

Symposium 1 - Joint Symposium of Pan-Pacific Continence Society (PPCS) and International Children's Continence Society (ICCS) - Managing Special Situations of Lower Urinary Tract Symptoms

Optimal Management of Lower Urinary Tract Symptoms in Bladder Outlet Obstruction

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The secondary response of bladder to the bladder outlet obstruction (BOO) is well documented. This is the whole idea of lower urinary tract symptoms (LUTS) induced by BOO. However, the receptors of prostate and bladder detrusor are different on the impact of BOO. This is also the main consideration of optimal treatment for LUTS/BOO. Therefore, the sub-groups of α -blocker is important in the selection of adequate medical management. On the contrary, the role of different receptors located within urothelial and submucosal area is also an important issue. The transient receptor potential vanilloid 4 (TRPV4) or β -3 agonist and even phosphodiesterase type 5 (PDE5) inhibitors and other transmitters may have a promising role in the management of LUTS/BOO in the future.

Nevertheless, the consideration of optimal management of LUTS/BOO should take overactive bladder (OAB) and nocturia into the consideration for optimal treatment strategies. This is because, the treatments specific for OAB and benign prostatic obstruction are not specific for the symptoms of nocturnal polyuria which is the major cause of nocturia. On the other hand, one could not expect the satisfaction only after the treatment of obstructive symptoms. In fact, the irritation symptoms are usually the main bothersome symptoms which may attributed to the OAB.

That's the reason why we need a more practical approaching and treatment guidelines for LUTS/BOO. Taiwanese Continence Society (TCS) proposed a treatment guideline which covers the above important issues need to be reconsidered.

In conclusion, BOO is not a problem of obstruction only, it is a combination of different problems such as obstruction, irritation and nocturia. That's why we need a step by step approaching and consideration to achieve optimal management for LUTS/BOO.

Management of Myelomeningocele: From Children to Adulthood, Including Intravesical Electrotherapy of Myelomeningocele

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The most common cause of neurogenic bladder in children is spina bifida including myelomeningocele (MMC). Although it can cause various problems such as bowel dysfunction, sexual dysfunction and infertility, renal function deterioration and urinary incontinence have been focused on mainly.

Fortunately the world wide prevalence of MMC have gradually decreased with use of folic acid and promptly managed in prenatal and neonatal period. The study and experience from MMC patients have offered the knowledge to manage the patients with lipomeningocele or tethered cord syndrome.

The goals of management of MMC are to reduce the storage pressure of bladder to preserve renal function and to obtain or maintain urinary continence. Since Lapide era clean intermittent catheterization (CIC) is the mandatory to preserve bladder and renal function. Also McGuire principle about the leak point pressure has been historical milestone and made anticholinergics to be the first line treatment methods to fulfill the goals.

These two keys of CIC and anticholinergics to manage MMC should be applied from neonates if necessary. Therefore the urodynamics is essential from neonate and voiding cystourethrography and ultrasonography is the best way to evaluate upper urinary tract and bladder. The infants with MMC should be closely followed until 2 years old when bladder function becomes stable. However since then continuous monitoring is recommended even though the bladder is not belonged to high risk group because the cord tethering may occur in any age.

To preserve renal function, bladder augmentation has been known as the definitive treatment to increase of bladder capacity and compliance. However it should be defer as far as possible because of high morbidity and irreversible changes of body. The night time drainage, the maximum dose of anticholinergics and etc would be recommended before decision of bladder augmentation. The botulinum toxin widely used in adults is another option for increasing bladder capacity and compliance, but it has short duration of effects and needs repeated general anesthesia in children. Various neuromodulations have been tried for the goal of volitional voiding or increasing bladder capacity, but the former has not been accomplished at all. Intravesical electrical therapy (IVES) has been reported as an effective method to increase bladder capacity and sensation in MMC patients by a few institutes including our clinic. We have the data from animal study and the clinical trial of IVES on bladder and bowel function in neurogenic bladder.

