NEWSLETTER OF THE INDIAN COLLEGE OF OBSTETRICIANS & GYNAECOLOGISTS

ISSUE OCTOBER 2017 | Pages 30

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Updates in Urogynaecology

President's Address

Dr. Rishma Dhillon Pai
President FOGSI

Dear Colleagues,

Seasons greeting to all my dear FOGSIAN'S.

While most of India is enjoying the holiday season, ICOG- the academic wing of FOGSI, has been working hard to bring you the new issue of the ICOG newsletter on urogynaecology.

Urogynaecology has become a major subspecialty in gynaecology. As a large number of women suffer urogynaecological problems, there is a need for specialized training and updates in this field.

This focused newsletter will help you to brush up your knowledge and keep you abreast with the latest developments in the field.

'There is only one good, knowledge, and one evil, ignorance.'

- Socrates

Chairperson's Address

Dr. Mala Arora
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In this issue, we bring forth the clinical updates in the field of Urinary incontinence (UI) and pelvic organ prolapse. UI is a widely under reported and socially crippling. It has multiple etiological factors and only a precise diagnosis will result in successful therapy. A careful history will often present the diagnosis. Urinary fistulas are rare and beyond the scope of this newsletter.

While **Stress incontinence** may often require surgical correction, **Urge and mixed incontinence** are managed medically and require treating urinary tract infections, psychological counseling, and antimuscarinic therapy. **Over active Bladder** is often a neurological disorder which results in urge incontinence and is largely treated with drugs, bladder drill and newer therapies like Botulinium injection, peripheral tibial nerve stimulation, sacral neuromodulation come to the rescue of cases resistant to conventional therapy.

Interstitial Cystitis is a progressive and painful disorder, but relieved with specific compounds like sodium pentosan sulphate.

Prevention of urogynaecological disorders is most important. It requires

- Prevention of birth injuries to the pelvic floor by avoiding difficult vaginal deliveries
- Regular prescription of kegel exercises to all women in post childbearing years which should be continued life-long to combat post- menopausal atrophy of pelvic floor muscles.
- Careful suspension of the vaginal vault and a subtotal hysterectomy will preserve the pelvic floor and maintain bladder control.

Secretary's Message

Dr. S. Shantha Kumari
Secretary ICOG

Dear All !

Urogynecology has remained a rather enigmatic subspeciality of ObGyn which incited awe both in the medical student who struggles with classification of "UV prolapse" similar to the Consultant ObGyn dealing with "stress urinary incontinence in a 85 year old granny" to the young Obstetrician dealing with similar problems in her recently "normally delivered 29 year old primipara"!! These clinical scenarios are not unfamiliar to the regular ObGyn practitioners and yet one seems rather perplexed when confronted with them in a regular OPD. As an independent subspecialty, urogynecology has evolved wonderfully in the last century with the pelvic floor anatomy, physiology and even electrophysiology so well elucidated through dedicated research and reviews in the field. In many cases management of urogynecological problems need interdisciplinary care protocols between Gynecologists, urologists, physiotherapists and nurses. Medical options are increasing and many surgical approaches are redefined. Theoretically speaking the list of choices is quite impressive but practically choosing the best treatment for each patient is a daunting task.

Surgical procedures, interventions and implant insertions in urogynecology have to constantly pass the test of the first rule of medicine "primum non nocere" because more often than not the symptoms are a "quality of life" issue and every intervention has to be proved useful beyond debate before being unequivocally prescribed. Nevertheless, quality of life issues are getting more and more relevant as the goal of medicine moves firmly from not only "adding years to life" but also towards " adding life to years" !!

This issue on Urogynecology envisages to apprise the readers on what's established beyond doubt, what could be useful to what's being investigated for future prospects in the subspecialty. Happy Reading!

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Greetings to All!

I thank you all with gratitude for much appreciating the previous issue of ICOG Campus on critical care. This month's dedicated issue is on **'Updates in Urogynaecology'**

Pelvic floor disorders, including urinary incontinence and pelvic organ prolapse (POP) affect millions of women worldwide resulting in considerable cost and quality of life impact. One-third of all women will suffer from these disorders at some point in their lives. Significant research efforts are underway to improve our understanding of the pathophysiology, optimal evaluation, and effective treatment for women with pelvic floor disorders. Recent advances, including new pharmacologic and surgical therapies, have reshaped the treatment of incontinence.

The main focus of this special issue is on new and existing diagnostic and treatment methods for urinary incontinence and pelvic organ prolapse. The featured articles summarize current approaches to the treatment of these disorders ranging from lifestyle modifications, pharmacological treatment to mechanical devices and minimally invasive surgeries and look into the future by discussing possible novel interventions for the treatment of pelvic floor dysfunction.

We have also discussed the clinical update of an enigmatic pathology of Interstitial Cystitis/ Bladder Pain Syndrome to apprise the readers about this much confusing entity. The journal search section brings forth high-quality clinical trials and translational studies relevant to the field of urogynaecology. Intriguing brain teasers at the end to keep up with the tradition.

We expect that our readers will enlighten their knowledge about various aspects of urogynaecological disorders.

I wish happy reading to all.

Every morning and night go into silence

for meditation is the only way to discriminate

between truth and error.

— Yogananda

Approach to a Female with Urinary Incontinence

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INTRODUCTION

Urinary incontinence (UI)—the complaint of any involuntary leakage of urine—is a common problem that affects many women of all ages but is more prevalent in the elderly. It is estimated that UI affects 30–60% of middle-aged and older women in the community. Despite this high prevalence, UI is both underreported and undertreated

TYPES OF INCONTINENCE

Stress incontinence is the involuntary leakage of urine with effort or exertion, sneezing, coughing, or laughing. These activities result in increased intra-abdominal pressure, which overcomes the sphincter closure mechanism in the absence of a bladder contraction. It is often caused by weakened pelvic muscles. Stress incontinence is the most common type of urinary incontinence in younger women.

Urge incontinence is the involuntary leakage of urine accompanied by or immediately preceded by a strong desire to pass urine. It is generally caused by an oversensitive bladder. Urge incontinence is more common in elderly women. In younger women, urge incontinence may be due to interstitial cystitis.

While the term **overactive bladder** is often used interchangeably with urge incontinence, it has a slightly different meaning. Overactive bladder is not actually a diagnosis, but refers to a constellation of symptoms associated with urge incontinence—such as urgency, frequency, and nocturia—which may or may not include incontinence.

Mixed incontinence is the combination of stress and urge incontinence. Mixed incontinence is the most common type of urinary incontinence for women overall.

Overflow incontinence is the dribbling and/or continuous leakage associated with incomplete bladder emptying, often caused by impaired detrusor contractility or, more rarely, by bladder outlet obstruction.

Functional incontinence is any incontinence that is caused by factors outside the lower urinary tract, such as impaired mobility or manual dexterity, or cognitive impairment.

