratio 1.98; 95% CI: 1.18-3.32) and with complete lesions (odds ratio 4.71; 95% CI: 2.52 - 8.81). Voiding dysfunction was most commonly managed with intermittent catheterization (prevalence 39%; 95% CI: 35-42%), followed by indwelling catheterization (prevalence 22%; 95% CI: 18-25%). Prevalence of antimuscarinic or mirabegron use was 29% (95% CI: 26-33%).

**Conclusions:** Our population-based description of urological management in Swiss SCI centers utilizing the EAU Guidelines on Neuro-Urology may be used as a reference for evaluation in other settings. Data further indicate a need for a sex-specific neuro-urological management research.



**MP3.13: Post COVID-19 demyelinating disease and the effect on lower urinary tract. A rare case of a 14-year-old man**

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**Introduction:** The effect of COVID-19 disease on the lower urinary tract (LUT) has been studied and pathophysiological pathways have been suggested. Moreover, the post COVID-19 complications may include neurological findings and symptoms with a possible dysregulation of LUT. In this study, we present a case of neurogenic bladder after COVID-19 infection in a 14-year-old man.

**Methods:** A 14-year-old man has been admitted to the emergency unit with disability of the lower body part. The symptoms included no sensation, no reflexes response, muscle infirmity and no sensation of a full bladder. The Extended Disability Status Scale (EDSS) was at 8. Patient reported a COVID-19 infection one month ago, with a deteriorating backpain, extended to both legs. Pediatricians classified symptoms at flaccid paraplegia after virus infection and requested an MRI and microbiological investigation. A neuro-urological evaluation has been also asked in a second time, while an indwelling catheter had been placed.

**Results:** Patient has been discharged after completed the requested investigation. No virus or other micro-organism has been identified or isolated, but MRI disclosed demyelization under the level of T7 of the spinal cord. Patient came to our unit without a catheter and with an improved EDSS at 3, to undergo a urodynamic test. Before the invasive study, ultrasound showed a post void residual urine of 250ml without voiding desire or any damage in upper urinary tract. He reported voiding in sitting position with abdominal stretch. The urodynamic study revealed detrusor overactivity both phasic and terminal, followed by inability of voluntary voiding in terms of detrusor underactivity. Bladder capacity was reduced with a non-specific sensation and a normal compliance. Patient has been advised to initiate treatment with oxybutynin 5mg once per day, combined with self-catheterization 4-5/day, avoiding abdominal strain to void. The short-term follow-up has already revealed a patient totally compliant to the suggested treatment with no complications.

**Conclusions:** Recent literature has documented demyelization after infection with COVID-19 virus. To our knowledge, this is a rare case of neurogenic bladder as a possible effect of COVID-19 disease and this could be regarded as a secondary damage in terms of a neurological post-COVID-19 lesion.



**MP3.14: Patient satisfaction on bladder irrigation with tap water to prevent and treat catheter-associated urinary tract infections with mild symptoms.**

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**Introduction:** Catheter-associated urinary tract infection (CAUTI) is a common complication among patients with urinary catheters and is usually treated with antibiotics. With increasing rates of antibiotic resistance and increasing healthcare costs, it is necessary to explore alternatives for antibiotic treatment of CAUTIs which are cost-effective, well tolerated by patients and lead to less resistance. Therefore, we aimed to assess patient satisfaction on bladder irrigation with tap water (BI) to prevent and treat CAUTIs with mild symptoms. The quality of tap water in The Netherlands is high and is continuously monitored for microbiological agents.

**Methods:** Patients >18 years of age with an indwelling catheter or on clean intermittent catheterization (CIC), who performed BI between 2019 – 2022 were eligible. A survey was conducted to assess patient satisfaction, the Patient Global Impression of Improvement (PGI-I) score, number of CAUTIs, antibiotic use and hospitalization due to CAUTI in the past 3 months.