To obtain urinary continence, sling, bladder neck injection, blad-

der neck reconfiguration and continent urinary diversion have been reported with the wide-ranging results. Artificial urinary sphincter implantation in children also seems to be a good choice to get both of continence and urination, but has not been free from some issues like technical problems and unwanted change of upper tracts.

From child to puberty, renal function, nutrition and growth rate should be curiously followed whatever the patients had undergone enterocystoplasty or not. Hypertension is easily inattentive issue that may shorten life. There is no need to emphasize the importance of the psychosocial support for child and adolescence. After puberty, sexual dysfunction is variable according to the level of defect. It can be overcome by intracorporeal injection or sildenafil in male and by adequate education in female. Fertility in females is thought to be normal. On the contrary, some males have possible infertility associated with azoospermia and cannot be resolved by electro-ejaculation.

Keywords: spinal dysraphism, neurogenic bladder, child, adult, electric stimulation therapy

Overactive Bladder - Is There a Gender Difference in Diagnosis and Management?

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Overactive bladder (OAB) is the term used to describe the symptom complex of urgency with or without urgency incontinence, usually with frequency and nocturia. The prevalence of OAB in both sexes is almost same and it increases with aging.

The human male and female each has a unique and different urogenital system. Therefore the underlying pathophysiology of OAB and key points of diagnosis/management might be different between males and female patients.

There are some relationship between benign prostatic hyperplasia (BPH) and OAB. About 60% of patients with BPH are associated with OAB. Medical management of lower urinary tract symptoms due to BPH with α -blocker and/or 5 α -reductase inhibitor is the first line treatment. In patients with OAB anticholinergic medication with or without α -blocker may be the first line treatment. Recent review showed that use of antimuscarinic agents for treatment bladder outlet obstruction (BOO) effectively improves patient quality of life. It seems that antimuscarinic agents do not affect voiding pressures and the use of antimuscarinic agents for BOO seems safe. There still remain some refractory cases that require surgical operation.

There is a causal relationship between OAB and pelvic organ prolapse (POP). No evidence is found for a relationship between the compartment or stage of the prolapse and the presence of OAB symptoms. All treatments for POP may result in an improvement in OAB symptoms. POP in the female and prostatic obstruction in the

male require uniquely different approaches to lower urinary tract dysfunction. In this presentation, I would like to overview gender difference for OAB treatment and management and add some of our clinical investigation of OAB in POP.

Innovations in Childhood Incontinence - Neurogenic and Functional Disorders

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Exciting things are happening in the work-up and management of children with lower urinary tract dysfunction. This lecture is designed to provide information about the latest research in the field of bladder dynamics in children. Knowing what's happening, what works and what doesn't will streamline the clinician's ability to present current and future ideas for management of their patients.

Firstly, new anticholinergic medications that have greater affinity for M₃ receptors, the principal receptor for controlling detrusor contractions, are being tested to determine their safety and efficacy. I plan to discuss the latest research regarding these drugs in patients with detrusor overactivity so when they become available you will have a better appreciation for their use in non-neurogenic as well neurogenic conditions.

Secondly, percutaneous tibial nerve stimulation is beginning to play an increasingly important role in the management of the overactive bladder. Recent advances in the needle characteristics have improved its tolerability and thus efficacy of this relatively non-invasive technique. I plan to describe some of the latest responses as a result of this improved technology.

Thirdly, I plan to present the latest applications for using robotic assisted surgeries thus making it easier to consider and apply this exciting and promising technique as part of the surgeon's armamentarium for management of lower urinary tract function in children.

If time permits I will address the latest finding regarding nerve re-routing for the management of bladder dysfunction in children with myelomeningocele and our findings regarding postnatal lower urinary tract function in myelodysplastic children who were closed prenatally.

