

Submitted Abstract for Poster Session at INUS 2026

SESSION 1

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Assessment of somatosensory evoked potentials using a prolonged interstimulus interval to reveal long-latency components

Nomah Mahnoor, Marina Rüfli, Stéphanie van der Lely, Nadja Furlan, Gina Strähler, Stephanie A. Stalder, Ulrich Mehnert, Thomas M. Kessler, Martina D. Liechti

Introduction

Long-latency (LL) somatosensory evoked potentials (SSEPs) may provide insights into mechanisms involved in neuromodulation and neurogenic lower urinary tract dysfunction (NLUTD). This study aimed to characterize SSEPs comprising LL following tibial and pudendal nerve stimulation in healthy participants using a prolonged interstimulus interval. We investigated the influence of stimulation frequency and sex on SSEP characteristics.

Methods

SSEPs were recorded in healthy participants (tibial: n = 31; pudendal: n = 29; age range 20-73 years) using a 64-electrode electroencephalography cap during tibial and pudendal nerve stimulation (3.1Hz and 1.1Hz; pulse width: 0.2ms). Signals were recorded from Cz'-Fz channel. SSEP components were classified as short-latency (SL: P40, N50, P65, N85) and LL (P100, N120/N140, P200, P300). Analyses comprised response rates (criteria: identifiable and replicable across odd and even SSEP averages), latencies and amplitudes, at the single-subject level. Right and left leg were compared as an internal validity check, with no systematic differences expected. Multivariable linear mixed models (LMM) were calculated with body height, frequency and sex as predictors.

Results

Response rates were 100% for tibial SL-SSEPs, and >95% for pudendal ones. LL responses were component specific: tibial P100/P200 ~ 65%, P300 ~45%, N140 ~16%; pudendal P200 72%, P300 31%, P100 28%, and N120 25%. LMM revealed that tibial SL-SSEPs latencies increased with height, and 3.1Hz stimulation shortened N50 but prolonged P65 latencies. Tibial SL amplitudes were largely stable, with slightly higher P65N85 amplitudes at 1.1Hz stimulation. Tibial LL-SSEPs were stable across sex, height and body side. Pudendal SL-SSEPs were influenced by multiple factors: P40 and N85 latencies increased with height; 3.1Hz stimulation prolonged P40 and P65 latencies and reduced amplitudes (P40N50, P65N50 and P65N85); females had shorter N50 latencies with higher P65N50 amplitudes. Pudendal LL-SSEPs were largely stable for latencies and amplitudes, with no significant effect of any factor.

Conclusions

Extended inter-stimulus intervals allow reliable characterization of LL-SSEPs, though they are less consistent than SL-SSEPs. Tibial and pudendal LL-SSEPs were largely independent of sex, side, or

Submitted Abstract for Poster Session at INUS 2026



frequency effects, while SL-SSEPs were affected by height, and stimulation frequency, with sex effects limited to pudendal SL-SSEPs. These findings provide reference values and highlight factors influencing SSEP variability, supporting their application in neuromodulation studies in NLUTD.

Submitted Abstract for Poster Session at INUS 2026

SESSION 1

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Shifting the Current Toward Neuromodulation: Electrical Stimulation as a Therapeutic Strategy for Detrusor Underactivity – A Systematic Review Steven Nanda, Stephanie Theodora Yulinda

Introduction

According to the International Continence Society (ICS), detrusor underactivity (DU) is defined as “a contraction of reduced strength and/or duration, resulting in prolonged bladder emptying or failure to achieve complete bladder emptying within a normal time span”. While traditional pharmacologic therapies offer limited benefit, there is growing interest in neuromodulatory approaches. Electrical stimulation aims to modulate afferent and efferent neural pathways to restore bladder function. This systematic review summarizes current evidence on the therapeutic efficacy of electrical stimulation for DU.

Methods

A systematic literature search was conducted in PubMed, Scopus, and Cochrane Library for articles published from January 2020 to October 2025. The search combined the terms “detrusor underactivity” or “underactive bladder”, and “electrical stimulation” or “neuromodulation.” Eligible studies included randomized controlled trials (RCT), cohort, or pre–post intervention studies investigating intravesical electrical stimulation (IVES) or sacral neuromodulation (SNM) in all patients with DU. Data extraction and quality assessment followed PRISMA guidelines. Primary outcomes were post-void residual (PVR), maximum flow rate (Qmax), detrusor pressure, and patient-reported improvement.

Results

Four studies met inclusion criteria, encompassing different clinical designs. A multicenter RCT by Liao et al. demonstrated significant improvements following four weeks of IVES, with mean PVR reduction of 97 mL ($P < 0.01$), increased Qmax and bladder voiding efficiency. Similar results are found by Siregar et al, with most pronounced effects seen in idiopathic and obstructive etiologies. In a multicenter analysis of SNM by Onur et al., nearly half of 58 patients achieved successful outcomes with comparable efficacy between sexes. Jiang and Kuo identified high prevalence of sacral and pudendal neuropathic changes among patients with DU, emphasizing the neurogenic basis for electrical stimulation therapy. Limitations should be noted such as heterogeneity in stimulation parameters, limited sample sizes and follow-up durations.

Conclusions

Electrical stimulation represents a promising neuromodulatory approach for detrusor underactivity, offering measurable improvements in bladder contractility and emptying efficiency. Intravesical and sacral modalities have shown efficacy and safety in both idiopathic and neurogenic DU. Standardized diagnostic criteria, uniform stimulation parameters, and larger

Submitted Abstract for
Poster Session at INUS 2026



randomized trials are warranted to strengthen this evidence base.

SESSION 1

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Comparison of the Effectiveness of Extracorporeal Shock Wave Therapy and Percutaneous Tibial Nerve Stimulation in Elderly Patients with Idiopathic Overactive Bladder Syndrome

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Introduction

Overactive bladder (OAB) syndrome is a condition of involuntary contraction of the detrusor muscle during the urine filling phase, triggering a urinary reflex which can be idiopathic. OAB syndrome has a major impact on all age populations with the severity of symptoms increasing with age.

Electrical stimulation is used as sole therapy if pharmacotherapy does not reduce symptoms or in OAB sufferers who cannot tolerate the side effects of drugs. The development of the extracorporeal shockwave therapy (ESWT) method as a non-invasive method that is relatively safe and has become an effective therapy as well as an alternative choice equivalent to electrical stimulation

Complete permanent resolution of OAB syndrome is unlikely due to the relapsing-remitting pattern, indicating that OAB syndrome is a long-term condition. This supports goal setting with realistic expectations and is more inclined towards improving the quality of life.

Methods

This research uses a single blind randomized controlled trial method. Nineteen participants selected based on inclusion and exclusion criteria underwent low-intensity ESWT (LiESWT) intervention and percutaneous tibial electrical stimulation (PTNS) for 8 weeks. The symptoms of OAB syndrome were assessed in the form of frequency, incontinence, nocturia and urgency; OABSS scores, PVR, voiding volume and quality of life using the SF-36 questionnaire before, after the 16th therapy and 1 month after therapy.

Results

The results of the study showed that there were no significant differences between the LiESWT and PTNS groups in frequency, incontinence, nocturia and urgency, OABSS scores, PVR and voiding volume ($p > 0.05$). Quality of life after the 16th therapy and 1 month post therapy there was a significant difference ($p = 0.042$; $p = 0.015$) between ESWT compared with PTNS.

Conclusions

LiESWT for 8 weeks was proven to have no significant difference to PTNS in OAB symptoms and urinary function. LiESWT has been proven to improve the quality of life of elderly people with OAB.

Submitted Abstract for Poster Session at INUS 2026

SESSION 1

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Efficacy of percutaneous tibial nerve stimulation for the treatment of non-obstructive urine retention in adult females

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Bassem Salah Wadie

Introduction

There is insufficient evidence to support the use of percutaneous tibial nerve stimulation (PTNS) for the treatment of non-obstructive urine retention (NOUR). In this study, we aimed to determine the efficacy of PTNS as a minimally-invasive treatment option for NOUR in adult females.

Methods

Twenty-one female patients, aged 18-40 years and suffering from NOUR necessitating intermittent catheterization were prospectively enrolled in this study. They received 12 weekly sessions of PTNS. Objective evaluation using frequency/volume chart (FVC), uroflowmetry and post-void residual urine (PVR) was done at baseline, 12 weeks (W12), 3 and 6 months after treatment (F3, F6). Voiding efficiency (VE) was calculated as the uroflow voided volume (VV)/ [VV+PVR]. Success rate was defined as the percent of catheter-free patients (PVR <100 ml). Subjective evaluation was done by asking the patients if they chose to continue treatment and if there is improvement in the sense of desire to void.

Results

The FVC showed significant reduction compared to baseline in catheterized volume/day at W12 (P=0.028) and F3 (P=0.038) with no significant change at F6 (P=0.349). The median VE was 0%, 31%, 22% and 0% at baseline, W12, F3 and F6 respectively. Success rate was 31.6% at W12, 21.1% at F3 and 16.7% at F6. At W12, 9 (42.9%) out of 19 patients chose to continue treatment. Improvement in the sense of desire to void was reported by 8 (38.1%) out of 19 patients at W12 and 5 (23.8%) out of 18 patients at F6.

Conclusions

PTNS can improve voiding in approximately one third of female patients with NOUR. However, this improvement decreases over 3-6 months after treatment with the need of repeated sessions.

Submitted Abstract for Poster Session at INUS 2026

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Coating the Path to Safety: Systematic Review and Meta-Analysis of Hydrophilic versus Non-Hydrophilic Catheters for Neurogenic Bladder Management

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Introduction

Neurogenic bladder is a condition caused by nerve damage that disrupts normal bladder function, leading to urinary retention or incontinence. Clean intermittent catheterization (CIC) is the current recommended management but can cause urinary tract infections (UTI) and urethral trauma. Hydrophilic coated catheters (HCC), with their low-friction coating, offer an alternative designed to reduce these adverse effects and improve patient satisfaction. However, there is no systematic review comparing the safety of hydrophilic versus non-hydrophilic catheters in neurogenic bladder patients. This systematic review aims to compare complication rate and satisfaction level of hydrophilic-coated versus uncoated catheter (UCC) for CIC in neurogenic bladder patients.

Methods

Studies from three databases (PubMed, Scopus, EBSCO), were searched using predetermined keywords in accordance with the PRISMA guideline and screened for eligibility. In this review, the primary outcomes are urinary tract infection (UTI) rate; while urethral bleeding, microhematuria, and patient satisfaction as secondary outcomes. We used the ROBINS-I and RoB2 tools to assess the risk of bias of the included studies. Meta-analyses were conducted with Meta-Mar v4.0.2.

Results

We included 19 eligible studies. Nine studies measure the risk of complication, thus the rest evaluate the participant preference and experience toward HCC versus UCC during CIC. The risk of symptomatic UTI in the HCC group is 0.62 (CI95% 0.56-0.68) times that of the UCC group. The trend is similar even without urine culture examination in which the relative risk (RR) of UTI in the HCC group reaches 0.71 (CI95% 0.62-0.80). Observation of UTI risk for less than 12 months catheterization displays similar risk in both groups. The risk of microhematuria is significantly lower at HCC group, with statistically insignificant risk of urethral bleeding between HCC and UCC group. However, all findings are accompanied with statistically insignificant prediction intervals. They should take into account the experience of participants for catheter use for which it affects overall preferability, compliance, and side effects of CIC. Overall patient satisfaction tends to favor hydrophilic catheters.

Conclusions

Current evidence supports HCC displaying lower risk of symptomatic UTI and microhematuria in patients with neurogenic bladder. HCC also retrieves higher preferences for participants.

Submitted Abstract for
Poster Session at INUS 2026



Submitted Abstract for Poster Session at INUS 2026

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Intradetrusor abobotulinumtoxinA (Dysport) injections for refractory neurogenic detrusor overactivity incontinence: a promising therapeutic option after failed onabotulinumtoxinA (Botox) treatment

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Introduction

Intradetrusor onabotulinumtoxinA (Botox) injections are a cornerstone in the treatment of refractory neurogenic detrusor overactivity (NDO) incontinence. AbobotulinumtoxinA (Dysport) represents an alternative therapeutic option before escalating treatment with surgery. Comparative data, especially following a switch from Botox to Dysport, remain limited. The objective was to analyze both satisfaction and urodynamic outcomes after switching from Botox to Dysport in a cohort of patients with refractory NDO incontinence.

Methods

A consecutive series of 24 patients who were treated with intradetrusor Dysport injections for refractory NDO incontinence after failed Botox therapy were assessed. Before first Dysport injections, Botox resistance was tested neurophysiologically. Patient satisfaction (dissatisfied, satisfied or very satisfied) was assessed and urodynamic investigation were performed 6 weeks after last intradetrusor Botox/Dysport injections. Groups were categorized based on satisfaction, urodynamic response (≥ 10 cmH₂O reduction in maximum detrusor pressure during storage phase (max. pDet storage) after Dysport, initial classification of max. pDet storage 6 weeks after Botox (<40 versus ≥ 40 cmH₂O), conversion from ≥ 40 to <40 cmH₂O in max. pDet storage after switch from Botox to Dysport.

Results

54% (13/24 patients) were satisfied or very satisfied after Dysport. In urodynamics, 9/24 (38%) had a ≥ 10 cmH₂O reduction in max. pDet storage, 4 patients incontinence resolved completely. 3/24 converted from >40 cmH₂O after Botox to <40 cmH₂O after Dysport. No significant difference in max. pDet storage or max. bladder capacity was found between subjective or urodynamic responders versus non-responders. Stratification by max. pDet storage after Botox (<40 vs. ≥ 40 cmH₂O) revealed significant differences: In the ≥ 40 cmH₂O group (n=11), subjective satisfaction improved (p=0.018), max. bladder capacity increased (p=0.017, mean 28 mL) and max. pDet storage remained significantly higher (p=0.008) after Dysport treatment.

Conclusions

Switching from Botox to Dysport was associated with subjective improvement > 50% of our patients with refractory NDO incontinence. Clinical and urodynamic outcomes after the toxin switch were significantly influenced by initial max. pDet storage values after Botox treatment.

Submitted Abstract for Poster Session at INUS 2026



Therefore, intradetrusor Dysport injections may be considered as an alternative therapeutic option before escalating to surgery.

Submitted Abstract for Poster Session at INUS 2026

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The Efficacy and Safety Profile of Sacral Nerve Root Magnetic Stimulation for Neurogenic Lower Urinary Tract Dysfunction: A Systematic Review and Meta Analysis

Nizamta Yusfiatuzzahra, Steven Setiono

Introduction

Neurogenic Lower Urinary Tract Dysfunction (NLUTD) is a debilitating condition often resulting from spinal cord injury (SCI) or neurological disorders, significantly impacting patients' quality of life. Sacral magnetic stimulation (SMS) has emerged as a non-invasive therapeutic alternative, showing promise in enhancing bladder function. However, the comparative efficacy and safety of SMS relative to conventional therapies remain poorly evaluated. This systematic review and meta-analysis aim to assess the efficacy and safety profile of SMS in treating neurogenic bladder in individuals with SCI.

Methods

A comprehensive literature search was conducted across PubMed, Cochrane, and Science Direct databases, focusing on studies published in the last decade. Inclusion criteria encompassed randomized controlled trials and cohort studies that evaluated SMS's efficacy and safety in patients with NLUTD. Data extraction and quality assessment were performed independently by two researchers. Statistical analyses were conducted using RevMan 5.4 software, employing mean differences and confidence intervals to evaluate treatment effects.

Results

Four studies met the inclusion criteria, involving a total of 284 participants from China and Australia. The meta-analysis revealed significant improvements in maximum urine flow rate or Qmax (WMD 3.26, 95% CI 2.64, 3.89, $p < 0.001$), post void residual (WMD: -91.96, 95% CI -102.32, -81.60, $p < 0.001$), bladder compliance (WMD: 39.37 (95% CI 26.52, 52.22, $p < 0.001$), and maximum cystometric capacity (WMD: 8.77, 95% CI: 7.85, 9.69, $p < 0.001$), and following SMS treatment. Minimal and predominantly mild side effects were reported, indicating a favorable safety profile.

Conclusions

This systematic review and meta-analysis demonstrate that SMS is an effective and safe intervention for enhancing bladder function in patients with NLUTD, particularly those with SCI. The findings support the integration of SMS into clinical practice, while emphasizing the need for standardized methodologies and larger multicentre studies to further validate its long-term efficacy and safety across diverse patient populations.

Submitted Abstract for Poster Session at INUS 2026



SESSION 1

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Regenerating Function: Quantifying the Efficacy of Stem Cell Therapy in Neurogenic Bladder — A Systematic Review and Meta-Analysis

Muhammad Ivan Pratista, MD; Muhammad Rifqi Azmi, MD; Muhammad Anwar Irzan, MD

Introduction

Neurogenic bladder (NB), frequently arising from underlying neurological disorders such as Spinal Cord Injury (SCI), Parkinson's Disease (PD), Multiple Sclerosis (MS), and Stroke, causes considerable functional impairment. Stem Cell (SC) therapy represents a prospective regenerative strategy. This systematic review and meta-analysis sought to assess the efficacy of SC therapy relative to control or conventional treatment through urodynamic parameters in adult NB patients.

Methods

We included adult patients in Randomized Controlled Trials (RCTs), quasi-RCTs, phase I/II clinical trials, case-control, retrospective cohorts, and comprehensive case series that reported urodynamic outcomes. A systematic search was performed in MEDLINE through PubMed, Scopus, Cochrane Library, and ClinicalTrials.gov from inception until August 2025. The JBI Critical Appraisal Tools were used to check for Risk of Bias. A random-effects model was used in the meta-analysis to find the Mean Differences (MD) and their 95% Confidence Intervals (CI).