DIAGNOSIS AND ASSESSMENT OF SEVERITY

History

Assessment of urinary symptoms should include:

- Symptom review

  "Do you ever leak urine when you don't want to?" (establishes diagnosis)

  "Do you ever leak urine when you cough, laugh, or exercise?" (stress incontinence)

  "Do you ever leak urine on your way to the bathroom?" (urge incontinence)

  "Do you ever use pads, tissues or cloth in your underwear to catch urine?" (addresses severity of symptoms)
- Past history or current symptoms of urinary tract infection (UTI), dysuria, or hematuria
- Medical problems and prior surgeries
- Consumption of bladder irritants (caffeinated products, alcohol, acidic foods and drinks)
- Excessive fluid intake (more than six to eight 8-oz glasses of fluid per day)

BLADDER DIARY

A bladder diary can be useful for quantifying symptoms and recording the number and type of episodes of urinary incontinence, and these diaries are recommended by both the American Urological Association (AUA) and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU). A bladder diary will also record the voiding times and exact voided volumes (recorded by a "hat" placed in the toilet). NICE guidelines also recommend the use of bladder diaries in the initial assessment of women with urinary incontinence or overactive bladder syndrome. Women should complete the diary for a minimum of three days to cover variations in their daily activities, although a two-day diary may be more feasible for patients to complete. However, bladder diaries are not always needed when the severity and type of urinary incontinence are readily ascertained from the history

PHYSICAL EXAMINATION

It may not be required as part of the initial diagnosis, but is recommended if non-pharmacological methods have not improved the patient's incontinence symptoms. It is recommended prior to prescribing medications, and may include:

- BMI (Obesity contributes to incontinence.)
- Extremities: Evaluate for edema, which can increase nocturia, especially in frail elderly patients.
- Neurologic: In cases of sudden-onset incontinence, or other neurologic symptoms, test anal, wink reflex, bulbocavernosus reflex, and perineal sensation.
- Abdominal: Palpate for masses, palpate for enlarged bladder
- Pelvic: Rule out vaginal atrophy, pelvic organ prolapse, cystocele.

  Confirm that patient is doing Kegel exercises (if already advised) correctly by feeling for pelvic floor rising and vaginal narrowing during a bimanual exam.

  Stress test to assess for leakage. (Note: The "Q-tip test" is no longer recommended due to low test specificity)

  Bonney's Test to judge feasibility of surgical correction in case of Stress incontinence

QUESTIONNAIRES

Several validated tools are available to assess the severity of urinary incontinence and measure condition specific HRQOL. The urogenital distress inventory (UDI-6) and the incontinence impact questionnaire (IIQ-7) encompass the urinary domain components of the pelvic floor distress inventory-short form (PFDI-20) and the pelvic floor impact questionnaire short form (PFIQ-7). They are popular questionnaires among specialists and measure symptom severity and impact on HRQOL, respectively.

LABORATORY EVALUATION

1. **Urinalysis**: recommended to look for
   - Infection (although asymptomatic bacteriuria does not cause incontinence)
   - Hematuria
   - Dehydration or excessive fluid intake (specific gravity normally 1.010–1.025)
2. **Postvoid residual (PVR)** urine volume measurement
3. **Urodynamics**: It should not be performed in women with untreated symptoms or urgency incontinence who have no evidence of neurologic disease or voiding dysfunction. AUA/SUFU guidelines discourage the use of urodynamics in the initial workup of the uncomplicated patient. However, it is often helpful in patients with mixed symptoms who could benefit from further specific delineation of the cause of their urinary incontinence.

Cystometry is also useful before starting more invasive treatment for drug refractory overactive bladder syndrome. NICE guidelines advocate the use of filling and voiding cystometry in women with suspected detrusor overactivity, voiding dysfunction, anterior prolapse, or in those who have had surgery for stress incontinence. If the diagnosis is still unclear, video urodynamics can be considered. Many specialists prefer video urodynamics as part of routine urodynamics because it provides important anatomic information about the appearance of the bladder and bladder neck (often open in women with stress urinary incontinence).

MANAGEMENT

The goal of management is to reduce urinary incontinence episodes. A multicomponent, stepped approach focused on the aspects of incontinence the patient considers most bothersome is the key to successful therapy

The usual approach to the treatment of urinary incontinence is a stepped-care plan starting with noninvasive behavioral modifications, followed by devices and pharmacologic interventions, and finally surgery in those whose symptoms do not respond to initial treatment. When patients have mixed incontinence, treatment should be directed towards the predominant symptom.Regardless of the approaches used, it is up to the individual patient to determine whether she considers her incontinence to be successfully managed**.** Different women will have different perceptions of what is bothersome and what is tolerable.

NON-PHARMACOLOGIC THERAPY

Lifestyle modification and behavioral therapy should be offered as first-line therapy for managing all types of urinary incontinence. These approaches have no side effects and are more effective than drug therapy. Typically, it takes a few weeks to 3 months of lifestyle modification and/or behavioral therapy for the full effects to become noticeable.

1. Lifestyle modifications

Moderately and morbidly obese women who experience stress incontinence should be encouraged to lose weight, which has been shown to reduce the frequency of incontinence symptoms.

Dietary change; avoiding foods and drinks that can adversely affect normal bladder function (caffeinated products, alcohol, and acidic or spicy products). Smoking cessation for patients with stress UI or stress-predominant mixed UI. Reduction of fluid intake in patients who are drinking excessive amounts. To avoid the risk of urinary tract infections, constipation, and dehydration, patients generally should not lower their intake below six to eight 8-ounce glasses of fluid each day. Avoid constipation.

Review of medications that may

- Cause incomplete bladder emptying (overflow incontinence), such as anticholinergics (dicyclomine, hyoscyamine, benztropine, trihexyphenidyl, etc.), antihistamines (diphenhydramine, chlorpheniramine, etc.), and beta-blockers (atenolol, metoprolol, propranolol, etc.).
- Cause edema, such as calcium channel blockers (amlodipine, felodipine, nifedipine, etc.) and NSAIDs (ibuprofen, naproxen, etc.).
- Cause cognitive changes, such as narcotics.
- Affect bladder function, such as alpha-blockers (doxazosin, prazosin, terazosin), oral or transdermal estrogen (Premarin, Climara, etc.) and antipsychotics (clozapine, chlorpromazine, haloperidol, thioridazine, etc.).
- Increase urinary output, such as diuretics (furosemide, hydrochlorothiazide, etc.)

For those with impaired mobility, reduction of physical barriers to toileting and mobility (e.g., selecting clothing that is easier to manage).

2. Behavioral therapy

Behavioral therapy, which includes Kegel exercises and bladder training, should be offered as a first-line therapy for the management of urgency, stress, and mixed urinary incontinence. Behavioral therapy has been found to be **more effective and to provide more sustained improvement** in symptoms than pharmacologic therapy.