What We Know and What We do not Know about Dysfunctional Voiding in Adults

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Dysfunctional voiding is an abnormality of bladder emptying in neurologically normal individuals in whom there is increased external sphincter and/or pelvic floor muscle activity during voluntary voiding. Dysfunctional voiding may result in various lower urinary tract symptoms, including storage symptoms (frequency, urgency and urgency incontinence) and emptying symptoms (decreased force of stream, hesitancy, need to strain and a feeling of incomplete bladder emptying). It may also be responsible for recurrent urinary tract infections, acute or chronic urinary retention, and in severe cases upper and lower urinary tract decompensation.

Dysfunctional voiding in children was originally thought to be a response to psychosocial problems. It is now recognized that it may represent a developmental abnormality, in which the transitional phase persists between infantile reflexogenic voiding and normal volitional voiding of adulthood. There are several theories of why dysfunctional voiding occurs in adults. The most believable theory is that it represents learned behavior in response to an adverse event or condition, such as inflammation, irritation, infection (cystitis, urethritis or vaginitis), urethral diverticulum, pelvic inflammatory disease, anorectal disease or trauma.

While the prevalence of dysfunctional voiding in the general adult female population is not known, Groutz et al observed that the incidence of dysfunctional voiding was 2% in a review of a database of 1,015 video urodynamic studies in adults.

The diagnosis of dysfunctional voiding is made when there is increased external sphincter activity during a sustained voluntary detrusor contraction. Typically this condition is noted as an increase in electromyography activity and/or a dilated proximal urethra, often with intermittent sphincteric activity, on voiding cystourethrography and usually associated with decreased or intermittent urinary flow. The clinical feature of dysfunctional voiding may be more benign in adults than in children or milder disease may more readily diagnosed, since urodynamic testing is more commonly performed in adults with long-standing symptoms than in children. Deindl et al noted 2 distinct types of dysfunctional patterns, that is increased pelvic floor muscle activity in 73% of cases and increased external urethral sphincter activity in 27%.

The treatment of dysfunctional voiding has evolved during the years. As in children, biofeedback and behavioral modification have become recommended treatment in women with dysfunctional voiding. Biofeedback has also been proved to be successful in men. Neuromodulation has become an integral component in the treatment algorithms for patients with dysfunctional voiding. The minimally invasive techniques currently employed provide a safe and effective alternative for patients with dysfunctional voiding refractory to conservative treatments.

Neurological disease should be suspected in any patient with dysfunctional voiding, especially in younger patients with detrusor instability and urge incontinence. Formal neurological evaluation should be done in these cases.

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Dysfunctional Voiding: Lessons Learned from Children

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Dysfunctional voiding (DV) means intermittent contraction or unrelaxed urinary sphincter during voiding phase. It is a voiding disorder and can be associated with storage disorder. Dysfunctional voiding can be congenital because many infants void in this dyscoordinated situation which usually resolves with time. Some children may acquire this abnormal voiding behavior under stressful environment, abnormal voiding posture, or no apparent risk factor at all.

DV should be suspected in children with urinary tract infection (UTI), or lower urinary tract symptoms (LUTS) such as urgency, daytime incontinence or nocturnal enuresis. DV can be diagnosed in cases with repeated staccato flow pattern in free uroflowmetry. The addition of perineal patch electromyogram (EMG) adds specificity on the diagnosis. Definite diagnosis can be demonstrated by videourodynamic study which reveals increased sphincter EMG at voiding phase and/or intermittent sphincter contraction during voiding phase.

DV is frequently associated with constipation. Dysfunctional elimination syndrome describes the combined problems of voiding and defecation. Successful treatment of constipation results in resolution of LUTS. Hence, urologists should master in the diagnosis and treatment of constipation.

DV frequently results in high detrusor pressure which may induce vesicoureteral reflux. Since DV is present in a subset of infants and may disappear after one year of age, operation may wait until that time. Anitmuscurinics or biofeedback relaxation of pelvic floor muscles can reduce detrusor pressure and should be applied to appropriate children with high detrusor pressure.

There is a belief that DV may squeeze infected urine back to bladder and cause UTI. Biofeedback relaxation of pelvic floor muscles did reduce the incidence of febrile UTI in children.