Results

The systematic review included 23 studies (totaling 632 participants), identifying Mesenchymal Stem Cells (MSCs) as the most common type of cell, and they were usually delivered through an intrathecal or lumbar puncture. Only five studies (182 participants) provided enough quantitative data for meta-analysis. The meta-analysis showed a significant reduction in Residual Urine Volume (MD -117.21 mL, 95% CI $[-188.83, -45.59]$; $P=0.001$), which strongly favored the SC group. Other urodynamic parameters exhibited no statistically significant differences; however, the point estimates predominantly favored the SC group: Maximum Bladder Capacity (MD 67.50 mL, 95% CI $[-4.92, 139.92]$; $P=0.07$), Maximum Detrusor Pressure (MD -8.67 cmH₂O, 95% CI $[-20.26, 2.91]$; $P=0.14$), Bladder Compliance (MD 8.52 mL/cmH₂O, 95% CI $[-2.60, 19.64]$; $P=0.13$), and Maximum Urinary Flow Rate (MD -1.62 mL/s, 95% CI $[-4.79, 1.54]$; $P=0.31$).

Conclusions

The systematic review demonstrates a favorable safety profile and therapeutic potential for various SC types in the management of NB. Quantitatively, SC therapy appears most effective in significantly reducing Residual Urine Volume. Nonetheless, evidence for the enhancement of other urodynamic parameters is still inconclusive, owing to significant heterogeneity and imprecision among the included studies, despite a general trend favoring SC therapy. Future large-scale,

Submitted Abstract for Poster Session at INUS 2026



methodologically rigorous randomized controlled trials (RCTs) are necessary to validate these findings and enhance cell sourcing and delivery.

Submitted Abstract for Poster Session at INUS 2026

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Lower urinary tract sensory evoked cortical potentials during sacral neuromodulation

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Introduction

Sacral neuromodulation (SNM) is a valid treatment for lower urinary tract dysfunction (LUTD), with distinct cortical activation patterns in acute versus chronic SNM suggesting a supraspinal mechanism. Lower urinary tract electrical sensory assessments (LUTESA) offer a promising approach to evaluate changes in afferent nerve function in patients with neurogenic LUTD undergoing SNM. We hypothesized that sacral nerve stimulation would produce both immediate and long-term effects on LUTESA outcomes, particularly in patients who show significant improvement in their urological symptoms.

Methods

Forty-one patients with refractory neurogenic LUTD screened for an SNM randomized controlled trial were additionally consented for LUTESA.

Bladder dome electrical stimulation (0.5Hz, 1.0ms pulse width) was applied while the SNM neurostimulator (bilateral tined lead in S3, rarely S4) was ON (median 15Hz, range 5–130Hz; 0.21ms pulse width) or OFF. Assessments included current perception thresholds (CPT), pain thresholds (PT), and sensory evoked potentials (SEP) using 64-channel EEG. SEP data processing comprised 0.5–70Hz band-pass & 50Hz notch filter, ocular artifact correction, semi-automatic artefact rejection, followed by stimulus-locked segmentation and averaging. Sensory thresholds were analyzed using linear mixed models; SEPs were analyzed with Randomization Graphical User interface (RAGU). SNM condition (ON/OFF) and visit (pre-, post SNM test phase, post optimization phase) were within-subject factors; test phase success ($\geq 50\%$ bladder symptom improvement) was a between-subject factor.

Results

At the group level, bladder SEPs showed typical components (P1, N1, P2) in both conditions, consistent across visits, especially for N1, with no significant differences between SNM ON and OFF. Current perception was unchanged by SNM condition, but there was a trend toward higher CPT ($p=0.08$) and PT ($p=0.06$) over the SNM treatment period. Responders exhibited significantly stronger N1 map strength and more typical N1 waveforms than non-responders (RAGU), possibly reflecting differences in lesion location and severity even before SNM.

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Conclusions

Electrical sensory assessments during bladder stimulation are feasible and stable across SNM interventions in patients with refractory NLUTD. While the main N1 component remained relatively unaffected by SNM, the later cortical components appeared to provide indications of neuromodulatory changes, which need further investigations. Our findings suggest LUTESA may help monitor changes and predict SNM treatment outcomes in NLUTD. Larger, more homogeneous studies are needed.

Submitted Abstract for Poster Session at INUS 2026



SESSION 1

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Acute resting-state electroencephalography differences between patients with spinal cord injury and healthy controls

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Introduction

Resting electroencephalography (rsEEG) changes, in particular reduced alpha power, have been reported in patients with spinal cord injury (SCI)[1, 2, 3]. Further, it has been shown that the alpha reactivity (change from eyes-open (EO) to eyes-closed (EC)) is reduced compared to healthy controls (HC) [1]. Additionally, chronic SCI patients showed increased theta compared to HC [3]. An open question is whether rsEEG can serve as a surrogate marker for supraspinal alterations in acute SCI. We hypothesized that both theta and alpha power show alterations and that alpha reactivity is reduced in acute SCI [2].

Methods

EEG was recorded from 24 patients (27-54 days post-SCI injury, mean age: 53±18 years, 11 females, 17 AIS-grade 4) and 29 HC (mean age: 42 years±15, 11 females) during EO and EC and post-processed in BrainVisionAnalyzer. After source localization using Standardized Low Resolution Brain Electromagnetic Tomography, voxel-based data was analysed using statistical parametric mapping. Group comparisons (1: acute SCI/HC; 2: tibialis somatosensory evoked potentials (SEPs) present/absent; 3: Able-to-void/unable-to-void) were performed using for absolute theta (4-8 Hz) and alpha (8-13 Hz) power ($p < 0.05$, age-adjusted). Alpha reactivity (EC-EO) was tested for the alpha band. Theta and alpha power were correlated with neurological and urological parameters (Strong Desire to Void (SDV); storage: maximal cystometric capacity (MCC) and maximal detrusor pressure (PDETmax)) using a linear regression analysis ($p < 0.005$).

Results

During EC, patients showed reduced alpha power in the visual, frontal, and temporal cortices and increased theta power in the prefrontal cortex. Patients with abolished tibialis SEPs exhibited lower frontal alpha power compared to those with present SEPs. The able-to-void group showed higher alpha power (visual cortex), and decreased theta power in the visual, parietal, and prefrontal cortices. Alpha reactivity in the visual cortex was diminished in patients with SCI. Alpha power correlated negatively with PDETmax in the secondary somatosensory and with SDV in the posterior cingulate cortex, while theta power correlated positively with MCC in the visual cortex.

During EO, patients showed decreased alpha power in the frontal cortex and lower theta power in the visual and prefrontal cortices. Those with abolished tibialis SEPs had reduced alpha power in the postcentral gyrus (leg area). The unable-to-void group showed increased theta power in the visual and frontal cortices, and theta power correlated positively with MCC in the visual cortex

Submitted Abstract for Poster Session at INUS 2026

Conclusions

Absolute rsEEG alpha power serves as an early marker for acute SCI patients. Reduced alpha reactivity could be a sign of thalamocortical dysrhythmia. References

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Submitted Abstract for Poster Session at INUS 2026

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Breaking Resistance: Mirabegron's Role in Overcoming Refractory Neurogenic Bladder—A Systematic Review and Meta-Analysis

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Introduction

Neurogenic bladder is a lower urinary tract dysfunction resulting from neurological disease or injury. Standard management consists of clean intermittent catheterization combined with anticholinergic drugs or intradetrusor botulinum toxin A injections. However, many patients are refractory to these treatments, leaving augmentation cystoplasty as the last option, despite its invasiveness. Mirabegron, a β_3 -adrenoreceptor agonist, has emerged as a promising adjuvant therapy, with studies showing improvements in urodynamic and clinical outcomes. By reducing the need for surgery, mirabegron offers potential benefit, yet no systematic review has synthesized current evidence on its role in refractory neurogenic bladder. This systematic review aims to evaluate the efficacy of mirabegron as an adjuvant therapy for refractory neurogenic bladder.

Methods

Studies from three databases (PubMed, Scopus, EBSCO), were searched using predetermined keywords in accordance with the PRISMA guideline and screened for eligibility. In this review, the primary outcomes are changes in bladder compliance and cystometric capacity after mirabegron administration; other urodynamic and clinical parameters as secondary outcomes. We used the ROBINS-I and RoB2 tools to assess the risk of bias of the included studies. Meta-analyses were conducted with Review Manager v5.4.1.

Results

We included 17 eligible studies. A meta-analysis showed an increase of 15.36 ml/cmH₂O in the bladder compliance ($p < 0.00001$; $I^2 = 58\%$) and an increase of 89.12 mL in the cystometric capacity ($p < 0.00001$; $I^2 = 0\%$). Subgroup analysis showed greater improvement with add-on therapy. In addition, meta-analysis also showed statistically significant changes in other parameters, such as a decrease in end-filling detrusor pressure, urinary frequency, urgent micturition episodes, nocturia frequency, overactive bladder symptoms score (OABSS), patient perception of bladder condition (PPBC), and international prostate symptoms score (IPSS); a decrease in the risk of vesicourethral reflux (VUR); and an increase in volume at first neurogenic detrusor overactivity. These findings indicate a significant improvement for patients with refractory neurogenic bladder treated with mirabegron.

Conclusions

Mirabegron significantly increases bladder compliance and cystometric capacity in a patient with

Submitted Abstract for Poster Session at INUS 2026



refractory neurogenic bladder. Mirabegron can be used as an adjuvant therapy after failure of primary therapy to reduce the need for surgery.

SESSION 1

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Computational Discovery of Novel Non-Steroidal Dual-Site Inhibitors of CYP17A1 for Enhanced Androgen Suppression in Castration-Resistant Prostate Cancer

Achmad Ilham Nurgina

Introduction

Prostate cancer progression is strongly driven by androgen receptor (AR) signaling. In castration-resistant prostate cancer (CRPC), tumors maintain androgen production through intratumoral steroidogenesis despite androgen deprivation therapy. The cytochrome P450 enzyme 17A1 (CYP17A1) plays a pivotal role in this process by catalyzing both 17 α -hydroxylase and 17,20-lyase reactions. Abiraterone, a steroidal CYP17A1 inhibitor, has become a standard therapy; however, it exhibits incomplete blockade of enzymatic activity and resistance often emerges, limiting long-term efficacy. Novel non-steroidal inhibitors with improved potency, selectivity, and dual-site binding capacity may provide more durable androgen suppression with fewer off-target effects. Computational drug discovery offers an efficient strategy to explore new chemical scaffolds by integrating docking, molecular dynamics, and pharmacodynamic modeling. This study aimed to identify novel non-steroidal CYP17A1 inhibitors using a validated in-silico pipeline.

Methods

1. Protein target preparation

Crystal structures of human CYP17A1 complexed with abiraterone (PDB ID: 4NKV) and orteronel (PDB ID: 4NKW) were retrieved from the Protein Data Bank. Proteins were prepared by adding hydrogen atoms, optimizing protonation states at pH 7.4, and retaining the heme prosthetic group with Fe³⁺. Active site grids were defined to include the heme group and substrate access channel.

2. Ligand preparation and docking

A virtual library of 5,000 azole, imidazole, and benzimidazole derivatives was curated from the ZINC15 database and minimized. Docking was performed using AutoDock Vina with explicit metal-coordination constraints between Fe and the ligand's nitrogen donor atoms. Validation was conducted through redocking of abiraterone and orteronel, achieving RMSD \leq 2.0 Å.

3. Rescoring and molecular dynamics

Top 200 ligands were rescored using MM/GBSA, and the best 10 were subjected to 100 ns MD simulations in GROMACS with explicit solvation. System stability was monitored by RMSD, RMSF, Fe-N bond distances, hydrogen bond persistence, and MM/GBSA binding free energy trajectories.

4. Off-target and ADMET evaluation

Off-target binding was assessed against CYP21A2, CYP11B1, and CYP3A4 using docking. ADMET properties were predicted using SwissADME and pkCSM to evaluate drug-likeness, solubility,

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bioavailability, and toxicity risk.

Results

Molecular docking successfully identified multiple ligands with superior predicted binding affinities to CYP17A1 compared with the reference drug abiraterone. Among these, three lead candidates exhibited markedly stronger binding free energies, ranging from -45 to -52 kcal/mol, whereas abiraterone displayed a binding energy of approximately -40 kcal/mol under identical docking conditions. Subsequent molecular dynamics (MD) simulations over 100 ns confirmed the stability of these interactions. The Fe–N coordination bond remained consistently maintained within a narrow range of 2.1–2.3 Å, while global protein–ligand complex stability was reflected by low root mean square deviation (RMSD) values (<2.0 Å) throughout the simulation trajectory.

Detailed interaction analysis revealed persistent hydrogen bonding with conserved I-helix residues Thr306 and Ser312, in addition to stable hydrophobic contacts within the substrate access channel, indicating robust and multi-point stabilization of the ligand within the active site. MM/GBSA rescoring further corroborated the favorable binding energetics, with all three candidates maintaining consistently lower free energy values compared to abiraterone across multiple trajectory snapshots.

In silico ADMET profiling indicated that the lead compounds fulfilled drug-likeness criteria, with balanced lipophilicity, acceptable solubility, and favorable predicted oral bioavailability. Importantly, off-target docking against related steroidogenic enzymes (CYP21A2 and CYP11B1) demonstrated lower binding affinities relative to CYP17A1, suggesting an improved selectivity profile and a reduced likelihood of glucocorticoid or mineralocorticoid pathway disruption.

Conclusions

This study identified three novel non-steroidal CYP17A1 inhibitors with superior binding free energies, stable dual-site interactions, and favorable ADMET properties compared to abiraterone. Computational modeling consistently predicted potent androgen suppression and improved pharmacodynamic outcomes, with reduced off-target risks. These findings strongly support the further development of the identified compounds as next-generation therapeutic candidates for castration-resistant prostate cancer.

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SESSION 1

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Histologic Supersession of Macroscopic Assessment: A Meta-Analysis of NeuroSAFE's Impact on Surgical Margin Status and Neurovascular Bundle Preservation in RARP

Fanny Aprianti Kuswadi, Ahmad Zulfan Hendri, Muhammad Anwar Irzan

Introduction

The NeuroSAFE (Neurovascular Structure-Adjacent Frozen-section Examination) technique, which provides real-time intraoperative frozen-section analysis during robot-assisted radical prostatectomy (RARP), aims to optimize the critical balance between nerve-sparing for functional recovery and oncological efficacy. While prior studies affirm its short-term functional benefits, its long-term oncological safety remains a subject of debate. Therefore, this study aimed to systematically review and synthesize the available evidence to evaluate the long-term functional and oncological outcomes of NeuroSAFE-guided RARP versus standard RARP.

Methods

Our team conducted a PRISMA-compliant systematic review and meta-analysis to evaluate the comparative efficacy of NeuroSAFE versus standard RARP. After a comprehensive search of PubMed, Embase, and Cochrane Central was performed from 2012 to July 2025 for studies comparing NeuroSAFE RARP to standard RARP. Primary outcomes were 12-month potency (IIEF-5 ≥ 17 or study-defined) and continence (0-1 pad/day). Secondary outcomes included rates of nerve-sparing, positive surgical margins (PSM) on final pathology, biochemical recurrence (BCR), and the presence of residual tumor in secondary resections. Pooled odds ratios (OR) and hazard ratios (HR) with 95% confidence intervals (CI) were calculated using a random-effects model.

Results

NeuroSAFE significantly increased bilateral nerve-sparing (OR 3.86, 95% CI 1.56–9.58), 12-month potency (OR 2.40, 95% CI 1.65–3.50), and 12-month continence (OR 1.49, 95% CI 1.07–2.09). There was no significant difference in the rate of PSM on final pathology (OR 0.75, 95% CI 0.52–1.08) or the risk of BCR (HR 0.92, 95% CI 0.75–1.14). In patients with intraoperative positive margins, secondary resection yielded residual tumor in 59% (95% CI 52–66%) of cases

Conclusions

A protocol-driven NeuroSAFE technique significantly improves long-term functional recovery without jeopardizing oncological efficacy. This decade-long experience validates the safety of its selective resection strategy, supporting its integration as a standard precision tool to achieve the oncological and functional trifecta in RARP

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SESSION 1

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Impact of Micro-Hole Zone Catheters Versus Conventional Eyelet Catheters on Bladder Emptying, Flow-Stops, and Microtrauma in Adults With Neurogenic or Non-Neurogenic Lower Urinary Tract Dysfunction Requiring Clean Intermittent Catheterisation: A Systematic Review

Branson Thamran, Bungaran Sihombing, Steven Steven

Introduction

Intermittent catheterization is the gold standard method for bladder emptying in neurogenic and non-neurogenic lower urinary tract dysfunction patients. Despite their usage, eyelet catheters are associated with frequent flow stops, incomplete bladder emptying, and mucosal trauma that leads to patients' discomfort and contributes to chronic urinary tract infections. This systematic review and meta-analysis aim to assess the safety and impact of the micro hole zone catheter in this population.

Methods

Several databases were widely searched for studies through 2025. The primary outcome was bladder emptying, and secondary outcomes were flow-stops and microtrauma. ROBINS-Intervention was used to assess the risk of bias.

Results

We identified four publications with a total of 253 patients. There was a significant difference in the residual urine volume between the two groups (MD = -21.40ml, 95% CI: -40 to -2.8, p=0.035). The Mean difference in flow stop rate was 6.19 (95% CI: 3.51-10.92), and the Mean difference in microtrauma was 6.56 (95% CI: 3.91-11.00). All favour the Micro Hole Zone Catheter.

Conclusions

The micro hole zone catheter demonstrated a safety option compared to the eyelet catheter and was associated with a much higher comfort scale and fewer flow-stops that lead to better emptying of the bladder.

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SESSION 1

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Genetic Goldmines: How Biobanking is Changing the Game in Overactive Bladder Syndrome

Aldy Ridho Pangestu, Tanaya Ghinorawa

Introduction

In overactive bladder research, biobanking facilitates precision medicine through the identification of possible biomarkers for tailored care using biospecimens. Most of the evidence is still descriptive, with limited conclusive data on clinical utility. Recent investigations involving the collection of urine and serum aim at improving stratification, predicting treatment response, and elucidating the mechanisms of symptom variability.

Methods

The review focused on the role of biobanks in precision medicine for studies on Overactive Bladder (OAB). We conducted Semantic Searches on ClinicalTrials.gov and identified studies for 'biobanks' and 'personalized medicine' for humans. Three studies met the criteria. They studied urine and serum biomarkers, but inconsistencies in sample-handling and missing quantitative data were recurrent issues.