For patients who have cognitive impairment and urge incontinence, several other behavioral strategies canbe used, including habit training, scheduled voiding, and prompted voiding. Studies indicate that scheduled voiding may be the most effective, with clear short-term benefits.

a. Kegel exercises

These should be offered as first-line conservative therapy for women with stress, urgency, or mixed urinary incontinence.

Kegel exercises are based on the on the principle of strength training, and involve squeezing and releasing the pelvic floor muscles used to stop urination. These contractions increase the strength and tone of the pelvic floor muscles, which increases the force of urethral closure, which in turn prevents stress incontinence during an abrupt increase in intra-abdominal pressure. Kegel exercises are also helpful in the management of urge incontinence as the detrusor contractions can be reflexively or voluntarily inhibited by tightening the pelvic floor. The basic recommended regimen involves 3 sets of 8–12 slow-velocity contractions sustained for 6–8 seconds each, performed 3–4 times a week and continued for at least 20 weeks.

The success of the treatment depends on the patient's motivation and ability to perform it correctly. It is most effective when it is done for at least 3 months, and is more beneficial in women with stress incontinence. Manual feedback (palpating the pelvic muscles during the exercises) and biofeedback (using a vaginal or anal device that provides visual or audio feedback about pelvic muscle contraction) have been used to teach patients the correct technique.

b. Bladder training

Bladder training is an appropriate first-line treatment for urgency urinary incontinence, and is also effective for stress and mixed urinary incontinence. The goal is to have a schedule for voiding once every 2–4 hours. A woman who feels an urge to urinate outside the schedule should try to hold it for more and more minutes each time until she can keep the schedule. Timed voiding is done only when the patient is awake.

c. Combined Kegel exercises and bladder training

A combination of Kegel exercises with bladder training may be more effective than either one used alone.

3. Pessaries & devices

For women with stress or mixed UI with stress predominance, pessaries can reduce episodes of UI. Pessaries, which can also be used to treat prolapse, are most often used by older women. Younger, sexually active women tend to be less interested in this option because pessaries must be removed prior to sexual intercourse, and replacing them can be challenging, especially for women with relatively narrow vaginas. Fittings for pessaries must be done under clinician's supervision.

Radiofrequency denaturation is a nonsurgical modality for stress UI that uses a device inserted into the urethra to deliver radiofrequency energy. This one-time procedure can be performed with local anesthesia in a physician's office. The procedure is safe, with the most common adverse effects including dysuria and urinary tract infections.

4. Electrical & magnetic stimulation

Electrical stimulation of the pelvic floor muscles with a vaginal or anal electrode can be used in women who cannot voluntarily contract pelvic floor muscles. This can be done at home and typically consists of two 15-minute sessions daily

for 12 weeks. It is used in patients who have incontinence that does not respond to structured pelvic floor muscle exercise programs.

Extracorporeal magnetic innervation (used for mild incontinence) involves a series of treatments in which the patient sits, fully clothed, on a chair that generates a low-power magnetic field. Patients typically undergo two or three treatments per week for six to eight weeks.

5. **Neuromodulation**

Several electrical neuromodulation devices are approved by the U.S. Food and Drug Administration (FDA) for treating urge incontinence refractory to behavioral interventions. Although the precise mode of action is unknown, the effects can be explained by modulating reflex pathways. Techniques include the use of removable vaginal or anal stimulators and percutaneous stimulators of the posterior tibial nerve, which shares a common nerve root with the innervation of the bladder. Posterior tibial nerve stimulators are the most widely used devices. In this office-based procedure, a needle electrode is applied near the medial malleolus, and electrical stimulation is administered in 30-minute sessions.

PHARMACOLOGIC THERAPY

Drug therapy to be added to non-pharmacologic options **only** for patients whose urgency or mixed (but not stress) incontinence does not respond adequately to non- pharmacologic options alone. Note that available drug treatments have modest benefit and are often discontinued because of their high rates of side effects. Cure is rarely achieved solely with drug therapy, however, and in many studies improvement over placebo is modest. Combination therapy with medication and behavioral treatments is more effective than either modality alone.

Anticholinergics are the preferred agents for the treatment of urge incontinence. Various anticholinergics are described in table 1.

Approved by the FDA in 2012, Mirabegron is from a new class of drugs used to treat urge incontinence by acting on beta3-adrenergic receptors which relax the detrusor. Also, recently approved by the FDA, injection of Onabotulinum toxin A (Botox) into the detrusor muscle can be considered for treating urge incontinence that has not responded to conservative treatments. Symptom reduction lasts three to six months.

No medications are FDA-approved for the treatment of stress incontinence. The antidepressant duloxetine has been shown to reduce stress incontinence, but there is no evidence that it generates cure.

Table 1: Anticholinergic drugs for treatment of urge incontinence

Drug	Formulations	Unique factors
Nonselective agents		
Fesoterodine (Toviaz)	Extended release	High drug levels in persons with poor metabolism of cytochrome P450 2D6
Oxybutynin (Ditropan)	Extended release Immediate release Topical gel Transdermal patch	Originally the preferred medication Highest rate of anticholinergic adverse effects
Tolterodine (Detrol)	Extended release Immediate release	Fewer adverse effects than oxybutynin
Trospium (Sanctura)	Extended release Immediate release	Renally cleared
M2/M3-selective agents		
Darifenacin (Enablex)	Extended release	Higher selectivity for M3 muscarinic receptors
Solifenacin (Vesicare)	Extended release	

MINIMALLY INVASIVE PROCEDURES

Injection of bulking agents is a minimally invasive procedure for women with intrinsic weakness of the urethral sphincter whose symptoms do not respond to noninvasive treatments and who cannot undergo surgery. Agents such as autologous fat, collagen, or carbon beads are injected through a needle placed transurethrally or periurethrally. Cure or improvement rates range from 18 to 40 percent, with repeated injections required to maintain effectiveness. Adverse effects include urinary retention, urgency, dysuria, and urinary tract infections.

SURGERY

Urge incontinence can be treated with surgically implanted devices that stimulate the sacral, paraurethral, and pudendal nerves. Sacral nerve stimulators are most commonly

Table 2: Treatment options for Urinary incontinence

Type	Conservative management	Pharmacologic	Surgical
Urge	Weight loss Fluid reduction Constipation management Bladder training Pelvic floor muscle exercises Electrical stimulation of the posterior tibial nerve	Anticholinergic drugs Beta-adrenergic agonists (mirabegron [Myrbetriq]) OnabotulinumtoxinA (Botox) Intravaginal estrogen*	Neuromodulation (implanted sacral nerve stimulator)
Stress	Weight loss Smoking cessation Fluid reduction Constipation management Pelvic floor muscle exercises (alone or with manual or biofeedback) Extracorporeal magnetic innervation Electrical stimulation Mechanical devices (e.g. pessary, urethral plugs)	Alpha-adrenergic agonists (e.g. pseudoephedrine, phenylephrine)* Duloxetine (Cymbalta)*	Sling procedures Suburethral sling with tension-free vaginal tape Pubovaginal sling Midurethral sling Urethropexy Needle urethropexy Retropubic unrethropexy or colposuspension (i.e. Burch and Marshal-Marchetti-Krantz procedures) Periurethral injections of bulking agents
Mixed	Combination of above treatments with focus on dominant symptorms	Medical focused on dominant symptoms	-
Overflow	Relief of obstruction Clean intermittent catheterization Indwelling urethral catheter	Alpha-adrenergic antagonists or blockers (e.g. tamsulosin [Flomax])	Suprapubic catheter

used, and improvement in symptoms is notable because these devices are used only for symptoms that are refractory to all other treatment. Implantable devices are costly and carry a risk of surgical complications.