**Results:** Ninety-nine patients on BI were included. Thirty-five patients had an indwelling catheter and 65 patients were on CIC. The mean age was 57 years and the average user experience was 39 months. Symptoms of CAUTI were experienced 124 times in the past 3 months, of which 51 were treated with antibiotics and 3 were hospitalized. Forty-one patients had no CAUTI symptoms in the past 3 months. 75% of the patients reported that their condition was improved as a result of BI (PGI-I). 81% of the patients found the time spent on BI acceptable, 65% were satisfied with BI and 72% would recommend this treatment. BI had a positive impact on life in 54%, because they experienced less CAUTI symptoms. 21% experienced a negative impact on life, mostly because of dependence on other persons to perform BI.

**Conclusions:** Bladder irrigation with tap water is well tolerated and might be a good alternative to antibiotics to prevent and treat CAUTI with mild symptoms. Future prospective randomized studies are needed in order to confirm the efficacy and safety of BI in preventing and treating CAUTIs with mild symptoms.

### **MP3.15: Local anaesthetic intra-detrusor OnaBotulinum Toxin A tolerability study**

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**Introduction:** Intra-detrusor OnaBotulinum Toxin A (BoTA) injections, often performed under local anaesthetic (LA), are highly effective at treating refractory overactive bladder in patients with and without neurogenic lower urinary tract dysfunction (NLUTD). This study aims to quantify pain perceived by patients during this procedure and detect risk factors for poor tolerance.

**Methods:** Data of all patients undergoing LA Botox across two centres was gathered prospectively and analysed using SPSS version 27.0. Collected demographics included age, sex, underlying bladder pathology, catheterisation status and dosing. Visual analogue scales (VAS) from 1-10 (1 = no pain, 10 = unbearable pain) were used to quantify pain at cystoscope insertion, first and last Botox injection and post-procedure (overall score).

**Results:** 44 (50%) male and 44 (50%) female patients were identified. One (1.1%) male with idiopathic disease could not tolerate LA cystoscopy. Of the 88 patients, 44 (50%) had NLUTD, 47 (53.4%) did not require catheterisation post-injections, 30 (34.1%) intermittently self-catheterised (ISC), 2 (2.3%) had indwelling urethral catheters and 9 (10.2%) had supra-pubic catheters (SPCs). Urethral lidocaine gel was used in 77 (87.5%) patients. A combination of urethral lidocaine gel and 0.25% bupivacaine mixed with Botox was used in 11 (12.5%) patients. The mean VAS for scope insertion, first injection, final injection and overall was 2.37, 2.74, 2.68 and 2.75 out of 10. The mean VAS for male and female patients during scope insertion was 3.12 and 1.64 ( $p=0.0023$ ). The mean VAS for idiopathic and neuropathic patients during scope insertion was 2.97 and 1.78 ( $p=0.025$ ). The mean overall VAS for Botox naïve patients and those having repeat injections was 2.64 and 2.77 ( $p=0.85$ ).

**Conclusions:** The mean VAS pain score for LA Botox is 2.75 out of 10. One patient (1.1%) had subsequent injections under GA due to intolerance of LA. Females and NLUTD patients found the procedure less painful than males and idiopaths. Age over 50, injecting bupivacaine alongside Botox and number of previous injections did not demonstrably impact perceived pain.

**MP3.16: Cystatin C-creatinine based estimated glomerular filtration rate equation captures greater kidney dysfunction than creatinine alone equation in non-weight bearing patients**

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**Introduction:** Individuals with neurogenic lower urinary tract dysfunction (NLUTD) are commonly non-weight-bearing (NWB), and muscle mass differs from that of the general population. Muscle mass is a main determinant of serum creatinine (sCr), but not cystatin C. We sought to determine whether estimated glomerular filtration rates differs when calculated using combined creatinine and cystatin C (eGFRcr-cys) compared to creatinine (eGFRcr) alone, and whether cystatin C would better detect renal dysfunction in the NWB population. We hypothesized that (eGFRcr-cys) formula would improve the identification of kidney dysfunction in NWB individuals.