Results

Biobanking facilitates treatment tailoring on the precision medicine spectrum for overactive bladder (OAB) research. Various registered studies investigating several possible biomarkers (urinary nerve growth factor, prostaglandin E2, adenosine triphosphate, beta-3 adrenoceptor, serum ADRB3, guanine nucleotide exchange factor, rho associated coiled coil containing protein kinase 2) used stored urine or serum samples. Each of the markers on the list was studied in isolation in respect of treatment, outcome, symptom improvement, and patient rank in the classification system based on the level of the marker. Nevertheless, the studies missed adequate clinical correlation documenting the change in the biomarker and the predictor, effect size, and response rates. Hence, evidence ascertaining the reliability of the biomarkers to guide treatment of OAB remains sparse and unproven.

Conclusions

There has been preliminary work with regard to biobanking-enabled precision medicine for overactive bladder. Some promising biomarkers have been identified; however, there remains a lack of validated clinical data. For precision medicine to be advanced in order to enhance the diagnosis and tailor the treatment of OAB, there needs to be biobanking done in a standardized way, comprehensive research, and extensive validation.

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SESSION 1

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Integrating Light-Sheet Microscopy and Post-Mortem MRI to Map Human Sacral Spinal Cord Nuclei Involved in Bladder Control

Mathijs de Rijk, Sven Hildebrand, Milo Imbeni, Carolina Buccelato, Gommert van Koeveringe, Alard Roebroek

Introduction

The neural control of micturition depends on a precisely coordinated network extending from the brainstem to small motor nuclei in the sacral spinal cord (SSC). Among these, Onuf's nucleus (ON) plays a key role in maintaining continence through sustained activation of the external urethral sphincter, and timely relaxation under somatic control. Despite this essential role, the three-dimensional (3D) cytoarchitecture of ON and its relation to surrounding spinal structures remain poorly defined. Traditional histological approaches cannot capture the rostrocaudal organization of these elongated nuclei, limiting our understanding of their structure–function relationships. A detailed 3D anatomical reference of the SSC is essential for interpreting *in vivo* neuroimaging data and for improving neuromodulatory interventions targeting sacral circuits.

Methods

Human post-mortem SSC samples (N = 4) were processed using optimized optical tissue clearing and light-sheet fluorescence microscopy (LSFM) to achieve high-resolution imaging of intact tissue blocks. Nissl staining enabled the visualization of grey- and white-matter borders and identification of ON in lamina IX. The same specimens were scanned with ultra-high-field (9.4 T) MRI to enable direct spatial registration between MRI contrast features and histologically verified structures.

Results

LSFM provided unprecedented 3D visualization of the SSC, permitting clear delineation of ON within the ventral horn. The nucleus appeared as a compact, elongated cluster of large motor neurons extending over multiple spinal segments. Co-registration with post-mortem MRI demonstrated a close correspondence between ON boundaries on histology and MRI contrast variations, establishing a translational bridge between microscopic anatomy and mesoscopic imaging.

Conclusions

This study provides the first integrated 3D map of human SSC nuclei implicated in bladder control, combining LSFM and ultra-high-field MRI. The ability to identify ON across both modalities establishes a methodological link between post-mortem MRI contrast and cellular-scale anatomy. This framework offers a foundation for future studies aiming to further characterize the cellular composition of ON through antibody labelling in LSFM, connect functional neuroimaging with microstructural organization, and to better understand the spinal mechanisms underlying continence and their modulation in disease.

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SESSION 1

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Neuroplasticity-based Rehabilitation for Overactive Bladder Symptoms in Neurogenic Bladder: A Systematic Review

Christalino G. F. Legoh, Harrina Erlianti Rahardjo

Introduction

Overactive bladder (OAB) is a common and disabling condition that results from neurogenic bladder. Conventional therapies often provide inadequate results. Neuroplasticity-based rehabilitation, which enhances the adaptability of the central and peripheral nervous systems, has emerged as a promising approach.

Methods

A systematic search was conducted in PubMed, Science Direct, Cochrane, Google scholar (2020–2025). Eligible studies included randomized controlled trials (RCTs), pilot studies, non-randomized studies, evaluating neuroplasticity-based interventions compared to sham or usual care in patients with neurogenic bladder presenting OAB symptoms. Data extraction and risk of bias assessment were performed according to PRISMA guidelines.

Results

Ten studies involving 800 patients were included. Intervention studies included transcranial magnetic stimulation (rTMS), percutaneous and transcutaneous tibial nerve stimulation (TTNS), and biofeedback-assisted pelvic floor muscle training. Our systematic review revealed substantial improvements in OAB symptoms with neural stimulation in comparison to sham or conventional care. However, the evidence regarding TTNS is inconclusive, exhibiting efficacy in certain trials while demonstrating limited or no benefit in others. This variability likely stems from variations in protocols and patient demographics. Pelvic floor muscle training combined with biofeedback consistently demonstrates efficacy in alleviating bladder symptoms, often augmented when combined with neuromodulation techniques. Electroacupuncture and rTMS emerge as promising modalities, particularly in the management of post-stroke neurogenic bladder, providing alternative or complementary approaches to conventional care.

Conclusions

Neuroplasticity-based rehabilitation holds great promise in alleviating OAB symptoms in neurogenic bladder patients. However, these findings should not be considered definitive, as further clinical trials are necessary to confirm their efficacy.

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Regional Differences in Sensory Afferent Innervation of the Mouse Bladder Wall

Susana Fernández Chadily, Anne van Klaveren, Gommert van Koeveringe, Mathijs de Rijk

Introduction

Sensory afferent innervation of the bladder wall provides the primary input for lower urinary tract control. Among these, unmyelinated C-fibers convey nociceptive, thermal, and chemical information, becoming particularly active under conditions of irritation or inflammation, whereas myelinated A δ -fibers signal bladder filling under normal physiological states. Calcitonin gene-related peptide (CGRP), expressed predominantly in unmyelinated C-fibers, serves as a reliable marker of sensory afferent fibers. Although previous studies have suggested regional specialization, quantitative mapping of sensory innervation across the full rostro-caudal axis of the mouse bladder is lacking. Here, we systematically quantified regional CGRP-positive innervation to determine whether afferent density follows a rostro-caudal gradual increase.

Methods

Bladders from 9 female C57BL/6J young mature mice were collected, fixed, cryoprotected, frozen, sectioned (20 μ m), and stained for CGRP immunofluorescence. For each section, images were segmented into seven equal regions from bladder dome (rostral) to bladder neck (caudal). CGRP-positive area was thresholded, images were binarized, and CGRP positive area was expressed as percentage of total tissue area. Median values per segment were used for statistical analysis. To test for a systematic rostro-caudal trend, linear regression slopes of CGRP-positive area versus segment position were compared against a null distribution generated by exact permutation of all $7! = 5,040$ possible segment orders. The empirical p-value reflected the proportion of permuted slopes \geq the observed slope.

Results

CGRP-positive fibers were present throughout the bladder wall, with increasing density toward caudal regions. The regression slope across segment means was positive ($\beta = 0.0095$), indicating a gradual rise in CGRP-positive area from bladder dome to bladder neck. Permutation analysis confirmed this trend as statistically significant ($p = 0.0171$), with only 1.7 % of randomized datasets producing slopes equal to or greater than the observed value. Negative controls showed only background autofluorescence, confirming staining specificity.

Conclusions

CGRP-positive sensory afferent innervation of the mouse bladder wall follows a significant rostro-caudal gradient, with higher density near the trigone and bladder neck. These findings provide the first quantitative evidence for systematic regional specialization of bladder sensory innervation in

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healthy mice. Establishing this baseline enables more precise interpretation of region-specific remodeling in pathological states such as overactive bladder, bladder pain syndrome, and age-related dysfunction, and supports region-targeted therapeutic strategies aimed at modulating afferent activity.

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SESSION 2

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PREVALENCE OF SHY BLADDER SYNDROME IN PATIENTS PRESENTING WITH BOTHERSOME LOWER URINARY TRACT SYMPTOMS

Dr.Kannan Nair, Miss Nandana Vijayan

Introduction

This study aims to determine the prevalence of both “mild “and “severe” forms of paruresis in individuals undergoing LUTS evaluation in the hospital and to check the correlation between Social Anxiety Disorder and Shy Bladder Syndrome.

Methods

This cross sectional observational study was conducted in the Department of Urology and involved 80 people undergoing LUTS evaluation. A self-report questionnaire was used to collect data on demographics, symptoms of paruresis, comorbid conditions particularly social anxiety and impact on quality life

Results

Among the 80 participants, most reported moderate to severe shy bladder symptoms, with 36.3% classified as severe and 22.5% as extreme. Social anxiety was also common, with over 75% showing moderate to severe levels. A strong positive correlation was found between shy bladder scores and both fear ($R^2 = 0.641$) and anxiety ($R^2 = 0.662$) components of social anxiety. The sample included more males (67.5%) than females (32.5%), highlighting a notable psychological burden in this clinical population

Conclusions

This study reveals a high prevalence of moderate to severe paruresis among individuals undergoing LUTS evaluation, with a strong positive correlation between shy bladder symptoms and social anxiety. Beyond psychological distress, paruresis can lead to significant urological complications such as incomplete bladder emptying, urinary retention, increased risk of urinary tract infections, and difficulty in performing essential diagnostic procedures. These findings underscore the importance of early identification and the need for a multidisciplinary approach combining urological and psychological care to effectively manage the condition and improve patient outcomes

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SESSION 2

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Medsynergy–INUS Neuro-Urology E-Course (2025) Outcomes and the INUS Student Task Force & Mentorship Model

Ruth Kirschner-Hermanns, Jalesh N. Panicker, Khrystyna Hafiichuk and Abhinav

Introduction

Abstract:

Neuro-urology is a specialised discipline that necessitates highly trained personnel and proper infrastructure to train the next generation, which is usually limited in rural regions and low- and middle-income countries (LMICs). To address this gap, an innovative e-learning course was piloted as a summer course jointly organized by Medsynergy and INUS in 2025.

Methods

Intervention:

Medsynergy-INUS Summer Course on Neuro-urology aimed to provide evidence-based education and mentorship through online lectures. This six-week virtual initiative, held from July to August, was collaboratively developed by Medsynergy and INUS teams. It featured weekly lectures delivered by INUS faculty, including Helmut Madersbacher (Austria), Jalesh N. Panicker (UK), Ruth Kirschner-Hermanns (Germany), Glenn T. Werneburg (USA), and Dr. Kadir Onem (Turkey), each covering distinct aspects of neuro-urology. Engagement metrics, quiz results, and participant feedback were systematically recorded.

Results

514 participants registered from different countries, reflecting a global demand for structured neuro-urology training. During the live session, an average of 96 participants attended, and recordings were made available through YouTube, INUS, Medsynergy, and partner networks afterwards. Engagement extended beyond live sessions, with an average of 130 participants completing post-lecture quizzes. 91 participants were awarded course completion certificates (achieving a cumulative score of 60% or higher), and 7 participants received special recognition for outstanding live engagement in discussions. Analysis of post-course feedback responses demonstrated high levels of satisfaction, particularly regarding the relevance of course content, accessibility of online lectures, and the benefits of international faculty mentorship.

Future-Plan:

Building on these outcomes, we propose the initiative of a Student Task Force alongside a Mentorship Network, which connects students and early-career professionals with international experts, ensuring continuity, capacity building, and the creation of an inclusive global learning community, and mitigating the disparity in Neuro-Urology education.

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Conclusions

The Medsynergy-INUS 2025 e-course demonstrated both feasibility and scalability, as well as significant global demand for neuro-urology education. The integration of structured online learning, a student-led task force, and connections with experts has the potential to reduce educational disparities and enhance collaboration.

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SESSION 2

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The Urodynamics of Discomfort: Which Interventions Actually Reduce Pain and Anxiety? A Systematic Review and Meta-Analysis

Albert Ciam, Zola Wijayanti, M Garidya Bestari

Introduction

Urodynamic study (UDS) is essential for evaluating lower urinary tract symptoms but often induces pain and anxiety due to its invasive nature. Various pharmacological and non-pharmacological strategies have been proposed to improve patient comfort, yet their overall effectiveness remains unclear. This study aim to evaluate the effectiveness of interventions aimed at reducing pain and anxiety in patients undergoing UDS.

Methods

Randomized controlled trials and observational studies involving adult patients undergoing UDS with interventions to reduce pain or anxiety compared to standard care were included. Non-English reports, case series, and narrative reviews were excluded. PubMed, EMBASE, ScienceDirect, and EBSCO were searched up to October 10, 2024. Study quality was assessed using RoB 2 for randomized trials, ROBINS-I for non-randomized studies, and the Newcastle-Ottawa Scale for retrospective studies. Standardized mean differences (SMD) with 95% confidence intervals (CI) were pooled using random- or fixed-effect models, with heterogeneity assessed by the I^2 statistic.

Results

Twenty-two studies including 2,196 participants were analyzed. For pain reduction (12 studies, 887 participants), providing detailed patient information significantly reduced pain (SMD 0.84; 95% CI 0.20–1.48; $p=0.01$), while music therapy and anesthetic agents showed no significant benefit. The overall pooled effect on pain was not significant (SMD 0.17; 95% CI -0.11 to 0.46; $p=0.24$). For anxiety reduction (10 studies, 904 participants), pooled analysis demonstrated a modest but significant reduction (SMD 0.57; 95% CI 0.11–1.02; $p=0.04$), though individual interventions such as music and information alone were inconsistent.

Conclusions

Marked heterogeneity in study designs, intervention protocols, and outcome measurements, along with small sample sizes, limited the precision of pooled estimates. Some non-pharmacological strategies, particularly structured patient information, can reduce discomfort during UDS, but evidence remains inconsistent. Larger, well-designed randomized trials are needed to establish standardized interventions.

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Soothing the Bladder: Music Therapy and Adapted Dive Reflex to Improve Urodynamic Accuracy by Reducing Procedural Anxiety

Zola Wijayanti, Aaron Tigor Sihombing, Evan Prakoso Gandakusuma, Albert Ciam

Introduction

Urodynamic testing is essential for determining the etiology of lower urinary tract symptoms (LUTS) but can provoke procedural anxiety. The amygdala, which regulates anxiety, also influences autonomic control of micturition; thus, heightened anxiety may alter maximum bladder capacity and affect test accuracy. Music therapy and the adapted dive reflex are non-pharmacological interventions known to reduce anxiety but have not previously been combined during urodynamic procedures.

Methods

This randomized controlled trial compared State-Trait Anxiety Inventory-Form Y (STAI-Y) scores and maximum bladder capacity before and after music therapy and adapted dive reflex in patients undergoing urodynamic testing. Patients with LUTS were randomized into an intervention group (music therapy during testing and adapted dive reflex before testing) and a control group (standard care). Data collected included voiding diaries, pre- and post-procedure STAI-Y scores, and urodynamic bladder capacity. Paired t-tests or Mann-Whitney tests were applied according to data distribution

Results

Sixty-seven participants were included (33 intervention, 34 control). There was no significant change in STAI-Y trait scores after intervention ($P = 0.230$), but STAI-Y state scores significantly decreased in the intervention group ($P = 0.0001$). The difference between voiding diary bladder capacity and urodynamic capacity was significantly smaller in the intervention group compared with controls ($P = 0.001$), indicating improved concordance between real-life and test measurements.

Conclusions

Music therapy combined with the adapted dive reflex during urodynamic testing effectively reduces situational (state) anxiety but not baseline (trait) anxiety. These interventions help align measured bladder capacity with patients' actual functional capacity, potentially enhancing the diagnostic accuracy of urodynamic evaluation.

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The Efficacy of Smoking Cessation on Lower Urinary Tract Symptoms in Men with Benign Prostatic Hyperplasia: A Systematic Review

Emmanuel Matthew Habinsaran

Introduction

Smoking is a risk factor for Lower Urinary Tract Symptoms (LUTS), but its direct impact on symptom severity in men with a confirmed diagnosis of Benign Prostatic Hyperplasia (BPH) remains unclear. While smoking cessation is often recommended as a lifestyle modification, the evidence base for this intervention in the BPH population is limited and requires further investigation. The objective of this systematic review was to assess the efficacy of smoking cessation on LUTS in adult men with BPH.

Methods

Pubmed, Cochrane, and Ebsco databases were searched to identify relevant studies based on PICO framework: (P) men with BPH and LUTS who smoke, (I) smoking cessation, (C) continued smoking, and (O) change in IPSS or bladder function. Inclusion criteria prioritized observational studies matching this framework. Studies were excluded if they involved irrelevant populations, confounded interventions, or did not have specified outcomes. The risk of bias for the included study was assessed using the Newcastle-Ottawa Scale, and a narrative synthesis was conducted.

Results

A total of 66 articles were identified through the initial database search. After screening, only one observational study was included. This study was assessed to have a moderate risk of bias. It found that a longer duration of smoking cessation was associated with improved bladder storage function, showing a positive correlation with maximum cytometric capacity (correlation coefficient 0.241, $P = 0.050$). Additionally, the study found that non-smokers had a significantly lower IPSS score for the specific symptom of straining compared to smokers (1.71 vs. 2.60, $P = 0.029$). However, the primary outcome of this review, the change in IPSS after smoking cessation, could not be evaluated, as no prospective trials measuring this specific change were identified.

Conclusions

Current low-quality evidence does not provide direct proof that smoking cessation leads to short-term symptom improvement in BPH patients, as measured by a change in the total IPSS. While the included evidence suggests a potential long-term biological benefit, there is a critical lack of high-quality evidence to guide clinical expectations regarding symptom improvement after quitting. Therefore, a high-quality prospective trial is needed to determine the benefits of smoking cessation for LUTS in BPH patients.

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SESSION 2

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Association Between Underwear Type and Sperm Parameters Related to Infertility in Reproductive-Age Men

Jovian Adinata^{1*}, Ersee Hera Gratia¹, Ponco Birowo¹

Introduction

Male infertility accounts for approximately 20–30% of all infertility cases worldwide and represents a significant public health concern. Beyond genetic and anatomical causes, modifiable lifestyle factors have gained attention as important determinants of male reproductive health. One such debated factor is the type of underwear worn, particularly tight-fitting garments, which may elevate scrotal temperature and impair spermatogenesis. The physiological mechanism suggests that increased testicular heat may disrupt sperm production, motility, and morphology. This systematic review aimed to comprehensively evaluate current evidence on the association between type underwear use and sperm quality parameters influencing male fertility potential.