Surgery is reserved for incontinence that does not respond to less invasive treatments. About 30 percent of women with stress incontinence ultimately elect to undergo surgery. Adverse outcomes include perioperative complications, development of urgency and urge incontinence, pelvic organ prolapse, and need for repeat surgery.

Surgical options include slings and urethropexy. Sling procedures include pubovaginal slings and midurethral slings (i.e., retropubic sling, single incision sling [mini-sling], tension-free vaginal tape, and transobturator sling). Urethropexy options include needle urethropexy and retropubic urethropexy (i.e., Burch and Marshall-Marchetti-Krantz procedures). There is no consensus on the best surgical approach. All methods aim to augment urethral closure, or support and stabilize the bladder neck and urethra.

A systematic review and meta-analysis of sling surgery for stress urinary incontinence, compared midurethral slings with open or laparoscopic Burch colposuspension, and the review recommends either, depending on adverse events of concern to the patient (level 1A evidence). Pubovaginal slings are recommended over Burch procedures to maximize cure (level 1A evidence). Midurethral slings are recommended over pubovaginal slings for better subjective cure (level 2C evidence). Despite the high rate of mesh related complications after vaginally placed mesh for prolapse, midurethral mesh slings for stress urinary incontinence have an acceptably low complication rate with durable efficacy.

In January 2014, the American Urogynecologic Society (AUGS) and SUFU issued a joint statement that strongly supported the use of polypropylene mesh for midurethral sling surgery. The statement recognized the procedure as the safe, effective, worldwide standard of care for the treatment of women with stress urinary incontinence.

SUMMARY

A summary on available treatment approaches is given in Table 2. The application of these algorithms can improve incontinence care at the generalist level and thereby reduce the need for specialty care, while algorithms applied to specialist care can help reduce costly, and sometimes unnecessary, testing.

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ABILITY is what you are capable of doing.

MOTIVATION determines what you do.

ATTITUDE determines how well you do it

— Lou Holtz

Overactive Bladder : An Update

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INTRODUCTION

The International Continence Society (ICS) defines Overactive Bladder (OAB) as the presence of "urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection (UTI) or other obvious pathology."[1] Therefore, OAB symptoms consist of four components: urgency, frequency, nocturia and urgency incontinence. OAB that occurs with incontinence is known as 'OAB wet'. OAB that occurs without incontinence is known as 'OAB dry'.[2]

Urgency is defined by the ICS as the "complaint of a sudden, compelling desire to pass urine which is difficult to defer."[1] It is considered the hallmark symptom of OAB.

Urinary frequency can be highly variable based upon hours of sleep, fluid intake, comorbid medical conditions and other factors. Traditionally, up to seven micturition episodes during waking hours has been considered normal.[3]

Nocturia is the complaint of interruption of sleep one or more times because of the need to void.[1] Like daytime frequency, nocturia can often be due to factors unrelated to OAB (e.g., excessive night time urine production, sleep apnoea).

EVALUATION OF OAB

When women are evaluated for OAB, counselling about treatment should begin with conservative options. The evaluation includes the following steps:

History

The purpose of history taking is to determine the type of urinary incontinence (UI) that is bothersome to the patient (eg. stress, urge, mixed), precipitating events, frequency of occurrence, severity, pad use, and effect of symptoms on activities of daily living.(Table 1)[4]

Also, negative responses to queries regarding symptoms of leakage on effort or physical exertion, incomplete emptying, incontinence associated with chronic urinary retention (previously referred to as overflow incontinence), functional impairment, continuous leakage, incomplete emptying and a lack of continuous leakage in women with recent pelvic surgery or radiation exposure rules out other types of incontinence.

Differentiation from other conditions : Nocturnal polyuria is the production of greater than 20 to 33% of total 24 hour urine output during the period of sleep, which is age-dependent with 20% for younger individuals and 33% for elderly individuals.[5] The nocturnal voids are frequently normal or large volume as opposed to the small volume voids commonly observed in nocturia associated with OAB. Sleep disturbances, vascular and/or cardiac disease and other medical conditions are often associated with nocturnal polyuria.

In polydipsia, urinary frequency occurs with normal or large volume voids and the intake is volume matched. Similarly, diabetes insipidus also is associated with frequent, large volume voids and should be distinguished from OAB.

The clinical presentation of interstitial cystitis/ bladder pain syndrome shares the symptoms of urinary frequency and urgency, with or without urgency incontinence; however, bladder and/or pelvic pain, including dyspareunia, is a crucial component of its presentation in contradistinction to OAB.

Also in the menopausal female patient, atrophic vaginitis can be a contributing factor to incontinence symptoms. There is some evidence for symptom improvement with the use of vaginal (but not systemic) estrogen.[6]

Thorough medical and neurologic histories should be obtained. Certain conditions, such as diabetes and neurologic disorders, can cause UI. In addition, a complete list of the patient's medications (including nonprescription medications) should be obtained.[3] Agents that can affect lower urinary tract function include diuretics, caffeine, alcohol, narcotic analgesics, anticholinergic drugs, antihistamines, psychotropic drugs, alpha-adrenergic blockers, alpha-adrenergic agonists, and calcium-channel blockers.

PHYSICAL EXAMINATION

This should include an abdominal examination, a rectal/ genitourinary examination, an assessment of lower extremities for edema, assessment of cognitive impairment. The primary purpose is to exclude confounding or contributing factors to the incontinence or its management.

INVESTIGATIONS

Urinalysis Urinary tract infections should be identified using urinalysis and treated before initiating further investigation or therapeutic intervention for UI. At the clinician's discretion, further evaluation can be done.

Urine culture is considered if urinalysis seems unreliable.

Postvoid Residual (PVR) Assessment Anti-muscarinics should be used with caution in patients with PVR 250–300 ml.[7]

Bladder diaries is useful for patient education, to document baseline symptom and treatment efficacy.