**Methods:** Electronic medical records were reviewed for individuals with available sCr and cystatin C and a diagnosis consistent with NWB status using ICD 9/10 codes. A 2:1 matched control group was identified without NWB diagnosis. eGFR was calculated using the 2021 CKD-EPI equations with and without cystatin C. Demographics and renal function of groups were compared using descriptive statistical analyses. Renal dysfunction was defined by renal ultrasound abnormalities (craniocaudal length more than two standard deviations below the population mean, abnormal echogenicity or parenchymal thickness, or evidence of scarring) or proteinuria ( $\geq 1+$  on dipstick or  $\geq 30$  mg/dl).

**Results:** The NWB (n=102) and control populations (n=204) were similar in age, sex, race, diabetes mellitus, and hypertension. In the NWB population, there was a significant reduction in eGFR when calculated using eGFRcr-cys versus eGFRcr (92.5 vs. 106.8 mL/min/1.73 m<sup>2</sup>, p=0.0032). There was no difference in the control population. In the subset of individuals with imaging and/or proteinuria suggestive of renal dysfunction, the NWB population (n=50) again had a significantly reduced eGFR when calculated using eGFRcr-cys relative to eGFRcr (85.5 vs. 102.4 mL/min/1.73 m<sup>2</sup>, p=0.017) and the control population (n=34) again did not. 36% of NWB individuals with evidence of renal dysfunction were recategorized into a category of lower eGFR (>90 vs. 60-89 vs. 30-59 vs. 15-29 mL/min/1.73 m<sup>2</sup>) when using eGFRcr-cys relative to eGFRcr.

**Conclusions:** Calculation of eGFR using eGFRcr-cys improved the identification of kidney dysfunction relative to eGFRcr alone in NWB individuals. We recommend using eGFRcr-cys formulas in NLUTD patients who are NWB for earlier detection of kidney dysfunction and reduction of disease progression.

### **MP3.17: Sex differences in urological management during acute spinal cord injury rehabilitation: Results from a prospective multicenter longitudinal cohort study**

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**Introduction:** Women account for a growing proportion of persons with acute spinal cord injury (SCI), but much of the urological research in SCI has been conducted in populations predominantly comprised of men. In acute SCI rehabilitation, use of antimuscarinic medication to protect renal function and catheterization to promote complete bladder emptying are critical management issues. The objective of this study is to describe differences between females and males in first-line urological management during acute SCI rehabilitation.

**Methods:** Data were extracted from the Inception Cohort of the Swiss Spinal Cord Injury (SwiSCI) cohort study, a population-based, prospective, multicenter, longitudinal study. Swiss residents, age  $\geq 16$ , undergoing inpatient specialized post-acute SCI rehabilitation are included. Data on usage of bladder overactivity medication (antimuscarinic and beta-3 adrenergic agonist), bladder emptying method, demographics and SCI characteristics were extracted from the clinical record between May 2013 and September 2021. Logistic regression was used to investigate the prevalence of bladder overactivity medication and suprapubic catheter use, as well as respective associated factors.

**Results:** In 748 patients, (n=219, 29% female), at discharge the prevalence of bladder overactivity medication use was 24% (95% CI: 18-29%) for females and 30% (95% CI: 26-34%) for males. Indicators of medication use included traumatic SCI and cervical AIS grade A,B,C SCI in both sexes. An interaction was identified between SCI characteristics and sex ( $p < 0.01$ ), with thoracic AIS grade A,B,C SCI, and lumbar AIS grade A,B,C SCI associated with a higher odds of bladder overactivity medication use in males and females, respectively. Prevalence of suprapubic catheter use was 22% (95% CI: 17-28%) for females and 17% (95% CI: 14-20%) for males at discharge. Suprapubic catheter use was indicated by cervical AIS grade A,B,C SCI, and age  $> 60$ . Thoracic AIS grade A,B,C SCI was associated with higher odds of suprapubic catheter use in females but not in males (SCI characteristic\*sex interaction,  $p = 0.013$ ).

**Conclusions:** Use of bladder overactivity medication and suprapubic catheters during acute SCI rehabilitation differed between males and females, especially in relation to SCI characteristics. Our findings indicate a scope for female-specific research aiming to identify the mechanisms underlying these differences and support patient-tailored management.