Methods

A systematic literature search was conducted across PubMed, Scopus, and ProQuest databases without year restrictions, limited to English-language and human studies. Eligible studies included adult men aged ≥ 18 years comparing tight versus loose underwear in relation to semen parameters, including sperm count, motility, morphology, and total motile sperm count. Study selection and data extraction followed the PRISMA 2020 guidelines. The risk of bias was assessed using the ROBINS-E tool for observational studies and ROBINS-I for interventional designs to ensure methodological consistency and reliability.

Results

Seven studies involving 2,774 participants met the inclusion criteria, encompassing cross-sectional, case-control, and interventional methodologies. Earlier investigations (Oldereid, 1992; Pacey, 2014) reported minimal or no significant association between underwear type and semen quality. However, subsequent studies (Parazzini, 1995; Povey, 2012; Mínguez-Alarcón, 2018; Komiya, 2023; Kaur, 2024) demonstrated that tight underwear use was significantly correlated with lower sperm concentration, reduced progressive motility, and decreased total motile sperm count. Among the reviewed studies, the most compelling evidence was presented by Komiya et al., through a pre–post interventional design that revealed statistically significant improvements in sperm quality parameters after implementing lifestyle modifications, notably the transition from tight to loose underwear.

Conclusions

The collective evidence indicates that wearing tight underwear may negatively affect sperm quality, particularly motility and concentration, through heat-induced testicular dysfunction. While heterogeneity among study designs and measurement methods limits definitive conclusions,

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underwear type remains a simple, non-invasive, and modifiable lifestyle factor. Further large-scale, standardized prospective studies are warranted to confirm causality and inform clinical recommendations for optimizing male fertility.

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SESSION 2

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Bridging Neural Silence Systematic Review and Meta-Analysis of Brain–Computer Interfaces and Neuroprosthetics for Restoring Bladder Control After Spinal Cord Injury

Aldy Ridho Pangestu, Tanaya Ghinorawa

Introduction

Spinal cord injuries are often associated with bladder dysfunction and incontinence in the patient, which can lead to a deterioration in the quality of life. This review evaluates novel neuroprosthetic approaches—sacral anterior root stimulation, sacral neuromodulation, and epidural spinal cord stimulation—considering their effectiveness, safety, cost, and the difficulties associated with restoring bladder function.

Methods

A wide-ranging semantic search provided the basis for the analysis of four principal studies concerning the neuroprosthetics approach for bladder control among the population suffering from spinal cord injuries. The work focused on the interventions employed, the outcomes achieved, valuations of safety and effectiveness from an economic perspective including the costs incurred.

Results

Data from four studies describing neuroprosthetic approaches aiming to restore bladder control in patients with spinal cord injury are analyzed in this systematic review. There was an 85.9% utilization rate of the device for urination in sacral anterior root stimulation (SARS). In sacral neuromodulation, initial success in testing was 45%, which improved to 75% during permanent use indicating success for over 50% of patients in bladder diary scores accomplishment. Epidural spinal cord stimulation improves voiding efficiency and decreases the residual bladder volume which are indicators of restored reflexes. Complications reported were surgical in nature, such as infection and misplacement of the device. Conversely, stimulation-related complications of pain and autonomic dysreflexia were minor and transient. There were positive changes in quality of life, the economic analysis revealing a cost-utility ratio of 10,647 QALYs, and 63% probability of being cost-effective at \$30,000. Advanced bladder function with good safety was observed in these interventions.

Conclusions

Neuroprosthetic techniques such as sacral and epidural spinal cord stimulation enhance bladder control in patients with spinal cord injuries, optimizing voiding and resolving complications to a reasonable degree. They are cost-effective, and potential restoration of autonomic function will improve patient quality of life.

SESSION 2

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Severe Urinary Tract Complication due to Late-Onset Tethered Cord Syndrome in a Spina Bifida Occulta Patient: A Case Report

Lia Purnasari, Rosi Wirawan, Melania Setiawan

Introduction

Tethered cord syndrome can develop as a complication of spina bifida occulta (SBO). Most people with SBO have no clinical symptoms, but the condition can progress and cause the spinal cord to adhere (tether) to the surrounding tissue, causing progressive neurological deficits. Symptoms vary and can worsen significantly during the growth spurt in adolescence, where the spine lengthens faster than the spinal cord and this causes constant stretching and tension on the spinal cord.

Methods

A 42-year-old healthy male presented with progressive voiding difficulty and loss of bladder sensation. The patient never had any micturition problems until he was 10 or 11. One time he remembered having to urinate more frequently and then had to hold it in because his teacher wouldn't let him go to the toilet. Since then, he often held back the urge to void; over the years the bladder feeling become subsided. Past history he had then multiple episodes of haematuria, urinary tract infection (UTI) and urinary retention; were treated with antibiotics and urethral dilatation. In the last 3 years the UTI occurred more frequent, the urine dribbled and he felt no bladder sensation. There is a palpable mass on the left upper buttock suggested to an occult spinal dysraphism, left sided S3 and S4-5 sensory deficits, decreased anal tone and weak voluntary anal contraction. Urodynamic evaluation revealed terminal detrusor overactivity, still normal bladder compliance and low detrusor pressure with suspected DSD during voiding. MRI pelvis showed a trabeculated, thick-walled bladder with multiple diffuse diverticulosis and features of chronic cystitis. The bladder has a pine tree appearance. On thoracolumbar MRI, conus medullaris was found at the S1 level, spina bifida at the S2-S3 level and tethered cord with intradural lipoma at the S2-S5 level. The patient was managed with aseptic intermittent catheterization (AIC), every 4-6 hourly depend on fluid intake. Following intervention showed less frequent UTI due to more complete bladder emptying.

Results

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Conclusions

In conditions where micturition problems are recurrent and progressive, an assessment tracing back to childhood or adolescence should be performed to rule out SBO or tethered cord. This case also emphasizes the importance of monitoring bladder function into adulthood in SBO patients.

SESSION 2

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Who Responds Best? A Meta-Analysis of PDE5 Inhibitor Efficacy in Spinal Cord Injury-Related Erectile Dysfunction Stratified by ASIA Grade and Injury Level

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Introduction

Erectile dysfunction (ED) is a prevalent and debilitating complication in men with spinal cord injury (SCI). Phosphodiesterase type-5 inhibitors (PDE5i) are commonly used as first-line therapy; however, treatment efficacy may vary depending on the severity of neurological injury. The ASIA Impairment Scale (AIS) is widely used to classify neurological completeness in SCI, yet its role in predicting PDE5i response has not been systematically reviewed. This meta-analysis evaluates the relationship between ASIA grade and treatment outcomes in SCI-related ED.

Methods

A systematic review and meta-analysis was performed according to PRISMA guidelines. PubMed, ScienceDirect, CENTRAL, and EBSCO were searched to September 2025 for RCTs and prospective cohorts evaluating PDE5i in adult men with SCI-ED. The primary endpoint was treatment response, assessed by International Index of Erectile Function–Erectile Function domain (IIEF-EF), Sexual Encounter Profile (SEP2, SEP3), or Global Assessment Question (GAQ). Subgroup analyses were conducted by AIS grade (complete [A] vs incomplete [B–D]) and by neurological level (above vs below T12). Risk of bias was assessed using RoB 2 and ROBINS-I.

Results

Six studies were included. Overall, PDE5i significantly improved erectile outcomes compared to placebo, with a pooled GAQ responder rate of RR 4.27 (95% CI: 2.30–7.91). In subgroup analysis by ASIA grade, efficacy remained consistent. For SEP2 (penetration), the response rate was RR 1.93 (AIS A) versus 1.57 (AIS B–D). For SEP3 (intercourse completion), the respective rates were RR 3.40 (AIS A) and 2.52 (AIS B–D). When stratified by injury level, patients with injuries below T12 had a lower SEP2 response (RR 1.78, 95% CI: 0.84–3.80) compared to those with injuries above T12 (RR 1.77, 95% CI: 1.48–2.11). PDE5i also significantly improved erectile function scores. The pooled mean difference in IIEF-EF was +8.41 (95% CI: 7.44–9.38) across ASIA grades, and +7.49 (95% CI: 5.87–9.12) across injury levels.

Conclusions

PDE5 inhibitors are effective and well tolerated for treating ED in men with SCI. Although efficacy is observed across all neurological severities, individuals with incomplete injuries (AIS B-D) show a higher likelihood of penetration and intercourse success. The lack of significant SEP2 improvement in patients with injuries below T12 suggests reduced responsiveness in lower motor neuron lesions. PDE5i should remain the standard first-line therapy for SCI-ED, with expectations tailored according to neurological completeness and lesion level.

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SESSION 2

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The Role of Bladder Training Prior to Catheter Removal in Adult Post-Stroke Urinary Retention Patient: A Systematic Review

Emmanuel Matthew Habinsaran, Adam Yafiq Zahran Tambunan, Ahmad Fathi Rafif Ismail, Naufal Rofi Daffari Sutikno

Introduction

Post-stroke urinary retention is a common complication following stroke. Indwelling urethral catheters are frequently used in the immediate post-stroke period, but their removal and subsequent bladder management remain challenging clinical decisions. Bladder training interventions have been proposed to facilitate the transition from catheterized to spontaneous voiding, but the evidence base for these approaches in post-stroke patients is limited and requires further investigation. The objective of this systematic review was to assess the efficacy of bladder training prior to catheter removal on successful spontaneous voiding in adult post-stroke urinary retention patient.

Methods

Pubmed, Cochrane, Ebsco, and Google Scholar databases were searched to identify relevant studies. Revised Cochrane risk-of-bias tool for randomized trials (RoB 2) were used to assess the risk of bias and methodological quality of the studies. Narrative synthesis were conducted to present the result.

Results

This systematic review included two randomized controlled trials, one assessed to be at a high risk of bias and the other at a moderate risk of bias. The study at high risk of bias, an assessment based on its early termination and significant participant attrition, showed that a systematic voiding program led to a slightly lower urinary incontinence severity score compared to usual care (mean 8.1 vs. 9.1). Conversely, the second study, assessed to be at a moderate risk of bias, found no significant difference between its pre-removal catheter clamping protocol and standard free drainage in any key outcomes, including time to first void, first voided volume, post-void residual volume, or mean voided volume on the third day after catheter removal. This trial also reported that patients in the clamping groups experienced adverse effects, including symptomatic urinary tract infections (7.5%) and urinary leakage (22.5%).

Conclusions

Current low-quality evidence does not support routine structured program and clamp/unclamp protocol of bladder training before catheter removal in post-stroke urinary retention patients, as studies fail to show a clear benefit and suggest a risk of adverse effects like infections. Therefore, a large, high-quality randomized controlled trial is needed to definitively determine the safety and effectiveness of this practice.

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SESSION 2

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Hospital to Home CIC Package: A structured Program to facilitate Clean Intermittent Catheterisation in person with Spinal Cord Injury

Chua Siew Chien

Julia Patrick Engkasan

Introduction

Clean intermittent catheterisation (CIC) is the gold standard for bladder management in people with spinal cord injury (SCI). It reduces the risk of urinary tract infection, protects renal function, and enhances quality of life when performed correctly. Despite these benefits, adherence and safety during the transition from hospital to home remain a challenge, particularly for newly injured patients and their caregivers who may face anxiety, uncertainty, and lack of confidence. To address these barriers, the Universiti Malaya Medical Centre (UMMC) Hospital to Home CIC Package was developed as a structured program to provide comprehensive education, hands-on training, and follow-up support.

Methods

Both authors developed the materials based on literature and their vast experience managing persons with SCI. The materials were tested for us in the ward by the SCI team. Changes were made based on their feedback. The package is then tried on patients who needed bladder management and was structured as a nurse-led intervention. Components included:

- Education materials
- Practical training
- Competency assessment
- Discharge kit
- Caregiver training
- Follow-up

Results

Implementation of the package demonstrated positive outcomes. Patients achieved independence in performing CIC with caregiver backup support by the time of discharge. At one-month follow-up, compliance exceeded 90%, with no urinary tract infections reported. Patients expressed increased confidence in managing bladder care and greater independence in daily life. Caregivers demonstrated competence, readiness, and reduced anxiety after hands-on coaching. Nurses also reported that the structured approach provided consistency, improved patient safety, and reduced unplanned readmissions. The bladder diary was consistently maintained and proved useful for adherence monitoring, fluid balance review, and early identification of potential

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complications.

Conclusions

The UMMC Hospital-to-Home CIC Package provides a structured, multi-component approach that supports patients with SCI during the critical transition from hospital to home. By integrating education, supervised practice, competency assessment, caregiver involvement, and follow-up support, the package enhances adherence, reduces complications, and empowers both patients and caregivers. This innovation demonstrates the importance of nurse-led interventions in rehabilitation care and offers a practical model that could be scaled and adapted across rehabilitation centres to standardise CIC discharge planning, improve outcomes, and support long-term community reintegration for people with SCI.

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SESSION 2

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Does a Clamp/Unclamp Protocol Improve Post-Catheterization Voiding Success in Adult Post-Stroke Urinary Retention Patient? A Narrative Review Emmanuel Matthew Habinsaran, Adam Yafiq Zahran Tambunan, Ahmad Fathi Rafif Ismail, Naufal Rofi Daffari Sutikno

Introduction

Urinary retention is a common complication following a stroke, and bladder training via clamp/unclamp protocol is one approach intended to improve the success of voiding after catheter removal. However, the clinical evidence supporting this intervention is still debated. This narrative review aims to summarize the current state of evidence regarding the effectiveness of clamp/unclamp protocols for adult post-stroke patients with urinary retention.

Methods

A review of relevant literature, including randomized controlled trials and systematic reviews, was conducted to evaluate the impact of bladder training on post-catheterization outcomes.

Results

The evidence consistently indicates a lack of benefit for clamp/unclamp protocol in post-stroke patients. A key randomized controlled trial found no significant difference in voiding success between patients who underwent catheter clamping and those who did not. Furthermore, a systematic review and meta-analysis concluded that routine clamping is not justified. The available studies are often limited by small sample sizes, and some research indicates that clamping protocols may be associated with adverse effects, such as urinary tract infections and leakage.

Conclusions

Based on current evidence, the clamp/unclamp protocols prior to catheter removal in adult post-stroke urinary retention patients is not supported. Clinical practice should shift towards evidence-based monitoring with post-void residual measurements and individualized management plans. Future high-quality, large-scale randomized controlled trials are necessary to definitively guide clinical practice and explore alternative bladder management strategies.

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SESSION 2

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Alterations in brain structure early after spinal cord injury

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Introduction

Spinal cord injury (SCI) triggers secondary damage that extends beyond the lesion site, leading to remote supraspinal degeneration. Numerous magnetic resonance imaging (MRI) studies have investigated supraspinal changes following SCI; however, compared to the chronic stage the subacute stage remains understudied, despite its crucial role in recovery through early functional reorganization. This study aimed to characterize injury-related structural and functional brain alterations, including those related to lower urinary tract dysfunctions, as early as one month after SCI.

Methods

Brain MRI was acquired one month post-injury in patients with sudden-onset (<7 days) cervical or thoracic SCI (n=29), and in healthy controls (n=34). White matter integrity was assessed using diffusion tensor imaging, while tissue loss was investigated using T1-weighted images. Resting-state functional MRI was conducted to examine differences in functional connectivity. Associations with neurological impairment (e.g. measured via tibial somatosensory evoked potentials (tSEP)) were tested using linear mixed-effects models.

Results

Compared to controls, patients with SCI showed lower fractional anisotropy (FA) (-4.4%) and higher radial diffusivity (RD) (+4.0%) in the bilateral inferior cerebellar peduncles (ICPs), along with smaller gray matter volume in the bilateral middle frontal gyrus. Within the ICPs, patients with abolished tSEP responses had lower FA (-6.6%) than those with partially or fully preserved responses. In the tSEP-preserved group, lower FA correlated with longer conduction velocities. Additionally, patients with SCI demonstrated significantly lower functional connectivity between the vermis 4/5 and the right insular and central opercular cortex (p-FDR = 0.037, cluster size = 86 voxels).

Conclusions

These findings suggest that changes in supraspinal tissue integrity occur within the first month after SCI, affecting at least one ascending pathway (ICPs) and correlating with the extent of tract-specific neurophysiological impairment. Moreover, disruption of ascending spinal input following SCI likely reduces cerebellar sensory drive, which may weaken functional coupling between spinocerebellar regions of the vermis and higher-order cortical integration areas, such as the insula

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and operculum. Importantly, early detection of supraspinal alterations could provide a framework for linking degeneration and reorganization to functional outcomes, including the emergence of neurogenic lower urinary tract dysfunction.

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SESSION 2

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Predictors of Spontaneous Voiding and Optimal Duration of Clean Intermittent Catheterization in Cognitive Impaired Elderly Women With Urinary Retention

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Masanori NOMIYA, M.D.

Introduction

Urinary retention in elderly women poses a major clinical challenge, particularly in those with cognitive impairment. Clean intermittent catheterization (CIC) is recommended, yet self-CIC is often unfeasible, and assisted CIC may not be sustainable in long-term care. Consequently, many patients depend on indwelling catheters, predisposing them to infection, discomfort, and reduced quality of life. Evidence regarding predictors of spontaneous voiding and the optimal duration of CIC before deciding long term indwelling urethral catheter remains scarce in this population. This study aimed to identify clinical factors associated with successful catheter removal and to determine the optimal timeframe for CIC discontinuation in elderly women with urinary retention.

Methods

We retrospectively analyzed 110 elderly women (median age 83.5 years, median Mini-Mental State Examination score 15) with urinary retention managed at our hospital between 2020 and 2024. Clinical variables included age, body mass index (BMI), Functional Independence Measure (FIM) and comorbidities. For complete retention, assisted CIC was performed to maintain bladder volume ≤ 300 mL; for incomplete retention, CIC was continued until the sum of voided and residual urine was ≤ 300 mL. CIC was discontinued when post-void residual volume was ≤ 100 mL, defined as successful spontaneous voiding. Kaplan–Meier analysis was used to estimate time to CIC discontinuation.

Results

Among 110 patients, 74 (67.2%) achieved successful CIC discontinuation. Compared with those who remained catheter-dependent, patients in the discontinuation group had significantly higher BMI (median 22.3 vs 19.7, $p=0.020$) and more frequent urge sensation at baseline (58.0% vs 30.3%, $p=0.010$). Kaplan–Meier analysis revealed a median time of 13 days to CIC discontinuation. By 14 days, approximately half of the patients achieved spontaneous voiding.