Symptom Questionnaires are useful in the quantification of bladder symptoms. Examples of Validated Urinary Incontinence Questionnaires are

- Urogenital Distress Inventory (UDI)
- Incontinence Impact Questionnaire (IIQ)
- Questionnaire for Urinary Incontinence Diagnosis (QUID)

Table 1: Differentiation from other incontinence

Symptoms	OAB wet/ UUI	Stress Urinary Incontinence (SUI)	Mixed Symptoms
Urgency (strong, sudden desire to void)	Yes	No	Yes
Frequency with urgency (> 8 times/24 h)	Yes	No	Yes
Leaking during physical activity (eg, coughing, sneezing, lifting)	No	Yes	Yes
Amount of urinary leakage with each episode of incontinence	Large (if present)	Small	Variable
Ability to reach the toilet in time following an urge to void	Often no	Yes	Variable
Waking to pass urine at night	Usually	Seldom	Maybe

- Incontinence-Quality of Life Questionnaire (I-QoL)
- Incontinence Severity Index (ISI)
- International Consultation on Incontinence Questionnaire (ICIQ)

Urodynamics, cystoscopy and **ultrasound** should only be used for complicated or refractory patients.[2]

TREATMENT

Prior to initiating treatment, the patients should be given education regarding normal and abnormal bladder function so that they can understand and actively participate in treatment plan.

The clinician must weigh the risks against the benefits of each therapy and individualise the treatment e.g. in elderly patients with cognitive deficit or severely reduced mobility due to dementia, severe arthritis, severe obesity, hemiparesis/plegia, and lower extremity amputations; incontinence due to OAB cannot be corrected pharmacologically, while associated adverse effects might cause more harm.

FIRST-LINE TREATMENTS: BEHAVIOURAL THERAPIES

Behavioural therapies have the advantages that they can be combined with all other therapeutic techniques and virtually have no adverse effects.

There are two fundamental approaches to behavioural treatment for OAB.

1. Modification of bladder function by changing voiding habits
   - self-monitoring (bladder diary)
   - bladder training by scheduled voiding, delayed voiding and double voiding
   - urge control techniques (distraction, self-assertions)
   - fluid management, caffeine reduction, dietary changes (avoiding bladder irritants)[8]
   - weight loss and other life style changes[9]
2. Focus on the bladder outlet to improve strength and control
   - techniques for urge suppression
   - pelvic floor muscle training and exercise (including pelvic floor relaxation)[10]
   - active use of pelvic floor muscles for urethral occlusion and urge suppression (urge strategies),
   - normal voiding techniques including position on toilet seats
   - biofeedback, electrical stimulation.

SECOND-LINE TREATMENTS:

Anti-Muscarinics (AM) have an antagonistic action on muscarinic receptors throughout the body, but improve OAB symptoms by blocking the M2 and M3 receptors in the bladder and urothelium, and therefore affect both involuntary detrusor contraction and increased sensory afferent signalling. Following oral anti-muscarinics can be offered :

- Darifenacin
- Oxybutynin
- Solifenacin
- Tolterodine
- Trospium

There is no compelling evidence for differential efficacy across medications as per conclusions of several published systematic reviews.[11] Before starting drug, the clinician should always discuss with women that some adverse effects such as dry mouth and constipation may indicate that treatment is starting to have an effect, and that they may not see the full benefits until they have been taking the treatment for 4 weeks. [12]

The extended release (ER) formulations should preferentially be prescribed over immediate release (IR) formulations because of lower rates of dry mouth. Standard (Evidence Strength Grade B)

If a patient experiences inadequate symptom control and/or unacceptable adverse drug events with one AM medication, then a dose modification or a different AM medication may be tried. These should not be used in patients with narrow-angle glaucoma unless approved by the treating ophthalmologist and should be used with extreme caution in patients with impaired gastric emptying or a history of urinary retention. Clinicians should manage constipation and dry mouth before abandoning effective AM therapy. Management may include bowel management, fluid management, dose modification or alternative AM. (Clinical Principle)

Clinicians must use caution in prescribing AM in patients who are using other medications with anti- cholinergic properties. (Expert Opinion)[13]

Beta-3 adrenoceptor agonist activates beta-3 adrenoceptors, allowing bladder relaxation, improving bladder filling and storage of urine. A starting dose of 25 mg, and increasing to 50 mg is recommended. The lowest dose is also recommended for renal and hepatic impairment.

Patients who remain incontinent after the initial treatment with an AM could be offered combination treatment with solifenacin and mirabegron (Evidence strength Grade C).[14]

THIRD-LINE TREATMENT:

Onabotulinum toxin A (100 U) may be offered as long-term therapy to carefully selected patients with symptoms of frequency, urgency, and urgency incontinence who have had an inadequate response to or are intolerant of OAB pharmacotherapy (Evidence strength Grade A). Patients considering onabotulinum toxin A must be carefully counselled regarding the need for close follow up, the possible need for catheterization (indwelling or CIC), and likelihood of repeat injections to maintain symptom improvement.

Peripheral tibial nerve stimulation (PTNS) does require a system capable of providing frequent clinic appointments, typically lasting 30 minutes to one hour in length, and patients must be compliant and able to continue frequent follow up. Therefore, attention must be paid to the patient's level of motivation and travel resources.

Sacral Neuromodulation (SNM) is considered as more invasive and higher-risk than other third-line treatment, but a suitable option for patients with OAB symptoms refractory to preferred treatment options (Evidence strength Grade B). [14]

ADDITIONAL TREATMENTS

Absorbent products, hand held urinals and toileting aids should not be considered as a treatment for UI. Use them only as:

- a coping strategy pending definitive treatment
- an adjunct to ongoing therapy
- long-term management of UI only after all treatment options have been explored. [2]

Indwelling catheterization, augmentation cystoplasty or other urinary diversions are rare long-term management strategies for OAB and should only be considered after all other medical and surgical options have been exhausted and only after careful consideration of the likely benefits and risks. (Expert Opinion) [2] (Evidence strength Grade D) [13]

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The goal is not to change who you are

but to become more of

who you are at your best

— Sally Hogshead

Botulinum Toxin in Idiopathic Overactive Bladder: State of the Art

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INTRODUCTION

Intravesical injection of botulinum toxin type A is a safe and effective third line treatment for patients with Overactive Bladder (OAB) that is refractory to behavioral therapy and antimuscarinics and approved by FDA for this indication since 2013.[1,2] Botulinum toxin A affects the nerve terminals by cleaving the SNAP 25 protein, which is part of the SNARE complex attachment protein, thus rendering the SNARE protein inactive and thus inhibit fusion of its associated synaptic vesicles with the cytoplasmic membrane. These synaptic vesicles are release acetylcholine from motor nerves in striated muscle and in the bladder. SNAP 25 protein expression has been observed in parasympathetic, sympathetic, and sensory nerves, thus explaining its effects on both detrusor contractions and urgency. Also, by inhibition of adenosine triphosphate release, botulinum toxin A also appears to influence urothelial function.[2]

AVAILABLE PREPARATIONS

The two most studied preparations of Botulinum toxin are onabotulinum toxin A (Botox™, Allergan, Inc., Irvine, CA, USA) and abobotulinum toxin A (Dysport®, Ipsen Biopharm Ltd, Slough, UK).[2] Though, significant and comparable efficacy was reported with both preparations, abobotulinum toxin A compared to onabotulinum toxin A was associated with significantly higher rate of urinary retention requiring clean intermittent self-catheterization (CISC) (42 vs 23%).[3]

PROCEDURE AND DOSAGE

Injection technique including the site of injection, depth of injection, injection volume and number of injections is yet to be standardized and studies reported in the literature differ in this regard. Authors reported different technique of intravesical injection of botulinum toxin A including trigone-including or trigone-sparing and intradetrusor or suburothelial, but the superiority of one over other is not established.[2-6] Dose-ranging studies reported 100 U of onabotulinum toxin A as optimum to reach a balance between effective, durable response and adverse effect.[7,8] Though majority reports the number of injections in the range of 15-20 sites, it varies between 10-40 sites in the literature. Also, it was observed that the different number of intravesical onabotulinum toxin A injections has similar therapeutic response and adverse effect.[2,9] Summarily, 100 U of intradetrusor injection of onabotulinumtoxin A at 20 different sites (5U each) separated by 1cm each can be considered optimum at present (Figure 1).