A bladder capacity >115% expected bladder capacity (EBC) or a voided volume >100% EBC can be defined as bladder over distention (BOD). BOD frequently results in staccato flow pattern, which implies dysfunctional voiding. Through modification of fluid intake and timed voiding we have reversed some cases of dysfunctional voiding associated with BOD.

Implications to Adult Urologists

DV may be present in adults with refractory LUTS, incontinence, or UTI. Constipation is related to DV and LUTS and UTI. DV can be an extension from childhood or recently acquired in the adulthood. Biofeedback relaxation of pelvic floor reverses DV and improves urinary symptoms. Bladder over distention may be present in adults with urgency +/- urgent incontinence.

Symposium 2 - Female Urinary Incontinence - Management in Complicated Situation

Salvage Therapy for Failed Surgery for Mixed Urinary Incontinence in Females

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Mixed urinary incontinence (MUI) is defined as a combination of stress and urge symptoms. Chronically, it has somehow been considered as a single disease entity, encompassing treatment options and etiology.

Selecting an optimal therapy for mixed incontinence is challenging, because a single-treatment modality may be insufficient for alleviating both the stress and urge components.

Lifestyle modification and behavioral therapy should be considered first-line options for all women with MUI. The add-on modality of pelvic floor muscle exercise may have an additional positive effect. It is effective to treat urge part with antimuscarinics; however, the stress component is most likely to persist after medical therapy.

Anti-incontinence surgery may have a positive impact on both the stress and urge parts of MUI; nevertheless, females with MUI probably may have lower cure rate as compared with women suffering from pure stress urinary incontinence. Therefore, what if anti-incontinence surgery failed to treat women with MUI; What should we ponder to decide the next treatment option which is the most appropriate and

effective for the patient?

Before the so-called salvage therapy is applied, we should be able to pick up the best candidate for surgery and reduce the probability of failure to much extent as well. Once facing the failed case, to decide which salvage therapy will work depends on the individual's clinical scenario and further study to elucidate the causative factors as completely as possible.

In summary, the optimum management of females with MUI may often need multiple treatment modalities. Although anti-incontinence surgery can resolve both components simultaneously for 50-75% of the patients, its routine implementation should be made with caution and the patient should be highly selected and counseled preoperatively.

Management of Stress Urinary Incontinence and Pelvic Organ Prolapse - Concurrently or Treat Prolapse Only?

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Advanced pelvic organ prolapse (POP) is associated with stress urinary incontinence (SUI). The rate of POP patients complaining of concomitant SUI has been reported to be 40 to 66%. Furthermore, a certain percentage of SUI is masked preoperatively, since advanced POP may cause urethral kinking and external urethral compression. The reported rate of occult or masked SUI in continence patients ranges from 27 to 68%.

To date, SUI prevention at the time of prolapse repair is still debatable, especially in preoperatively diagnosed occult SUI. It has been reported that preoperative positive stress test with prolapse reduction is associated with a higher risk for postoperative leakage. However, some of patients with positive stress test are still continence after POP surgical repair without continence surgery. Further, when performing concurrent prolapse and continence surgeries, some reports suggest the potential risks of developing the storage and voiding problems and increasing urinary tract injuries.

Using cough stress testing with prolapse reduction, we examined how precisely preoperative evaluation of occult SUI can predict the development of SUI after POP surgery.

We reviewed retrospectively the records of all 119 women who underwent surgery for symptomatic POP. The International Consultation on Incontinence Questionnaire Short Form for urinary incontinence (ICIQ-UI) was used for evaluation of urinary incontinence (UI). Women were considered to have UI if they reported symptoms of UI on the ICIQ-UI and required a pad usage during activities of daily living. POP repair was performed with the use of polypropylene mesh (GyneMesh PS™, Ethicon, USA) cut by the surgeon according to the Trans Vaginal Mesh (TVM) technique described previously. Whenever the patients with symptomatic SUI and/or a positive stress test wished for opera-