Conclusions

Spontaneous voiding was attainable in a substantial proportion of elderly women with urinary retention, even in the presence of cognitive decline. A two-week trial of CIC appears optimal to evaluate voiding recovery before considering long-term catheterization. Higher BMI and preserved

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urge sensation emerged as favorable prognostic factors. These findings underscore the importance of maintaining adequate CIC in the early period and provide practical guidance for clinical decision-making, potentially reducing unnecessary indwelling catheterization and its associated complications in this vulnerable population.

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SESSION 2

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Association between Bedridden Status and Catheter-Related Complications in Patients with Long-Term Indwelling Catheters: A Retrospective Study from a Geriatric Center in Japan

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Sadafumi TOMIOKA M.D.

Takanao OMI M.D.

Masanori NOMIYA, M.D., Ph.D.

Introduction

Long-term indwelling urinary catheterization (IDC) is required in older adults to manage urinary retention, protect renal function, or control recurrent urinary tract infections (UTI). However, prolonged catheter use is strongly associated with complications, such as catheter-associated UTI, obstruction, emergency consultations, and hospital admissions. Although functional dependency and bedridden status are recognized as major determinants of outcomes in geriatric populations, their specific role in catheter-related complications has not been systematically investigated. The aim of this study was to clarify the impact of bedridden status, neurological disease, and other clinical factors on the risk of catheter-related complications in patients with long-term IDC.

Methods

We retrospectively reviewed 117 patients with long-term IDC treated at a tertiary geriatric hospital. The cohort included both inpatients and outpatients (mean age 78 years; 65% male). Primary reasons for catheterization were voiding dysfunction (76.0%) and UTI or hematuria (20.7%). Data extracted included demographics, comorbidities, neurological disease, bedridden rank (J: independent with/without limited outdoor activity; A–C: varying levels of bedridden), and occurrence of catheter-related complications. Patients were divided into independent (J) and bedridden (A–C) groups. Logistic regression models were constructed to assess risk factors, including age, sex, neurological disease, bedridden status, and catheter duration.

Results

Neurological diseases were present in 37% of patients, including cerebrovascular disease (n=21), dementia including Alzheimer's disease (n=15), Parkinson's disease (n=6), and spinal cord disorders including cervical myelopathy or injury (n=4). Overall, 45.5% of the independent group and 69.0% of the bedridden group experienced complications ($p<0.05$). Multivariate analysis revealed that bedridden status tended to increase complication risk (OR 2.1, 95% CI 0.84–5.0, $p=0.11$). Male sex (OR 2.9, 95% CI 1.1–7.9, $p=0.035$) and longer catheter duration ($p=0.026$) were independent predictors. Neurological disease showed a trend toward increased risk (OR 2.1, 95% CI 0.82–4.5), though significance was not reached.

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Conclusions

Bedridden status, male sex, and extended catheter duration were identified as key factors for catheter-related complications. Neurological diseases, especially dementia, cerebrovascular disease, and Parkinson's disease, may also contribute. These findings underscore the need for early identification of high-risk groups and tailored prevention strategies in frail elderly with neuro-urological conditions.

SESSION 2

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From Pads to Power: High-Intensity Focused Electromagnetic (HIFEM) Therapy for Neurogenic Bladder and Pelvic Floor Dysfunction — A New Frontier in Continence Care: A Systematic Review

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Peni

Shelly Maulidya Angelita Sholihah

Introduction

Neurogenic bladder and pelvic floor dysfunction substantially contribute to lower urinary tract symptoms, urinary incontinence, and reduced quality of life (QoL). High-intensity focused electromagnetic (HIFEM) therapy has emerged as a non-invasive option to strengthen pelvic floor musculature and improve continence, yet evidence remains fragmented. This systematic review assessed subjective and objective outcomes of HIFEM in patients with neurogenic bladder or pelvic floor dysfunction, using validated questionnaires (ICIQ-SF, KHQ, PFDI-20, PFIQ-7, FSFI, PISQ-12) and objective measures including pad usage, overactive bladder symptom score (OABSS), voiding frequency, and pelvic floor electromyography (sEMG).

Methods

Eligible studies published between 2018 and 2025 were searched in electronic databases (PubMed, Wiley, Cochrane, ScienceDirect, Google Scholar). Randomized controlled trials (RCTs), cohorts, and single-arm studies reporting outcomes of HIFEM in adults with urinary incontinence, neurogenic bladder, or pelvic floor dysfunction were included. Data were extracted for study design, population, intervention, follow-up, subjective scores, and objective parameters. Risk of bias and applicability were assessed using the Cochrane Risk of Bias 2.0 tool for RCTs and ROBINS-I for non-randomized studies.

Results

A total of 13 studies (n≈637 participants) were included: 3 sham-controlled RCTs, 2 comparative cohorts, and 8 single-arm trials. Across studies, ICIQ-SF scores consistently improved by 50–70% from baseline, with 25–34% of patients achieving complete dryness by 1–3 months. Pad usage decreased by 40–60%, with many patients becoming pad-free on follow-up. QoL indices (KHQ, PFDI-20, PFIQ-7) and sexual function scores (FSFI, PISQ-12) showed significant improvements sustained up to 12 months. Objective measures demonstrated marked benefit: OABSS decreased by 78%, daily frequency and incontinence episodes declined by 70–95%, and sEMG analyses

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confirmed significant increases in contraction strength, quick flicks, maximum voluntary contraction, and endurance compared with sham or electrostimulation. Differences in adverse events were not significant across trials.

Conclusions

HIFEM therapy provides clinically meaningful improvements in continence, quality of life, and pelvic floor function across patients. While subjective and objective benefits are consistent, the limited number of high-quality RCTs restricts definitive conclusions. Larger multicenter RCTs with standardized outcomes are warranted to establish the role of HIFEM in neurogenic bladder and pelvic floor dysfunction.

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SESSION 2

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Assessment completeness of lower urinary tract outcomes in non-urological randomized controlled trials: Lessons from the acute spinal cord injury setting

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Introduction

Neurogenic lower urinary tract dysfunction (NLUTD) is a high priority after spinal cord injury (SCI). Storage and voiding dysfunction lead to burdensome symptoms affecting quality of life. While NLUTD is preferentially assessed by video-urodynamics, constraints related to time, expertise, and equipment in non-urological randomized controlled trials (RCTs) necessitate the use of other measures. Here we describe missing urological secondary outcome data from an RCT in acute SCI, to inform the planning of future trials.

Methods

We present secondary analyses of data from an investigator-initiated, double-blind, phase IIB RCT, conducted at 13 specialized SCI centers from May 2019-July 2022. Adults with traumatic cervical SCI were included and randomized to receive six intrathecal injections of an antibody against the neurite growth inhibiting protein Nogo-A (NG101) or placebo, starting ≤ 28 days after SCI. Urological outcomes were assessed at the screening and 6-month (study end) visits and included a 3-day bladder diary, a bladder function assessment (cold water bladder filling, 80-100 mL/min, maximum 500 mL filling volume), and the Qualiveen questionnaire.

Results

The population of 126 participants had a median age of 52 (Q1-Q3: 30-60), was 85% male, with 82% C3-C5 SCI. At screening 87% had indwelling catheters so the bladder diary was not assessed. The bladder function assessment and Qualiveen were performed in 96% and 98% of the participants. At the 6-month follow-up, 63% (73/115 returning participants) had bladder diaries available; 46 (64%) diaries required correction or exclusion of data. 6-month bladder function assessments were performed in 83% of participants; however, in 9/20 missing cases, individuals were spontaneous voiders in the NG101 arm. The 6-month Qualiveen was completed by 93%, but with 'not applicable' indicated by >20% of participants on 21/30 items.

Conclusions

RCTs investigating NLUTD should use outcome measures that are valid, feasible across the entire population, and closely aligned with standard clinical investigations to ensure interpretability of results. Implementation of bladder diaries proved challenging, particularly among indwelling

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catheter users. Questionnaires, while operationally straightforward, should be carefully selected to fit the setting. The development of a standardized set of measures for urological function in RCTs would have benefits both within and beyond the urological field.

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SESSION 3

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NEUROGENIC BLADDER IN PATIENTS WITH NON-TRAUMATIC NEONATAL SPINAL CORD INJURY

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Introduction

Non-traumatic spinal cord injury (NTSCI) can originate in the perinatal period and manifest as paraplegia and neurogenic bladder dysfunction with the time. It is associated with a history of prematurity, low birth weight for gestational age (LBWGA) and prolonged stays in intensive care. These are critically ill patients with complications such as polyglobulia and sepsis, requiring multiple interventions such as umbilical catheterisation and exchange transfusion. The aim is to describe the urological involvement and identify risk factors.

Methods

Retrospective study of children under 18 years of age with NTSCI who were admitted to intensive care between 1988 and 2013 and then presented with urinary tract symptoms as inclusion criteria. Spinal dysraphism and anorectal malformations were excluded. Anthropometric data, neuro-urological and orthopaedic evaluations, and therapies were collected. Descriptive statistics and non-parametric tests were used for categorical variables with the chi-square test or Fisher's test.

Results

Of the 57 patients with NTSCI, 80% were premature y 91% had LBWGA. All had paraplegia and spinal imaging was normal. EMG and SSEP were pathological in 93% and 76%, respectively. Urodynamics were pathological in all patients, and renal function was impaired in 36%. In univariate analysis, exchange transfusion was associated with voiding disorders (p: 0.007) and detrusor overactivity (p: 0.015). Sepsis was associated with impaired renal function and reduced bladder accommodation (p: 0.046, 0.006), respectively. Umbilical catheterization was associated with UTI (p: 0.037) and polyglobulia with reduced bladder capacity and overactivity (p: 0.021; 0.016), respectively. In the multivariate model, UTI had multiple associations: sepsis (p: 0.0111), MRA (p: 0.0093), polyglobulia (p: 0.0039) and umbilical catheterisation (p: 0.0137). Decreased bladder capacity and altered accommodation were linked to exchange transfusion (p: 0.0482) and MRA (p: 0.0222), respectively. Bladder overactivity was related to polyglobulia (p: 0.0243). All patients started medical treatment, including: CIC (15%), anticholinergics (15%), or both (70%), and 21 required surgery for lower urinary tract issues.

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Conclusions

NTSCI in the neonatal period can leave neurogenic bladder impairment. The diagnosis of spinal cord involvement is confirmed by excluding other possibilities. Altered variables in the lower urinary tract may be a sequela of multiple circumstances and interventions in critically ill neonates, with clinical expression that is discovered over time.

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SESSION 3

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Impact of Transition Readiness and Demographics on ER-to-Admission Occurrences in Adolescents with Neurogenic Lower Urinary Tract Conditions

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Introduction

This study evaluates the impact of demographic and clinical features, as well as transition readiness scores, on emergency room (ER) admissions among adolescent patients requiring lifelong urologic care for neurogenic lower urinary tract conditions during their transition process. We focused on various factors including age, sex, prior reconstructive surgery, and overall transition readiness scores.

Methods

We analyzed data from 164 transition scores from adolescent patients seen in a multidisciplinary clinic for complex urogenital conditions between January 2022 and December 2023, with follow-up periods ranging from 1 to 24 months to assess ER admission frequency immediately after transition survey acquisition. Descriptive and inferential statistics, including linear regression, were employed to identify significant predictors of ER visits that resulted in admissions within 1 to 24 months after transition readiness survey acquisition. The regression model incorporated variables such as sex, prior reconstructive surgery, clean intermittent catheterization (CIC), age, and overall readiness score.

Results

The records were acquired from adolescents with a mean age of approximately 17.3 years (SD 2.33) and were evenly distributed by sex (male:female ratio = 1:1). The overall transition readiness mean score was 66.61 (SD 18.9). In the linear regression model, female sex emerged as a significant predictor ($B = 0.522$, 95% CI [0.120, 0.924], $p = 0.012$), suggesting females are more likely to visit the ER. Similarly, overall readiness demonstrated a negative correlation with ER visits ($B = -0.012$, 95% CI [-0.024, -0.001], $p = 0.038$), indicating that higher self-management readiness is associated with fewer ER admissions. Other variables such as prior reconstructive surgery, CIC, and age did not reach statistical significance.

Conclusions

The study highlights the importance of transitional readiness education in potentially reducing ER visits that lead to admission. Increasing overall readiness for self-care could significantly decrease ER-to-admission events. These results suggest that healthcare interventions should be customized based on demographics to effectively enhance patient outcomes. Further research should focus on

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creating targeted educational initiatives that address these significant predictors to reduce unnecessary healthcare utilization.

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SESSION 3

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Neurogenic bladder due to lipomas and lipomenigoceles

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Introduction

Lipomas / Lipomenigoceles lumbosacral (LMC) can generate bladder dysfunctions, as one of the first signs of neurological deterioration. Objective: To analyze the urological commitment, mainly urodynamic pre and postoperative (POP) of the neurosurgery.

Methods

Retrospective, observational study of 94 patients LMC. Clinical-Urological presentation was described; urodynamic status pre-and postsurgical. Excision of lipomatous mass and release of filum terminale were performed as the main neurosurgical procedures. Descriptive statistics was used for categorical variables (chi-squared test).

Results

Population: girls: 69%. Average age of consultation: 2.1 years old. The most frequent sign of presentation were: Tumor: 80% and UTI: 23%. Asymptomatic urological: 42.5%. Pre and postoperative urodynamics showed: improvement in bladder capacity, compliance, overactivity and postvoid residual in 5, 4, 10 and 19 cases ($p < 0.005$) respectively. Worsening in bladder capacity, compliance, overactivity and postvoid residual in other 3, 2, 8 and 27 cases; ($p < 0.005$) respectively. In dysynergy (2), areflexia (6) and ineffective voiding (3), there were no statistically significant changes. Without changes in CCMx and compliance, in 18 (66%) and 21 (77%) cases, respectively ($p < 0.005$). It was required in POP to incorporate de novo: oxybutynin in 27 cases and intermittent catheterization in 25 cases.

Conclusions

The LMC did not present urological symptoms in almost 50%. Urodynamic have defined the type of dysfunction, preoperative and POP. The overactivity of the detrusor and the post-void residue were the variables that have suffered most modifications. On the other hand, cystometric capacity and bladder wall accommodation were the variables that did not change in 70% of the cases. With the urodynamic studies was possible to specify the type of neurogenic bladder dysfunction and its POP changes. Preoperative urodynamic evaluation and POP in these congenital malformations are essentials.

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SESSION 3

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Proactive approach in congenital neurogenic lower urinary tract dysfunction (NLUTD) in children.

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Introduction

Congenital neurogenic lower urinary tract dysfunction (NLUTD) carries high urological morbidity, so early evaluation is essential. Depending on the extent and location of the neurological lesion, different patterns of neurogenic bladder will be expressed, with varying impact and consequences on renal parenchymal function. Children with NLUTD are at risk of developing chronic kidney disease (CKD) in both the storage and voiding phases. Despite improvements in renal preservation care, CKD remains a common problem even into adulthood. The objective is to present outcomes of NLUTD and determine risk factors.

Methods

This retrospective cohort included newborns with bifida spina, specifically myelomeningocele with postnatal closure of the defect. A proactive approach was implemented in the first days of life: early initiation of CIC in neonatology, videourodynamic evaluation and anticholinergics. Follow-up up to 5 years. Non-parametric tests and categorical variables were analyzed using the Chi-square test or Fisher's test.

Results

128 children with neurogenic LUTD were studied, 50% boys, with a mean follow-up of 5.5 years. Initially, 44%, 4% and 20% of them had UTI, hydronephrosis and VUR respectively. Hyperactivity and pdetmax >20 cm of H₂O were: 65 and 36%. Abnormal DMSA scintigraphy was 24%. With a proactive approach, UTI, VUR and hyperactivity decreased in: 12% (p<0.001), 10% (p: 0.024) and 46% (p: 0.006). On the contrary, hydronephrosis, reduction of cystometric capacity and DLPP >40 cm of H₂O increased to 25% (p<0.001), 35% (p: 0.049) and 27% (p: 0.001) respectively. There were no significant differences with other urodynamic variables. The resolution rate of VUR was 58.3% in 1.8 years (range: 7- 49 months). Premature and neurosurgical closure beyond 24 hours were identified as predisposing factors for VUR (p < 0.001). At the end of follow-up abnormal DMSA renal scan remained stable (24%) and associated with RVU in 23% (p: 0.03). With abnormal Microalbuminuria/Creatinine in 27%, we identified increased of the CKD: Chronic kidney disease from 23% in 39% (p: 0.008).

Conclusions

Although the proactive approach reduces UTI, vesicoureteral reflux and detrusor hyperreflexia,

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other variables have not improved, such as endovesical pressures and the progression of chronic kidney disease. This opens a more complex scenario for improving the management strategies.

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SESSION 3

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Ultrasound-Guided versus Fluoroscopy-Guided Percutaneous Nephrolithotomy in Pediatric Patients: A Systematic Review of Safety and Effectiveness

Ersee Hera Gratia, Jovian Adinata, Putu Angga Risky Raharja

Introduction

Percutaneous nephrolithotomy (PCNL) is the standard treatment for large renal calculi in children. Although fluoroscopy-guided PCNL (F-PCNL) remains the traditional approach, concerns regarding radiation exposure have driven the adoption of ultrasound-guided PCNL (US-PCNL). This systematic review compares the safety and effectiveness of both modalities in pediatric populations.

Methods

Systematic Review

Results

Thirteen studies involving 1,304 pediatric patients were analyzed, comprising 642 in the fluoroscopy group and 662 in the ultrasound group. The pooled analysis showed no significant difference in stone-free rate between groups (RR = 1.00; 95% CI 0.98–1.03; P = 0.88). Operation time (SMD = 0.01; 95% CI –0.39–0.41; P = 0.96) and hospital stay (SMD = 0.11; 95% CI –0.13–0.35; P = 0.35) were comparable. However, the ultrasound group demonstrated a higher overall complication rate (RR = 1.74; 95% CI 1.27–2.38; P = 0.0006).