WHAT DOES EVIDENCE SAY?

Two phase three trials including 1105 patients reported clinically relevant and statistically significant improvement in all OAB parameters after intravesical onabotulinum toxin A injection compared to placebo. In both the trials significantly greater proportion of patients reported greatly improved or improved response compared to placebo (60.8 vs. 29.2 and 62.8 vs. 26.8).[10,11] In a systemic review and meta-analysis including 1320 patients, it was observed that intravesical onabotulinum toxin A significantly improves the OAB parameters compared to placebo including the mean number of urinary incontinence (UI) per day (-2.77 vs -1.01, $P < 0.00001$), number of micturitions per day (-1.61 vs -0.87, $P < 0.00001$), maximum cystometric capacity (91.39 vs 32.32, $P < 0.00001$) and volume voided (44.29 vs 7.36, $P < 0.00001$), incontinence free patients (29.20% vs 7.95%, $P < 0.00001$).[12] The initial duration of relief was reported in the literature between 6.3 to 10.6 months. [2] In the only study reporting use of intravesical onabotulinum toxin A in 21 elderly patients (18 female and 3 male) with a mean age of 81.2 years (range 75-92 years) and refractory OAB, patients received 200 IU of intravesical onabotulinum toxin A at 20 sites. It was reported that the number of daily voids reduced significantly by 54.4% and incontinence pads per day reduced by 67.5%. Of these, 76 % reported >50% improvement in symptoms after 1 injection and mean time to deterioration was 7.12 months. [13] Sievert et al reported that improvement in urgency episodes per day, number of micturition per day and satisfaction rates are independent of the number of anticholinergics taken previously. Also, whether the anticholinergics were stopped due to intolerable side effects or due to insufficient efficacy did not alter symptomatic improvement and satisfaction rate.[14] However, Makeovey et al in a retrospective analysis reported that result of onabutulinum toxin A is superior in patients who discontinued the anticholinergics due to intolerable side effects compared to those with insufficient efficacy (80 vs. 60%).[15] The mean interval of repeat intravesical onabotulinum toxin A injection varies from 3-18 months and led to significant reduction in frequency, urgency and urge incontinence after each injection. Nitti et al in a long-term (3.5 years) prospective, multicenter study of the efficacy and safety of onabotulinum toxin A which included 839 patients, and of these 829 received one or more treatment and 430 completed 3.5 years follow up. From the baseline urgency incontinence (UI) episodes per day of 5.6, the decrease in UI episodes per day was -3.1 to -3.8, whether the patient received 1-6 treatments. The observed median duration of effect was 7.6 months, of which 34.2, 37.2 and 28.5 % had the median effect lasting < 6 months, 6-12 months and >12 months respectively.[16] Studies have reported significant improvement in quality of life scores following intravesical onabotulinum toxin A in doses 100 IU or higher.[7,8,10,11]

COMPLICATIONS

The common reasons for discontinuation of therapy was lack of efficacy, need for CISC, UTI, urinary retention.[17-21] Nitti et al in a recent study reported that the most common

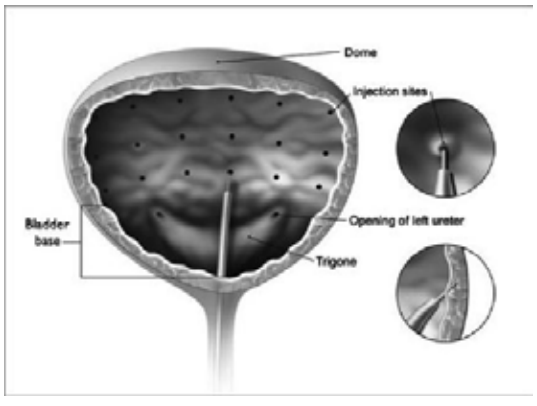

Figure 1: Intradetrusor injection of Botulinum Toxin at multiple sites

complication after intravesical onabotulinum toxin A is uncomplicated UTI, and it ranged from 17% after 1st cycle to 14.4% after cycle 6. Also, they reported that need for CIC was 4% in cycle 1 and that decreased to 1% in cycle 5 and 6. The mean duration of CIC ranged from 3.1 to 8.3 weeks.[16] Earlier studies reported complications following intravesical onabotulinum toxin A, which include UTI in 15.5-24.1%, rise in PVRU >200ml from baseline 8.7-8.8%, need for CISC 6.1-12%.[10-12] Risk factors associated with increased incidence of complications include male sex, baseline PVR urine volume ≥100 mL, associated comorbidity and BoNT-A dose >100 U among others.[22]

Visco et al in a randomized comparative trial comparing anticholinergics versus 100 U of onabotulinum toxin A concluded that both had similar cost-effectiveness in initial 6 months of UI treatment. Cost analysis at 9 months was in favor of onabotulinum toxin A.[23]

CONCLUSION

Current guidelines recommend 100U of intradetrusor onabotulinumtoxinA in OAB patient refractory to first- and second-line OAB treatments with the warning of limited duration of efficacy, risk of UTI, urinary retention and need for CISC, if required.[1,24]

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Interstitial Cystitis/Bladder Pain Syndrome - Clinical Aspects

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INTRODUCTION

Interstitial cystitis has been recognized as an inflammatory painful condition of the urinary bladder for more than a century. The term 'Interstitial cystitis' was first described by Skene, who mentioned about destruction of mucous membrane of bladder by inflammation, which appeared to spread into the wall of urinary bladder.Later Guy Hunner described the typical ulceration in the dome of urinary bladder of these patients, which was possible due to evolution of the quality of endoscopes. This was perhaps the first clinical 'clinching evidence' of the erstwhile elusive disease. The ulcer was thought to be the cause of symptoms in these women and hence there were many more patients who were never classified as Interstitial cystitis due to lack of presence of the Hunners ulcer but suffering in a similar manner. These were perhaps the non-ulcer variety of interstitial cystitis. This classification of Interstitial cystitis into 'Hunner's ulcer' and 'Non-ulcer' variety was recognized towards the end of last century.