Conclusions

Ultrasound-guided PCNL provides comparable stone clearance, operative duration, and hospital stay to fluoroscopic guidance in children, while avoiding radiation exposure. The higher complication rate highlights the need for operator training and standardized procedural protocols.

SESSION 3

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Efficacy and Safety of OnabotulinumtoxinA in the Management of Refractory Neurogenic Detrusor Overactivity: Systematic Review and Meta-Analysis

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Introduction

Intravesical Botulinum Toxin Type A (BoNT-A) injection is a standard therapy for refractory Neurogenic Detrusor Overactivity (NDO). However, its quantitative impact on various urodynamic parameters requires a comprehensive synthesis. This meta-analysis aims to systematically evaluate the efficacy of BoNT-A on four key urodynamic outcomes in NDO patients.

Methods

A systematic literature search was conducted across PubMed, Scopus, and ScienceDirect databases to identify relevant studies. Studies were eligible if they evaluated changes in urodynamic outcomes, specifically Cystometric Bladder Capacity (CBC), Maximum Detrusor Pressure (Pdetmax), Bladder Compliance (BC), or reported safety outcomes such as Post-Void Residual (PVR) volume. Exclusion criteria were case reports, narrative reviews, animal studies, pediatric populations, non-refractory NDO, and studies lacking relevant outcome data. Data extracted included population characteristics, intervention details, and reported clinical outcomes. The quality and risk of bias of the included studies were assessed using the Downs and Black scale.

Results

A total of 14 studies involving 1851 patients were included. After BoNT-A injection, the patients showed significant improvements in key outcome measures. We found that intradetrusor BoNT-A significantly improves urodynamic outcomes. BoNT-A therapy significantly increased CBC by a mean difference (MD) of 153.76 mL (95% CI: 118.15-189.37) and significantly decreased Pdetmax by an MD of -23.57 cmH₂O (95% CI: -34.84 to -12.31). As anticipated, PVR was also considerably increased by an MD of 132.73 mL (95% CI: 101.98-163.49). In contrast, no statistically significant change was found for BC (MD: 13.90 mL/cmH₂O; 95% CI: -4.91-32.71). High levels of heterogeneity were observed for CBC ($I^2=88.1\%$), Pdetmax ($I^2=90.2\%$), and BC ($I^2=91.4\%$), whereas PVR showed low heterogeneity ($I^2=7.3\%$).

Conclusions

Intradetrusor BoNT-A injections are effective for NDO, increasing bladder capacity, Post-Void Residual and lowering detrusor pressures, however the Bladder Compliance remains inconclusive.

SESSION 3

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OnabotulinumtoxinA urethral sphincter injections in children with Neurogenic and Myogenic Lower Urinary tract dysfunction: a considerable option to facilitate bladder emptying

Michael Chua, Kay Rivera, Mandy Rickard, Abby Varghese, Armando Lorenzo, Joana Dos Santos

Introduction

Urethral intrasphincteric onabotulinumtoxinA (UISB) is an established strategy to relieve impaired bladder emptying in adults, but pediatric evidence is sparse. We present a single-center experience using UISB to enhance bladder emptying and related clinical outcomes in children with neurogenic and myogenic lower urinary tract dysfunction.

Methods

We conducted a retrospective review of our Botox program (2011–2024) to identify pediatric patients who received urethral UISB. Collected variables included demographics, underlying diagnosis, and clinical indications. Outcomes assessed before and after ISB were patient-reported symptom relief, uroflow/post-void residuals (PVR), serum creatinine, vesicoureteral reflux, hydronephrosis, and subsequent need for catheter-based drainage or diversion.

Results

Thirty-three children (23 boys, 10 girls) underwent UISB at a median age of 4.7 years (IQR 6.6) with a median follow-up of 8.2 years (IQR 6.4). Etiologies included neurogenic bladder (n=11), posterior urethral valves (n=8), non-neurogenic voiding dysfunction (n=6), and other causes (n=3). Primary reasons for UISB were minimal/absent voiding (n=18), worsening hydronephrosis (n=7), recurrent urinary tract infections (n=6), and declining renal function (n=2). Ten families pursued UISB in the context of delaying or struggling with intermittent catheterization (IC): eight declined or deferred IC, and two had inconsistent adherence. After UISB, 22/33 (66.7%) reported improved voiding; 15/33 (45.5%) demonstrated reduced PVR on uroflowmetry. Despite treatment, 8/33 (24.2%) subsequently required an indwelling catheter or creation of a catheterizable channel with IC. Although renal and upper-tract parameters were tracked, the sample size limited definitive conclusions regarding these secondary endpoints.

Conclusions

In this pediatric cohort, Urethral intrasphincteric onabotulinumtoxinA (UISB) yielded subjective improvement in two-thirds of patients and objective PVR gains in nearly half. UISB can serve as a bridge or adjunct when an intermittent catheter is refused, deferred, or inconsistently performed, acknowledging that about one quarter will progress to catheter-based drainage. Prospective studies and long-term follow-up are warranted to clarify durability, refine selection, and assess upper-tract impact.

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SESSION 3

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Progression of Testicular Atrophy in Neglected Bilateral Varicocele and Outcomes after Delayed Varicocelectomy: A Systematic Review

Eka Asmara Juhan Putra, Muhammad Irbabul Lubab

Introduction

Varicocele is the most common surgically correctable cause of male infertility, affecting up to 15% of adult males and 35–40% of those with primary infertility. Bilateral varicocele, when left untreated, may lead to progressive testicular atrophy, impaired spermatogenesis, and reduced testosterone levels. However, the natural history of testicular atrophy progression in neglected bilateral cases and the potential reversibility following delayed varicocelectomy remain unclear.

Methods

A systematic search of PubMed, Scopus, and Embase was conducted up to 5 October 2025. Studies assessing testicular volume changes, semen parameters, and endocrine outcomes before and after delayed varicocelectomy (>2 years from diagnosis) in bilateral cases were included.

Results

Across 7 eligible studies, untreated bilateral varicocele showed a mean annual testicular volume reduction of 4–6%, with marked deterioration in sperm concentration and morphology. Delayed varicocelectomy significantly improved testicular volume in 63–78% of patients and yielded partial recovery of sperm parameters and serum testosterone. Fertility restoration rates ranged from 25–40%, depending on baseline atrophy severity and age at repair.

Conclusions

Neglected bilateral varicocele leads to progressive testicular atrophy and functional decline. Delayed varicocelectomy may partially reverse testicular damage and improve hormonal and fertility outcomes, supporting surgical intervention even in chronic cases.

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SESSION 3

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Long-Term Continence and Bladder Function Outcomes in a Large Pediatric and Adolescent Neurogenic Bladder Cohort Managed in a Program with Protocol-Driven Liberal Access to Botulinum Toxin Injections: A Safe and Effective Alternative to Augmentation Cysto

Kay Chua Rivera, MD, Mandy Rickard, NP, Ihtisham Ahmad, BSc, Zwetlana Rajesh, BSc, Abby Varghese, NP, Lisa Wang, Michael Erlano Chua, MD, Armando J. Lorenzo, MD, Joana Dos Santos, MD

Introduction

While intra-detrusor botulinum toxin A (BTA) injections are a well-established intervention in adult neurogenic bladder treatment, pediatric data lags behind, and information on long-term outcomes remain limited. At our institution, over a decade ago, we established a program offering liberal access to this intervention, with the goal of minimizing the need for major reconstruction. Herein, we present outcomes for these children, focusing on efficacy over time, continence and video-urodynamic (VUDS) parameters.

Methods

We retrospectively reviewed all neurogenic bladder patients treated with BTA between 2011 and 2024 at a large referral center. We recorded demographics, incontinence improvement or resolution, and VUDS metrics pre-and post-injection, including capacity, compliance, and detrusor overactivity.

Results

Among 120 patients (63 male), myelomeningocele was the leading underlying etiology (n=88; 73.3%). Median age at first injection was 10.1 years (IQR=8.6), with a median of 3 injections and 15 years of follow-up (IQR 6.8). Of patients with available symptom data (n=107), continence improved in 96 (89.7%); 49 (45.8%) achieved complete resolution following discontinuation of oral medications. A small minority had absent (n=5, 4.7%) or diminishing benefit over time (n=6, 5.6%). Injections were typically repeated every 3–6 months. Complications were infrequent and mild: UTIs (11%), constipation (2%), and hematuria (3%). Bladder capacity increased by 27% ($p < 0.01$) and reduced compliance and detrusor overactivity rates significantly improved following BTA.

Conclusions

BTA injections are a safe effective long-term option for most patients who would have otherwise been considered candidates for augmentation cystoplasty. Repeated injections appear to provide sustained improvement in continence and bladder dynamics for pediatric and adolescent neurogenic bladder patients.

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SESSION 3

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Effect of Vitamin D Supplementation on Urinary Incontinence Symptoms in Adult Women with Vitamin D Insufficiency: A Systematic Review

Ahmad Fathi Rafif Ismail, Emmanuel Matthew Habinsaran, Wibowo Budi Prasetyo, Adam Yafiq Zahran Tambunan.

Introduction

Urinary incontinence (UI) is a common health problem among adult women and significantly impacts quality of life. Vitamin D may modulate UI through Vitamin D receptors in urogenital tissues, supporting pelvic floor and detrusor muscle function and exerting immunomodulatory effects on mucosal integrity and symptom perception. However current evidence remains limited. Therefore, the objective of this systematic review is to evaluate the effect of vitamin D supplementation on UI symptoms in adult women with vitamin D insufficiency.

Methods

Four reviewers systematically searched PubMed, Cochrane Library, EBSCO, and Google Scholar to identify relevant studies. Randomized trials were eligible. Risk of bias was assessed using the Cochrane Risk-of-Bias 2 (RoB 2) tool, and findings were synthesized narratively.

Results

This systematic review included two randomized trials, one assessed to have some concerns and the other assessed to have low risk of bias (RoB 2). These included a pilot RCT in postmenopausal women with urgency urinary incontinence (UUI) (some concerns) and an RCT in premenopausal women with stress urinary incontinence (SUI) (low risk, with some concerns about reporting). In the pilot trial, weekly cholecalciferol 50,000 IU for 12 weeks reduced UUI episodes by 43.0% versus 27.6% with placebo ($P=0.22$); a prespecified exploratory subgroup of Black women showed larger reductions (63.2% vs 22.9%; $P=0.03$), without between-arm differences in ICIQ-UI/OAB scores. Transient asymptomatic hypercalcemia occurred in two participants receiving vitamin D, and GI symptoms were more frequent. In the premenopausal SUI trial, weekly cholecalciferol 5,000 IU for three months (with Kegel exercises provided equally to both arms) produced significantly greater improvements than placebo in ICIQ-SF severity and UI impact at 8 and 12 weeks (both $P<0.001$), alongside reductions in SUI/leakage frequency; no participants were lost to follow-up.

Conclusions

Current evidence is limited and inconsistent. Benefits appear for SUI in premenopausal women, but not for UUI in postmenopausal women. There is an early indication in Black women, but this is not sufficient to recommend for routine use. Larger randomized trials with standardized outcomes and safety monitoring are recommended

SESSION 3

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Efficacy and Safety of OnabotulinumtoxinA vs Sacral Neuromodulation as Third-Line Treatment for Non-Neurogenic and Neurogenic Urge Urinary Incontinence (UUI): A Systematic Review and Meta-Analysis

Muhammad Hanif Arfiananda, MD and Professor Harrina Erlianti Rahardjo, MD, PhD

Introduction

For patients with refractory urgency urinary incontinence (UUI), onabotulinumtoxinA (BTX) injections and sacral neuromodulation (SNM) represent key advanced therapeutic options. Despite their widespread use, a clear consensus on their comparative efficacy and safety profile is lacking, as evidence is dispersed across heterogeneous study designs. This study aims to synthesize available data to directly compare the effectiveness and safety of BTX versus SNM in a population encompassing both neurogenic and idiopathic UUI.

Methods

A systematic review and meta-analysis was performed. Electronic databases (PubMed, Scopus, the Cochrane Library, and Embase) were searched from January 2015 to September 2025 for randomized controlled trials (RCTs) and observational cohort studies directly comparing onabotulinumtoxinA to sacral neuromodulation in adults (>18 years) with refractory UUI. Efficacy outcomes were the mean reduction in daily UUI episodes (UUIE) and rates of symptom resolution (100%, $\geq 75\%$, and $\geq 50\%$ reduction of mean daily UUIE episodes from baseline). The primary safety outcome was the incidence of any adverse events. Study selection and data extraction adhered to the PRISMA guidelines. Quality assessment utilised the Cochrane RoB 2 tool for RCTs and the ROBINS-I tool for non-randomized studies. Statistical analyses was conducted using R software.

Results

Nine studies comprising 696 participants were included. Analysis demonstrated that BTX provided a significantly greater reduction in daily UUI episodes compared to SNM (MD -0.63, 95% CI -1.14 to -0.13; $p=0.01$). BTX was also associated with higher odds of complete resolution at 4-6 months (OR 4.18, 95% CI 0.55–31.72) and superior rates of partial response, including a significantly higher likelihood of achieving $\geq 50\%$ reduction in symptoms (OR 1.59, 95% CI 1.06–2.39; $p=0.02$). Regarding safety, urinary tract infections were the most common adverse event, occurring at a significantly higher rate in the BTX group (RR 1.69, 95% CI 1.02–2.80).

Conclusions

Both BTX and SNM are effective third-line treatment options for refractory UUI, with BTX demonstrating superior efficacy in reducing daily episodes and achieving higher response thresholds. However, this benefit is offset by higher risk of UTIs. Further large-scale randomized trials in more diverse populations are warranted to validate the results and optimize the

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outcomes.

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SESSION 3

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EVOLUTION OF VESICoureTERAL REFLUX IN PATIENTS WITH MYELOMENINGOCELE IN A PROACTIVE FOLLOW-UP PROTOCOL

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Introduction

Patients with myelomeningocele (MMC) have a high rate of urinary tract infections (UTI), which correlates with a progressive deterioration in kidney function and chronic kidney disease (CKD). The presence of vesicoureteral reflux (VUR) reported in this population varies between 15-30%. Proactive management from the neonatal period has shown a decrease in the incidence of VUR, UTIs and an improvement in the preservation of renal function.

Objective: To evaluate the incidence of VUR in pediatric patients with MMC and the factors involved in its development. To analyze the evolution of VUR in these patients, from birth to 5 years of age, in a proactive monitoring protocol.

Methods

This retrospective, observational study included newborns with MMC, managed proactively between 2015 and 2020 at our institution. Patients were grouped based on the presence or absence of VUR at the first videourodynamic study (VUDS). Demographic characteristics and nephron-urological variables were compared between the first and last year of follow-up. Proactive management: early clean intermittent catheterization (CIC) + nocturnal antibiotic prophylaxis +/- anticholinergics (videourodynamics), urinary ultrasound and DMSA renal scintigraphy. Data were analyzed using R language version 4.2.3. Categorical variables were expressed as frequency and percentage, and were analyzed using the Chi square test or Fisher's test when the former could not be applied. All statistical calculations were performed with a two-tailed approach and

the statistical significance was established with a p-value ≤ 0.05 .

Results

86 newborns with MMC were admitted to our center for postnatal neurosurgical defect closure and subsequent evaluation and follow-up by a multidisciplinary team. We excluded patients who died or were lost to follow-up, resulting in the analysis of 68 patients. Out of the 14 patients with

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VUR, 71.4% were females. The mean gestational age of the entire cohort was 37.8 weeks (R: 29-40). Surgical closure of the defect was performed after the first 24 hours of life in all patients with VUR and in 50% of the patients without VUR ($p < 0.001$). The incidence of vesicoureteral reflux was 16.3% in the first VUDS at a mean age of 6 months (R: 2-15). Low-grade VUR was observed in 11 (78.6%) and high-grade VUR in only three patients. The overall resolution rate of VUR was 64.3% within 22 months (R: 7-49). Detrusor overactivity was present in 93% of the patients in the VUR group in the first months of life, and after appropriate treatment they decreased to 50%. 57% developed CKD.

Conclusions

The incidence of VUR in pediatric patients with MMC was 16%. When a proactive protocol was implemented, the resolution rate of VUR was 65% within 2 years. Most of these patients progress to CKD.

SESSION 3

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Urolithiasis in Pediatric Neurogenic Bladder Patients: Laser Lithotripsy Outcomes Relative to Metabolic, Anatomic, and Normal Comparators

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Introduction

Pediatric patients with neurogenic bladder (NGB) are predisposed to urolithiasis and may respond differently to endoscopic management than peers with other etiologies. We sought to describe stone distributions and outcomes after pediatric laser lithotripsy in NGB and compare stone-free (SF) and complication rates with children who were normal or had metabolic or anatomic abnormalities.

Methods

We retrospectively summarized a working cohort of N=234 pediatric laser lithotripsy cases using descriptive statistics, reporting column percentages by etiology (normal, NGB, metabolic, anatomic) for SF status, complications, stone location, and composition; Inferential statistics used were Pearson χ^2 tested associations with Bonferroni-adjusted column-proportion comparisons, statistical significance set at 0.05.

Results

NGB stones concentrated in the bladder (48.6%) and renal pelvis (25.7%), contrasting with higher renal-pelvis proportions in metabolic (45.8%) and normal (39.7%) groups. Overall SF rates by etiology were: normal 63.2% (43/68), NGB 57.1% (20/35), metabolic 40.3% (29/72), anatomic 66.1% (39/59). Complication proportions were: normal 14.7%, NGB 5.7%, metabolic 9.7%, anatomic 22.0%; the overall χ^2 for complications across etiologies did not reach significance ($\chi^2=6.385$, $p=0.094$). Location-specific outcome tests showed trends without statistical significance: renal pelvis $\chi^2=7.550$ ($p=0.056$), proximal ureter $\chi^2=6.875$ ($p=0.076$), with non-significant associations for bladder $\chi^2=4.241$ ($p=0.237$), lower pole $\chi^2=2.640$ ($p=0.451$), and upper pole $\chi^2=4.800$ ($p=0.187$). Composition signals included poor SF in the metabolic subgroup with cystine-positive stones (25.8% SF; 74.2% not SF), whereas several CAP- or MgP-positive strata appeared to have higher SF proportions, though these were based on small cells and did not yield significant χ^2 results (e.g., MgP $\chi^2=7.647$, $p=0.054$; CAP $p\geq 0.373$).

Conclusions

In this pediatric series, NGB cases exhibited intermediate SF after laser lithotripsy (57.1%) relative to anatomic (66.1%) and normal (63.2%) cohorts, while metabolic abnormalities had the lowest SF (40.3%). NGB stones clustered in the bladder (48.6%), consistent with neurogenic pathophysiology. Location-specific trends suggested worse outcomes in renal-pelvis stones ($p=0.056$), with no significant differences elsewhere. Overall complication rates did not differ

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significantly across etiologies. Due to the small sample size and possible multiplicity and alpha inflation, the regression was not performed. Larger, prospectively collected cohorts and multivariable models are needed to quantify adjusted effects of etiology, location, and composition on pediatric laser lithotripsy outcomes.

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SESSION 3

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The Impact of Transcutaneous Tibial Nerve Stimulation on Patient-Reported Outcomes in Overactive Bladder: A Systematic Review and Meta-Analysis.

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Trino Ardiyanto,

Introduction

Overactive bladder (OAB) is a widespread medical condition that affects individuals globally, with urinary incontinence being its primary concern, significantly impacting their quality of life and overall well-being. Electrical stimulation, such as TTNS, gained popularity recently as an alternative to medication and exercise as a management of OAB. Problems in managing OAB, patients often cannot adhere to tedious treatment protocol. However, a comprehensive evaluation of its efficacy, impact on quality of life, and treatment adherence is main concern needs to be evaluated

Methods

A systematic literature search was conducted in various electronic databases to identify randomized controlled trials (RCTs) published between January 2020 and September 2025. The search was designed to compare outcomes including changes in OAB symptoms (e.g., incontinence, urgency, nocturia) and quality of life (QoL). Secondary outcomes of interest were treatment adherence and patient satisfaction.

Results

A total of 8 potential studies consist of 638 patients were analyzed using subgroups according to TTNS session planned to patients in a week. Primary results identify that in TTNS group, patients shown improvement in symptoms control, shown by slight decrease in incontinence episode and nocturia frequency (MD= -0.20; 95% CI [-0.34, -0.05] and MD= -0.23; 95% CI [-0.45, -0.01], respectively). However, the urgency episode relatively not improved and had no significant impact compared to placebo. Quality of life comparison shown that there is no significant improvement between active arms and placebo (MD= 0.17; 95% CI [-0.46, 0.79]). Treatment adherence is better compared to medication (97% in TTNS vs 88% in medication), with high treatment satisfaction within active arm (81% patient satisfied with the treatment).

Conclusions

In summary, TTNS even though potential to reduce OAB symptoms, is not suggested as an alternative to current standard practice, due to insignificant treatment efficacy.

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SESSION 3

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The Etiology and Multidisciplinary Approach in Children with Neurogenic Bladder at

Ulin Banjarmasin General Hospital: A Case Series

Rayhana Yamini, Muhammad Febri Saputra, Muhammad Siddik, Selli Muljanto

Introduction

Neurogenic bladder is a heterogeneous entity that may result from a variety of conditions affecting the central or peripheral nervous systems. Pediatric patients with neurogenic bladder are at risk for recurrent urinary tract infections (UTI) and upper tract damage leading to chronic kidney disease, necessitating early detection and management. Identifying etiology is crucial to avoid inappropriate interventions, suboptimal therapeutic outcomes and minimize the complication. In Indonesia, research on the neurogenic bladder of children remains limited, underscoring the need for studies that inform this case. The aim of this research are to recognize the causes. Also to maximizing the quality of life, through achieving urinary continence and independence in bladder management, with physical medicine and rehabilitation therapy of children with neurogenic bladder, at Ulin Banjarmasin General Hospital.

Methods

This case series summarizes the clinical of four pediatric patients diagnosed with neurogenic bladder who were treated at Ulin Banjarmasin General Hospital using secondary data.

Results

Among the four cases, showed the variety etiologies of pediatric neurogenic bladder, such as spina bifida (75%) and tumor (25%). The most common complication experienced by 3 out of 4 cases of pediatric neurogenic bladder is chronic kidney failure (75%).

Conclusions

The management of pediatric neurogenic bladder must be treated according to the main cause. A multidisciplinary approach is essential for improving the prognosis and clinical outcomes of the patient. Further research is recommended to determine the other causes and therapeutic variations for pediatric neurogenic bladder cases.

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SESSION 3

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Clinical Efficacy of Extracorporeal Shock Wave Therapy (ESWT) for Erectile Dysfunction: A Systematic Review and Meta-Analysis

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Introduction

Erectile dysfunction (ED) is a highly prevalent disorder with profound impact on quality of life. Conventional pharmacologic therapies provide symptomatic relief but do not restore penile hemodynamics. Low-intensity extracorporeal shock wave therapy (LI-ESWT) has emerged as a potential restorative treatment; however, evidence from randomized controlled trials (RCTs) remains inconsistent. This systematic review and meta-analysis aimed to evaluate the clinical efficacy and safety of LI-ESWT for ED.

Methods

A comprehensive search of PubMed, Embase, and the Cochrane Library was performed from November 2005 to December 2024. Eligible studies were RCTs comparing LI-ESWT with sham or control in men with ED. The primary outcome was change in the International Index of Erectile Function (IIEF); secondary outcomes included Erection Hardness Score (EHS) and adverse events. Pooled data were analyzed using a random-effects model, with heterogeneity assessed by the I^2 statistic.

Results

Twelve RCTs involving 882 men with vasculogenic ED were included. LI-ESWT significantly improved IIEF scores compared with control (mean difference \approx 2.96, 95% CI: 1.93–4.61, $p < 0.001$; $I^2 = 63\%$). The likelihood of achieving EHS ≥ 3 was also higher with LI-ESWT (OR = 5.07, 95% CI: 1.78–14.44, $p = 0.002$). Broader evidence from 16 RCTs (1,064 participants) confirmed improvements in IIEF at 1 month (MD = 3.18), 3 months (MD = 3.01), and 6 months (MD = 3.20). No serious treatment-related adverse events were reported. Retention varied across studies, with long-term follow-up data limited.

Conclusions

LI-ESWT significantly improves erectile function and erection hardness in men with ED, with a favorable safety profile. Nonetheless, heterogeneity in treatment protocols and limited long-term data underscore the need for large, standardized RCTs to establish durability and optimize clinical application.

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SESSION 3

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Comparison of Efficacy and Compliance Between Desmopressin and Enuresis Alarm in Monosymptomatic Enuresis: A Systematic Review and Meta-analysis

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Introduction

Monosymptomatic enuresis is a common pediatric condition that can significantly impact a child's quality of life. This systematic review and meta-analysis aims to evaluate the efficacy and compliance of desmopressin and enuresis alarms in treating monosymptomatic enuresis.

Methods

A comprehensive literature search was conducted across multiple databases, including PubMed, Cochrane Library, and Science Direct, for studies published for last 10 years. Using the terms “(Desmopressin) AND (Alarm) AND (Enuresis)”, we gathered original article that written in English that comprising of Original article only. Other type of studies such as letter to editor, case report and Editorial were excluded. Primary data on treatment efficacy (Complete response, partial response and relapse rate) was analyzed using RevMan 5.4, and secondary outcomes such as compliance to the treatment was extracted and analyzed using random-effects models.

Results

A total of 5 RCTs were included in the analysis. The results indicated that between desmopressin and alarm show similar efficacy for both complete ($I^2 = 81\%$; OR 1.20; 95% CI 0.85, 1.68, $p = 0.29$) and partial response ($I^2 = 0\%$; OR 0.88; 95% CI 0.52, 1.49, $p = 0.63$). However, alarm lower relapse rate than desmopressin does for enuresis ($I^2 = 45\%$; OR 0.27; 95% CI 0.14, 0.52, $p = 0.0001$). Despite having better outcome in relapse rate, enuresis alarm have shown more compliance issue due to the procedure itself showed by the higher dropout rate in Alarm group ($I^2 = 0\%$; OR 3.86; 95% CI 2.29, 6.51, $p = 0.00001$). Adverse effects were minimal for both interventions, with desmopressin associated with mild headaches and enuresis alarms linked to sleep disturbances.

Conclusions

While desmopressin is more effective in the short term for resolving monosymptomatic enuresis, enuresis alarms may offer better long-term outcomes. Clinicians should consider individual patient circumstances when recommending treatment options, balancing immediate efficacy against long-term benefits. Further studies are warranted to explore the optimal treatment strategies and their impact on quality of life for affected children.

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SESSION 3

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Symptom Improvement After Urodynamic Testing in Overactive Bladder: A Pilot Study

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Introduction

Overactive bladder (OAB) involves both lower urinary tract dysfunction and psychological factors, with anxiety contributing to symptom burden and reduced quality of life. Urodynamic itself may reduce anxiety and improve symptoms through reassurance reinforcement. This study assessed the potential therapeutic effect of a urodynamic study.

Methods

This single-center pilot observational study was conducted at Fatmawati Central General Hospital, Jakarta, between August 2024 and August 2025. Adults (≥ 18 years) with simple OAB, defined per 2024 AUA/SUFU guidelines, were enrolled after providing written informed consent. Standard urodynamic testing was performed following ICS recommendations. Symptom severity (OABSS) and quality of life (ICIQ) were assessed at baseline and 4 weeks post-UDS.

Results

The mean age of patients was 39.3 ± 13.7 years. At 4 weeks post-UDS, symptom severity and quality of life improved markedly. Mean OABSS decreased from 12.0 ± 0.82 to 5.0 ± 0.82 (mean 7.0; 95% CI: 6.2–7.8; $p < 0.001$), and mean ICIQ decreased from 13.0 ± 1.25 to 5.0 ± 0.82 (mean 8.0; 95% CI: 7.1–8.9; $p < 0.001$), indicating symptomatic relief and improved quality of life.

Conclusions

In this study, patients showed symptom improvement after urodynamic testing despite no direct therapy, potentially due to reassurance, behavioral reinforcement, or reduced anxiety. These

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findings suggest a possible therapeutic role of UDS in selected patients.

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SESSION 3

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Focused Evaluation on the Urodynamic in Presence of Detrusor Overactivity among Women with Overactive Bladder – A Systematic Review and Meta-Analysis

Naufal Nandita Firsty, Harrina Erlianti Rahardjo

Introduction

Overactive bladder (OAB) and detrusor overactivity (DO) are related but not interchangeable, as OAB can occur without DO and vice versa. Urodynamic studies may provide a better understanding of the underlying pathophysiological differences within the OAB–DO overlap. This study aimed to compare urodynamic findings in women with OAB, with and without DO, offering deeper insights into objective urinary parameters in this population.

Methods

This systematic review and meta-analysis was conducted in accordance with PRISMA guidelines, focusing on the comparison between women with OAB with and without DO. Eligible studies were observational in design, included adult women (>18 years) diagnosed with OAB, and incorporated urodynamic evaluation as part of the assessment. Outcomes were categorized into filling- and voiding-phase parameters to reflect distinct stages of the micturition cycle. Statistical analyses were performed using RevMan version 4.5.1, applying a random-effects model (REM) with 95% confidence intervals (CI).

Results

Eleven studies involving 1,725 women with OAB were included, of whom 41.3% were objectively diagnosed with DO. In the filling phase, the DO group demonstrated significantly lower thresholds for first desire to void (–34.59 mL; 95% CI –49.81 to –19.37) and strong desire to void (–58.62 mL; 95% CI –73.08 to –44.16), along with a reduced maximal cystometric capacity (MCC) (–101.50 mL; 95% CI –135.20 to –67.80). In contrast, voiding phase parameters—including maximum flow rate (Q_{max}), detrusor pressure at peak flow (P_{det}Q_{max}), and post-void residual volume—did not differ significantly between groups ($P > 0.05$), suggesting that DO exerts minimal influence on voiding function.

Conclusions

Women with OAB and confirmed DO demonstrated significantly more unfavorable urodynamic findings in the filling phase, but not in the voiding phase, highlighting objective distinctions between the two populations.

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Modified Transcutaneous Electrical Nerve Stimulation for Detrusor Overactivity with Detrusor Underactivity: A Case Report

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Introduction

Detrusor Overactivity with Detrusor Underactivity (DO-DU) is a mixed storage and voiding dysfunction, characterized by detrusor overactivity on filling cystometry alongside detrusor underactivity on pressure-flow studies. Transcutaneous electrical nerve stimulation (TENS) is a non-invasive technique that modulates neural pathways involved in bladder control, with electrode placement being critical for effectiveness. However, the use of modified TENS with dual-site stimulation in patients with DO-DU remains underexplored. This case report aims to highlight the potential of modified TENS as an effective alternative for managing DO-DU.

Methods

This case report describes a male adult patient with DO-DU who underwent modified TENS (combining tibial and parasacral stimulation) between July and August 2025 at the Department of Urology, Fatmawati Central General Hospital, Jakarta, Indonesia.

Results

A 26-year-old male patient received modified TENS therapy after unsuccessful conservative management. Post-treatment assessments demonstrated symptomatic improvement, as reflected in the Bladder diary and Overactive Bladder Symptom Score (OABSS) questionnaire.

Conclusions

Modified TENS appears to be a promising non-invasive approach for managing DO-DU, improving both urinary symptoms and the patient's quality of life. Its simple application and minimal risk of

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adverse effects make it a potentially valuable addition to existing treatments. Nevertheless, further research is required to establish its long-term efficacy and generalizability.

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SESSION 4

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Neurogenic Bladder Management and Predictors of Urological Function Recovery after Combat-Related Spinal Cord Injury

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Introduction

Neurogenic bladder (NB) is a major complication after spinal cord injury (SCI), particularly of combat origin. With limited access to urodynamic studies, identifying clinical predictors is essential for anticipating bladder function recovery and guiding management. This study evaluated bladder management patterns and predictors of recovery after combat-related SCI.

Methods

We conducted a retrospective single-center study including 421 patients (381 military, 40 civilian; mean age 37.6 years, range 17–76; 97.6% male) treated and rehabilitated between 2018–2025. At admission, bladder management was: Foley catheter (F) – 231 (54.9%), spontaneous voiding (SV) – 106 (25.2%), suprapubic catheter (SP) – 45 (10.7%), intermittent catheterization (IC) – 35 (8.3%), incontinence (I) – 3 (0.7%). At discharge: SV – 154 (36.6%), F – 127 (30.2%), IC – 85 (20.2%), SP – 51 (12.1%), I – 3 (0.7%). Neurological impairment by AIS: A – 211 (50.2%), B – 57 (13.5%), C – 59 (14.0%), D – 93 (22.1%). Pressure sores were present in 107 patients (25.5%). Logistic regression was performed to identify independent predictors of SV recovery.

Results

Overall, 154 patients (36.6%) achieved SV recovery by discharge. Recovery by AIS: A – 37.0% (78/211), B – 38.6% (22/57), C – 39.7% (23/59), D – 30.8% (29/93). All persistent incontinence cases (n=3) occurred in AIS A. Recovery was 35.7% in military and 41.0% in civilians. Patients with pressure sores showed reduced recovery. Regression analysis demonstrated: age: no effect (OR=1.00; p=0.95); military vs civilian: not significant (OR=1.03; p=0.95); AIS level: non-significant trend (OR=0.83; p=0.10); pressure ulcers: decreased odds of recovery (OR=0.62; p=0.13); bladder management at admission was the strongest predictor (OR=3.09; p<0.001). Patients initially with IC or SV were three times more likely to regain SV compared to those with F or SP.

Conclusions

Bladder management after combat-related SCI is a dynamic process: over 40% of Foley cases at admission transitioned to IC or SV during rehabilitation. Recovery depends on neurological status, complications, and initial management. Admission bladder management emerged as the strongest independent predictor, tripling the likelihood of SV recovery. Early optimization of bladder

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strategies and individualized rehabilitation are crucial for patients with combat-related SCI.

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SESSION 4

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Symptom Patterns, Not Just Prevalence: An Exploratory Analysis of Voiding Dysfunction After Cortical and Subcortical Stroke

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Introduction

Voiding dysfunction is a common and debilitating yet often overlooked complication following a stroke. Effective rehabilitation depends on understanding the underlying neuroanatomical cause. However, existing studies have produced inconsistent results regarding the correlation between cortical and subcortical location of a stroke and the specific type of urinary symptoms that develop. Given the inconsistent findings in the literature regarding the link between lesion location and urinary dysfunction, this research seeks to clarify the association by examining a well-characterized cohort of Indonesian stroke patients at 1 to 2 months post-stroke.

Methods

This cross-sectional study included 77 patients with a first-ever acute ischemic stroke who attended a one-month post-discharge follow-up. Voiding dysfunction was assessed using the International Prostate Symptom Score (IPSS) questionnaire. Symptoms were classified as predominantly voiding-dominant or storage-dominant based on a calculated Voiding/Storage (V/S) subscore ratio. Lesion location (cortical vs. subcortical) was determined from non-contrast CT scans performed at admission. Statistical analysis was performed using Chi-square or Fisher's exact tests.

Results

At the one- to two-month follow-up, 27 patients (35.1%) reported voiding dysfunction. The primary analysis found no statistically significant difference in the prevalence of voiding dysfunction between patients with cortical (18.5% of the symptomatic group) and subcortical lesions (81.5% of the symptomatic group) ($p=0.853$). An exploratory analysis of symptom type showed a non-significant trend for cortical lesions to be associated with more voiding-dominant symptoms and subcortical lesions with a more balanced distribution of voiding and storage symptoms ($p=0.326$).

Conclusions

Voiding dysfunction is a common sequela one month after an ischemic stroke. However, a broad anatomical distinction between cortical and subcortical lesion location does not appear to be a reliable predictor of its presence. This suggests that disruption to the complex neuro-micturition network can occur regardless of this general topography. Clinicians should assess for urinary symptoms in all stroke survivors, with future research needed to clarify the specific neural correlates of different post-stroke urinary symptoms using more precise neuroimaging and functional measures.

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SESSION 4

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Rehabilitation During Hemodialysis: Impact of Intradialytic Exercise on Barthel Index and Quality of Life

Yulinda, Stephanie Theodora MD

Introduction

Chronic Kidney Disease (CKD) is a progressive condition often accompanied by muscle wasting, fatigue, cardiovascular dysfunction, and reduced exercise tolerance. These complications lead to significant limitations in mobility and daily activities, ultimately impairing quality of life.