INTERSTITIAL CYSTITIS / BLADDER PAIN SYNDROME

It was felt that pelvic pain which was related to micturition cycle and associated with lower urinary tract symptoms could be categorized into a clinical syndrome and thus a new term 'Bladder Pain Syndrome' was coined. This changed the whole outlook of the clinical perspective of this disease, with Hunners ulcer, now termed, as Hunners lesion, became just one subset of BPS. Thus, Bladder pain syndrome (BPS) is a heterogeous entity with inclusion of various clinical entities like interstitial cystitis, painful bladder syndrome, urethral syndrome, trigonitis. Since Interstitial cystitis has been a well-known term used by patients' groups and their care providers including health care authorities, it is difficult to give up this term altogether. Therefore, in many parts of world the two terms are used in conjunction. The currently accepted terminology happens to be Interstitial cystitis / Bladder pain syndrome (IC/BPS).

Different societies have defined this condition but there are some limitations in each. The Global Interstitial Cystitis / Bladder Pain society (GIBS), based out of Mumbai, India has been the scientific body working on this subject in this part of the world. The GIBS committee members had extensive deliberations over the existing definitions being followed by international societies, namely American Urology Association, European association of urology and the Asian Urology association (based in Japan). The definition proposed by GIBS has been structured to simplify the definition for clinical purpose and to suit the prevailing local practices.

GIBS DEFINITION OF IC/BPS

Pain or discomfort in lower abdomen and / or urogenital area

- Of more than 3 months duration,
- Which is usually worst on full bladder
- Along with one or more lower urinary tract irritative symptoms like frequency, urgency, nocturia,
- With or without standard stigmata on cytoscopy
- Provided another discernable pathology likely to cause these symptoms has been excluded

CLINICAL APPROACH TO A PATIENT WITH SUSPECTED IC/BPS

High clinical index of suspicion is the key to diagnosis. It is equally important not to over diagnose this condition.

HISTORY

A. The description of Pain / Discomfort

The following characteristics are essential for the clinical diagnosis of IC/BPS.

1. Pain or discomfort in lower abdomen and / or urogenital area
2. Of more than 3 months duration,
3. Which is worst on full bladder
4. Along with one or more lower urinary tract irritative symptoms like frequency, urgency, nocturia.

The following need to be clarified further in this regard.

- Pain may occur in other areas like rectum, lower back, and inner thighs.
- Correct information regarding relationship of pain with different phases of urination is the sheet anchor of diagnosis.
- A leading question can be: "If you have a sudden desire to go to washroom, what is your fear? Is it that you would be afraid of leaking urine which will be embarrassing or you would get immensely uncomfortable due to increasing pain while holding on? The answer will help to quickly exclude OAB (Overactive Bladder) from IC/ BPS
- When the patient wakes up from sleep to pass urine, is it because of a sensation of full bladder (desire to pass urine) or due to pain. The patients often learn to evacuate their bladder to get rid of pain in cases of IC/ BPS.
- Pain relieved of passing stools or flatus should point towards the Intestinal tract as cause of the symptoms
- Pain intensity changing with the menstrual cycle should be viewed as originating from uterus and adnexa
- Deep Dyspareunia in women is suggestive of IC/BPS while superficial Dyspareunia is indicative of Vulvovaginitis.

B. History of confusable diseases

One must exclude the following in History

- Prior pelvic surgery
- Urinary stone disease
- Pelvic inflammatory disease (History of Vaginal discharge)
- History of pelvic radiation
- Infertility
- Diagnosis of endometriosis
- History of neurological disease (suggestive of Neurogenic bladder)

C. History suggestive of aetiology

- History of allergies/ bronchial asthma / Seasonal hay fever / drug allergies / urticaria
- History of obstructive symptoms , in women due to pelvic floor spasm , in men due to prostatic pathology or stricture urethra
- History 'Burning character' of pain suggestive of neuropathic pain
- Recent change in diet , like health drinks, excessive tea/ green tea/ coffee/ dark chocolates or something else which the patient wasn't used to earlier. Change of diet due to geographical translocation.
- Recent drug treatment for unrelated disease

D. History of associated diseases/ co-

Table 1: Diagnostic tests for of IC/BPS (Proposed by GIBS Council)

Mandatory (Essential)	Recommended (In selected cases)	Optional
Clinical history	Urine culture**	Urodynamics
Physical	Urine cytology***	Bladder Biopsy
Examinations	Symptom scores#	
Frequency Volume chart	QOL scores	
Urinalysis	Cystoscopy	
Ultrasonography*		

Table 2: Confusable diseases with interstitial cystitis

Bladder diseases	Overactive bladder, neurogenic bladder, benign or malignant bladder tumor, bladder calculus, radiation cystitis, chemotherapy induced cystitis (Cyclophosphamide, ketamine,tiaprophenic acid etc.)
Urethral diseases	Urethral diverticulum, urethral stricture
Genitourinary Infections	Bacterial cystitis, tubercular cystitis, urethritis, prostatitis, chronic pelvic inflammatory diseases, active genital herpes, vaginal candidiasis
Gynecologic diseases	Endometriosis, uterine myoma, vaginitis, climacteric disturbance, uterine/ cervical/vaginal cancer
Other conditions	Polyuria, pelvic floor muscle spasm, vulvodynia, vestibulodynia, pelvic congestion syndrome

morbities like

- Fibromyalgia
- Migraine
- Mental stress
- Irritable Bowel syndrome

EXAMINATION

A. General - Gait of the patient, Mental state of the patient, Somatic signs of anxiety like pallor, sweating etc.

B. Abdominal examination- Scars of previous surgeries, any masses, tenderness in abdomen, mainly suprapubic.

C. Local examination

- Inspection , Per speculum, and digital pelvic examination.
- Any area of tenderness in perineum,
- Tone of the pelvic floor muscle
- Trigger points need to be noted
- Any Myofascial bands must be looked for

D. Focused neurological examination if indicated

INVESTIGATIONS

The investigations are primarily aimed at excluding the diseases with specific etiology and treatment other than IC/BPS. Due to an increased prevalence of stone disease, tuberculosis and lower urinary tract infections in women in tropical climates, which has guided the following recommendations proposed by GIBS (Table 1).