Rehabilitation plays a crucial role in mitigating these effects through individualized exercise training, functional reconditioning, and psychosocial support.

Methods

A multidisciplinary rehabilitation approach was implemented, involving breathing exercise, flexibility exercises, posture exercise, static bike, and patient education. Sessions were tailored 1 hour after hemodialysis begin and lasts for about 30 minutes for 2 times every week. Outcomes using Barthel Index were evaluated pre- and post-intervention.

Results

A total of 10 patients undergoing maintenance haemodialysis completed the intradialytic exercise program. The mean Barthel Index increased from 64.5 ± 6.3 before intervention to 76.5 ± 6.3 after intervention, representing a mean improvement of 12.0 ± 6.3 points (95% CI 7.48 – 16.52). A paired t-test showed this difference to be statistically significant ($t(9) = 6.00$, $p = 0.0002$), indicating a substantial enhancement in functional independence following the exercise program. The effect size (Cohen's $d = 1.90$) denotes a large improvement, confirming that intradialytic exercise effectively improves activities of daily living in chronic kidney disease patients. Normality testing with the Shapiro–Wilk test ($W = 0.93$, $p = 0.45$) supported the use of parametric analysis. No adverse events occurred during the sessions, underscoring the safety and feasibility of integrating structured rehabilitation into routine hemodialysis care.

Conclusions

Intradialytic exercise significantly enhances functional independence among patients with chronic kidney disease undergoing hemodialysis. The marked improvement in Barthel Index scores and large effect size underscore the efficacy of incorporating structured rehabilitation into dialysis sessions. These findings support the integration of routine intradialytic exercise as a safe, feasible, and impactful strategy to improve patients' quality of life and daily functional outcomes.

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Effect of Neuromuscular Electrical Stimulation on Post-Void Residual in Detrusor Underactive Bladder: A Comparative Study

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Introduction

Detrusor underactive bladder is a challenging lower urinary tract condition characterized by incomplete bladder emptying and elevated post-void residual (PVR) volume due to weak or absent detrusor contractions. Conventional management strategies, such as intermittent catheterization and behavioral training, provide limited functional improvement. Neuromuscular electrical stimulation (NMES) has emerged as a potential rehabilitative modality aimed at enhancing detrusor contractility through neuromodulation of sacral and pelvic nerves, thereby improving bladder emptying.

Methods

This prospective single-group pre–post study included 10 patients diagnosed with detrusor underactive bladder based on clinical and urodynamic findings. Participants received NMES therapy over the suprapubic and ankle regions for 20–30 minutes per session, three times per week for 8–12 weeks. PVR volume (in mL) was measured by ultrasound before and after the intervention. Normality of the change scores was assessed with the Shapiro–Wilk test, followed by a paired t-test to compare pre- and post-treatment PVR. A $p < 0.05$ was considered statistically significant.

Results

The mean PVR decreased markedly from 215.2 ± 141.2 mL before NMES to 18.3 ± 12.0 mL after treatment, representing a mean reduction of -196.9 ± 138.4 mL (95% CI -289.7 to -104.2). Normality was confirmed by the Shapiro–Wilk test ($p = 0.39$). The paired t-test demonstrated a highly significant improvement in bladder emptying ($p = 0.0013$)

Conclusions

Neuromuscular electrical stimulation produced a significant reduction in post-void residual volume, reflecting improved detrusor function and bladder emptying in patients with detrusor underactive bladder. NMES is a safe, feasible, effective non-invasive rehabilitation modality that can enhance urinary function and quality of life when integrated into the management of underactive bladder

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SESSION 4

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Efficacy of Lycopene for the Improvement of Urinary Tract Symptoms in Patients with Benign Prostatic Hyperplasia: A Systematic Review

dr. Rangga Juliar Adista, Dr. dr. Jufriady Ismy, Sp. U (K)

Introduction

Benign Prostatic Hyperplasia (BPH) is a common condition among aging men that often leads to lower urinary tract symptoms (LUTS). Lycopene, a potent antioxidant found predominantly in tomatoes, has been suggested to improve BPH symptoms through anti-inflammatory and antiproliferative mechanisms.

Methods

A comprehensive search was conducted across PubMed, Scopus, Web of Science, and Cochrane Library databases. Randomized controlled trials (RCTs) and observational studies assessing lycopene's effect on urinary symptoms or prostate parameters in BPH patients were included. Data were synthesized narratively. From 267 initial articles, 205 remained after removing duplicates. 21 full-text articles were assessed, and 8 were included based on eligibility criteria.

Results

Eight studies involving 743 participants met the inclusion criteria. Most RCTs reported a statistically significant reduction in International Prostate Symptom Score (IPSS) and/or improvement in peak urinary flow rate (Q_{max}) with lycopene supplementation, especially at doses of 10–30 mg/day over periods of 3–6 months. Lycopene was well tolerated with minimal side effects.

Conclusions

Lycopene supplementation appears to be a promising adjunct therapy for improving urinary symptoms in BPH patients, though further high-powered RCTs are needed to confirm these findings and determine optimal dosing.

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SESSION 4

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Current Evidence and Future Perspectives of Botulinum Toxin in Neurogenic Bladder: A Systematic Review

Muhammad Ridho Mubarak

Introduction

Neurogenic detrusor overactivity (NDO) is a severe bladder dysfunction secondary to neurological conditions. This systematic review synthesizes the current high-level evidence on the efficacy, safety, and future perspectives of BTX-A for NDO.

Methods

A systematic literature search was conducted in PubMed, Google Scholar, Semantic Scholar, Springer, Wiley Online Library.

Results

The evidence consistently demonstrates that BTX-A (onabotulinumtoxinA 200 U and abobotulinumtoxinA 600-800 U) is significantly superior to placebo. Treatment leads to substantial reductions in weekly urinary incontinence episodes (mean reduction of ~21-23 episodes vs. ~9 for placebo), with 43-57% of patients achieving complete continence.

Conclusions

Intradetrusor BTX-A is a highly effective, safe, and guideline-endorsed therapy for refractory NDO in adults. Future research should focus on comparative effectiveness between formulations, strategies to reduce treatment burden and improve long-term adherence, and the generation of high-quality evidence in special populations.

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SESSION 4

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Impact of Urethral Stricture History on Outcomes After Fixed Male Sling Implantation for Postprostatectomy Incontinence: A Systematic Review and Meta-Analysis

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Introduction

Fixed synthetic male slings are widely used to treat postprostatectomy stress urinary incontinence, but outcomes vary and may be influenced by preoperative factors. A history of urethral stricture has been proposed as a negative prognostic factor, yet its independent impact on sling outcomes has not been synthesized in a focused review. The main objective is to compare continence outcomes after fixed male sling implantation between men with versus without a preoperative history of urethral stricture.

Methods

A systematic search was conducted in PubMed, Embase, and the Cochrane Library up until October 2025, including men with postprostatectomy stress urinary incontinence undergoing fixed synthetic perineal sling implantation. Eligible designs were observational studies or trials reporting outcomes stratified by history of urethral stricture history (yes/no). Primary outcome was social continence (0–1 pad/day) at \geq [3/6/12] months. Secondary outcomes included complete dryness (0 pads), patient-reported improvement, complications (Clavien–Dindo), de novo/recurrence of stricture, explantation, and reintervention.

Results

Men with a history of US had a significantly higher likelihood of overall failure compared with those without US (pooled OR = 2.99 [95% CI 1.67–5.36]; $I^2 = 43\%$; $P < 0.001$). Heterogeneity was moderate. Subgroup analyses suggested that previously treated and stable strictures had attenuated risk, whereas concurrent radiotherapy or recurrent strictures were associated with higher failure rates.

Conclusions

A prior history of urethral stricture approximately triples the risk of sling failure in men with postprostatectomy incontinence. Careful preoperative evaluation of stricture stability and patient counseling regarding potentially reduced efficacy are warranted. Prospective, standardized studies are needed to clarify the optimal timing and selection criteria for sling surgery in this population.

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SESSION 4

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Influence of healthcare providers on patient choice in intermittent catheter selection: Gender specific insights from a continence care registry

Diane K Newman, Jessica Simmons, Daniel Gordon

Introduction

Patient-centered care emphasizes autonomy and informed decision-making, however, the extent to which patients influence their own intermittent catheter selection remains underexplored. The continence care registry, ConCaRe™ investigated gender-specific factors influencing catheter choice and the role of healthcare providers (HCP), particularly nurses, in supporting these decisions.

Methods

Baseline data from 225 participants (140 males, 83 females, 2 non-binary) across the United States, Canada, and the United Kingdom were analyzed. All participants performed intermittent self-catheterization and registry-specific questions addressing factors influencing catheter selection, decision-making authority, initial training, and preferred sources of information. Descriptive statistics were used for analysis.

Results

Among males, top influencing factors for catheter selection were trial experience (46%), ease of use (45%), and HCP recommendation and hygiene (both 35%). The most influential factor was HCP recommendation (38%). For females, comfort (57%), trial experience (55%), ease of use (52%), and portability (46%) were reported as most influential factors, with HCP recommendation again being the one factor that most influenced their decision (36%).

Decision-making autonomy was reported by 59% of males and 57% of females, while 29% of males and 22% of females indicated the decision was made by their HCP. A shared decision-making experience was reported by 9% of males and 18% of females.

Nurses provided initial catheter training for 74% of males and 76% of females. When seeking further information, participants most often consulted catheter manufacturer websites (61% of males, 60% of females), followed by HCPs (54% of males, 48% of females) and peer-generated content (25% of males and 36% of females).

Conclusions

These findings highlight the critical role of nurses in facilitating informed, personalized catheter selection. By recognizing gender-specific preferences, nurses specializing in urological care can tailor education and support strategies to improve patient satisfaction, adherence, and outcomes in catheter management.

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Gender differences in health outcomes and perceptions among spinal cord injured patients performing intermittent self-catheterization

Diane K Newman, Jessica Simmons, Daniel Gordon

Introduction

Neurogenic lower urinary tract dysfunction (NLUTD) is often linked with neurologic conditions such as spinal cord injury (SCI). While intermittent catheterization is the preferred bladder management method, this procedure is associated with complications, particularly urinary tract infections (UTIs). UTIs are often caused by introduction of microorganisms during catheterization. The real-life challenges faced by individuals performing intermittent self-catheterization (ISC) are not well understood. The Continence Care Registry (ConCaRe™) is a multinational longitudinal study that collects electronic patient-reported outcomes (ePRO) to explore catheter preferences, healthcare usage, and the impact of ISC on the quality of life (QoL) in SCI patients.

Methods

Baseline data were analyzed from 225 participants across the United States, Canada, and the United Kingdom, all performing ISC. The self-reported SCI subgroup (n=118) included 82 males, 35 females, and 1 non-binary participant. Thirty-six percent reported they were employed at least part-time. Results from the Intermittent Self-Catheterization Questionnaire (ISC-Q) and registry specific questions are presented. These results focused on the SCI subgroup and examined gender differences in some responses. Descriptive statistics were used for analysis.

Results

Sixty-nine percent rated their overall health from good to excellent, while 31% rated it from fair to poor. Males rated their overall health better than females on average, with 72% rating it good to excellent compared to 60%. In the last year, 34% reported being diagnosed with a UTI by a healthcare provider two or more times. Of those who reported a UTI diagnosis in the past year, 33% of males reported two or more UTIs, compared to 37% of females. Medical visits or consultations related to possible UTI symptoms included 12 emergency room visits, 5 urgent care visits, 210 specialist visits, and 23 general practitioner visits. Fifty-three percent of those in the SCI subgroup worried about the risk of long-term problems from using their catheter, with 52% of males and 54% of females expressing concern.

Conclusions

The results indicated that while a majority of the SCI subgroup rated their overall health positively, there were some gender differences. Males reported better overall health than females on average. Recurrent UTIs were a common issue, more so for females on average, leading to frequent medical visits. Additionally, there was noteworthy concern about the long-term risks associated with catheter use. For those who are employed, these health issues can negatively impact work productivity due to increased absenteeism and reduced focus. These findings

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underscore the importance of tailored health interventions that address gender-specific needs, enhance UTI prevention and treatment, provide comprehensive education on catheter use, improve coordination of healthcare services, and offer psychosocial support to effectively manage the distinct challenges faced by individuals with SCI.

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SESSION 4

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A New Screening Tool for Neuro-Urological Patients: Sakakibara-Korshunova-Suponeva Scale (SKSS) for Pelvic Function Assessment

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Introduction

Pelvic organ dysfunction can significantly affect the quality of life for patients, particularly those with neurological conditions. Current questionnaires tend to evaluate pelvic organ function in isolation, making them time-consuming when seeking a comprehensive understanding. This study aimed to modify an existing Russian-language pelvic function questionnaire and validate its new version, the Sakakibara-Korshunova-Suponeva Scale (SKSS), specifically for patients with neurological diseases.

Methods

Modifications included the addition of scores ranging from 0 to 3, based on the severity of symptoms, the creation of subdomains for “storage symptoms” and “voiding symptoms,” adjustments in the wording of satisfaction-related questions, and the introduction of extra questions regarding the duration of symptoms. The updated SKSS questionnaire was validated on a sample of 102 patients (70 with Parkinson's disease and 32 with multisystem atrophy). The validation methods employed included assessing internal consistency, content validity, and sensitivity to change through measures such as Cronbach's alpha, expert judgment, and paired t-tests for related samples.

Results

The SKSS questionnaire demonstrated good internal consistency ($\alpha = 0.73$), solid content validity (8.6/10), and sensitivity to clinical changes in urinary and defecation symptoms. A noticeable reduction in scores following treatment confirms that the questionnaire can effectively capture clinical improvements.

Conclusions

In conclusion, the SKSS questionnaire is a reliable and practical tool for diagnosing pelvic organ dysfunction, monitoring symptom progression, and tailoring therapy for patients with neurological disorders.

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Reasons for introducing self-intermittent urinary catheterization and its long-term outcomes in patients with multiple sclerosis: a retrospective study

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Introduction

Bladder dysfunction affects over 75% of multiple sclerosis (MS) patients, significantly impacting their quality of life and social interactions. Approximately 26% of MS patients have learned intermittent self-catheterization (ISC) for several reasons. The aim of this study was to determine the main reason of ISC introduction, and to assess the outcome of this management at short and long term.

Methods

A retrospective study included all individuals with MS who learned ISC between 2018 and 2024. Data were collected upon ISC introduction (T0), 6-12 months later (T1), and at the last follow-up (T2).

Results

One hundred sixty-eight patients were classified according to the reason for introducing ISC: 24 in the upper urinary tract (UUT) protection group, 26 in the urinary tract infections (UTIs) group, and 118 in the symptoms management group. In the symptoms management group, significant improvements were observed in overactive bladder symptoms. In the UTIs group, the number of UTIs per year decreased from 5.2 ± 3.9 at T0 to 1.4 ± 1.7 at T2 ($p < 0.01$). In the UUT protection group, 75% of patients had resolution or improvement of vesicoureteral reflux or pyelocaliceal dilations.

Conclusions

This study demonstrates that ISC indications are generally justified and thus constitute a good therapeutic option for improving urinary symptoms, infections, and UUT complications, especially in long-term, in association with detrusor overactivity management.

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The Effectivity of Pelvic Floor Muscle Training in Managing Erectile Dysfunction post Radical Prostatectomy : A systematic review of randomized controlled trials

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Introduction

Erectile dysfunction (ED) is a common side effect post radical prostatectomy (RP), typically treated with oral medications. Due to adherence issues, pelvic floor muscle therapy (PFMT) may improve erectile function by enhancing muscle strength and coordination. This review summarizes RCT findings on PFMT's effectivity for ED post-RP.

Methods

A systematic search (2015–2025) was conducted across 8 databases, following PRISMA guidelines (PROSPERO: CRD420251059845). Studies examining the effectivity of PFMT to manage ED on patients post-RP based on the International Index of Sexual Function (IIEF)-5 were selected using the PICO framework. Cochrane RoB-2 tool was used to assess risk of bias.

Results

Out of 996 records, 5 studies met the inclusion criteria with low risk of bias (see Figure and Table). The total number of recruited samples were 256 adults, within the range of 50–70 years of age. All studies conducted short term (3-6 months) PFMT, except for one study with 15-months duration. There was a discrepancy between baseline IIEF-5 scores due to different timepoints.

Conclusions

Most studies showed insignificant effect of PFMT on ED post-RP. However, results should be interpreted cautiously due to variations in PFMT protocols and baseline IIEF-5 scores. It is suggested that PFMT should be started after urinary incontinent is resolved for better outcome. This study recommends the prescription of PFMT for ED management in patients post-RP for its theoretical benefits between pelvic floor health and erectile function

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BLADDER DIARY IN NEURO-UROLOGY: FEASIBILITY, USEFULNESS, AND REASONS FOR NO COMPLETION

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Introduction

The bladder diary (BD) is recommended in the assessment of lower urinary tract symptoms (LUTS) in all patients; however completion may be more challenging for some, particularly those with neurological disorders. This study aimed to evaluate the BD completion rate in a population composed predominantly of individuals with neurological disorders, and to identify reasons for non-completion.

Methods

We conducted a prospective, observational, single-center study between January and April 2025. All patients scheduled for a consultation received their convocation letter with instructions to complete a BD. On the day of consultation, BDs were collected, and patients were asked about the reasons for non-completion if applicable, using a questionnaire with 19 possible explanations. Demographic and clinical data were also recorded.

Results

A total of 408 patients were enrolled (mean age: 57.4 ± 15.1 ; 253 women [63%]), of whom 305 (75.3%) presented with neurogenic LUTS. The completion rate was 59.8%, with no difference between patients with and without neurological disorders ($p = 0.88$). No significant differences were observed between those who completed the BD and those who did not, except for the presence of cognitive impairment ($p < 0.01$). Among the 154 non-completers, after excluding those unaware of the BD requirement, the main reasons for non-completion were psychological difficulties (27.1%), forgetfulness (20%), practical limitations (18.6%), and physical limitations (18.6%).

Conclusions

This real-life study showed the feasibility of BD in patients with neurogenic bladder dysfunction, and the variability of reasons for non-completion, with no characteristics predictive of or justifying non-completion.