- **Frequency volume chart** gives a fair idea of the functional bladder capacity. A single 24 hours charting serves a valuable evidence to objectivley evaluate the progress of disease, its response to treatment. The voided volume, spacing in between and the number of voids can be objective parameters for an intervention study.
- **Urine analysis** In the absence of pus cells in the urinary sediments, leucocyte esterase (LE) or nitrite in the urine sample, a diagnosis of urinary infection is almost excluded. Presence of red blood cells in urine should indicate a detailed evaluation of the urinary tract starting with the **urine cytology** for malignant cells.
- **Ultrasonography** of the urinary tract to exclude any pelvic pathology likey to be the cause of symptoms, including significant post void residual urine.
- **Anesthetic challenge test** is a simple test to demonstrate that the pain is indeed originating from bladder. 20 ml of 1 % lignocaine may be instilled in bladder by a per urethral soft small calibre catheter after evacuating any urinefrom the bladder. Theere is an immediate relief from pain which stays for almost an hour or more. This indicates that the apin is indeed originating from bladder. But this is not a specific test as pain due to any bladder inflammation would be relieved bt instilling lignocaine in bladder. However, it is very useful when differentiating pelvic pain originating from uterus or adenexa (e.g. endometriosis) or colon.
- **Symptom scores** O'Leary Saint symptom score and Pain Frequency Urgency (PUF) score are useful for the follow-up and documentation of these patients.
- **Cystoscopy** The American Urological Association (AUA)does not recommend cystoscopy in all cases of IC/BPS. However, European Society for Study of Interstitial Cystitis (ESSIC) recommend cystoscopy in all cases. GIBS have recommended this as a dignostic investigation, as well as a therapeutic procedure, providing an opportunity to perform hydrodsitension and ablate Hunners lesions in the bladder.
- **Biopsy of any baldder lesion** must be taken in order to exclude a different pathology like cystitis cystica, tubercular granuloma or urothelial malignancy.
- **Urodynamic evaluation** in select cases to distinguish between neuropathic inflictions of baldder and this condition.
- **Laparoscopy** reserved for cases wher the chronic pelvic pain strongly suggests a cause other than bladdder.

While evaluating a case of suspected IC/ BPS, all confusable diesease entities must be carefully excluded. Table 2 enlists such diseases which might mimic IC/ BPS in clinical presentation.

MANAGEMENT OF IC/BPS

PATIENT EDUCATION

The management of these patients begins with detailed discussion of the disease entity and prognosis. It must be emphasized that the treatment might be prolonged and the relief might be slow to appear. There could be need to change medications during the course of treatment as this is a heterogeneous entity and so are the treatment modalities.

ORAL NON-SPECIFIC MEDICATION.

a. Urinary Alkalisers: Simply changing the acidic pH of urine to neutral or slightly alkaline is arguably expected to reduce the pain in such patients.

b. Amitriptyline (Tryptomer) is a tricyclic antidepressant and has central and peripheral action. Apart from relieving neuropathic pain, it also stabilizes bladder contractility by its anticholinergic effect. This should be the treatment of choice in patients with the 'burning' or 'pricking' character of pain. Its main side effects are sedation and dryness of mouth. Dose: 10 mg at bedtime slowly escalated to 25 mg two times a day.

c. Hydroxyzine (Atarax) is anti–histamine. In patients with history of allergies like seasonal rhinorrhea, urticarial or bronchial asthma should be considered for use of this drug. Hydroxyzine is usually well tolerated but has a sedative effect in some individuals. Dose: 10 mg oral tablet at bed time but can be increased to 25 mg two to three times a day.

d. Skeletal muscle relaxants like clonazepam or cyclobenzaprine may be used if the symptoms are suggestive of pelvic floor overactivity or on examination there are tender trigger points in levator ani muscle. Dose: Clonazepam (Clonotril) 0.25 mg at bed time; Cyclobenzparine

(Skelebenz 15 mg) 15 mg at bed time. The main side effects of this class of drugs is sedation and light headedness.

e. Analgesics like tramadol, Gabapentin and pregabalin.These medicines must be used with caution as as drug dependency is a frequent occurrence.

ORAL SPECIFIC MEDICATION.

Pentosan Polysulphate (PPS) is a synthetic sulphated polysaccharide which may be used as oral tablet or intravesical instillation. It is estimated that 4-6% of this drug when ingested orally is excreted unchanged in urine. It is expected to replenish the Glycosamine Glycan (GAG) layer of the urothelium which is responsible for the impermeability of the urothelium. It is recommended in the dose of 100 mg three times a day, to be taken at least 1 hour before or 2 hours after meals to improve the bioavailability of drug. Usually the drug is well tolerated as the incidence of overall adverse events is almost 4% which include alopecia, diarrhoea, nausea, rash and rarely bleeding tendencies. A trial for at least 3-6 months must be given before labelling a failure to treatment.

INTRAVESICAL TREATMENTS

Various clinically available GAG replenishing molecules are Heparin, Pentosan Poly Sulphate, Hyaluronic acid, Chondroitin Sulphate, Combination of Hyaluronic acid and Chondroitin Sulphate.

In India, none of these except heparin is available for intravesical use. There are various regimes of intravesical treatments available. Most of them are combinations of one or more of the following :

GAG replenishing agent (usually Heparin), corticosteroid, a local anesthetic agent and alkalising agent.

The author uses the one that contains heparin (25000 IU) and hydrocortisone (200mg) in 50 ml of physiologic saline. This is instilled in the bladder every week for 6 weeks. If required, this regime can be repeated.

DIETARY MODIFICATION.

Certain dietary constituents can result in toxic metabolites in ceratin predisposed individuals resulting in injury to the urothelial layer altering its permeability. Urinary metabolite may damage the urthelium by direct assault on the urothelium by the shear nature of the component of urine. There may also be an allergic manifestation in response to the urinary constituents. Thus is it logical to expect the dietary constituents to exacerbate pain in IC/ BPS. Patients are instructed to make a note of offending dietary ingredients so that the same could be avoided to keep the symptoms away.

PAIN MANGEMENT

It is an important aspect of the treatment of IC /BPS. Many a time it becomes imperative to take help from the pain mangement teams which specialise in th etreatment of chronic pains. They may include injection of local anesthetic agents at the triggerpoints , myofascial realxation or administration systemic analgesic agents

SUMMARY

The science of IC/ BPS is ever evolving. The physicians have to remain abreast with the changing terminology and definitions in order to identify and treat these patients. IC/ BPS is a heterogenous condition and requires treatment using various modalities. Patient education is a very important ingredient of the treatment. An attempt should be made to identify the pointers on clinical grounds e.g. hsitory of allregies so that antihistamines may be added in the treatment regime. The treatments are usually prolonged with reasonable relief in most patients . However some patients have a progressive disabilty resulting in beahvioral changes.

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Management of Prolapse : Evolving Trends

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INTRODUCTION

Many of the common techniques for prolapse repair are rather unchanged since the end of the nineteenth century when most of the techniques were established. Colpectomy, colporraphy, perineorrhaphy, hysterectomy, fascial repair, and myorrhaphy are still the most frequent techniques used in routine surgery. Hysterectomy alone will often fail to address the underlying deficiencies in pelvic support that have led to uterovaginal prolapse. The risk of future vault prolapse is six-fold higher if the initial indication for hysterectomy was for prolapse compared with other indications, such as menorrhagia or pelvic pain.

BACKGROUND OF PROLAPSE SURGERIES

The Manchester repair procedure was introduced in 1888. The original procedure involved amputation of the cervix, colporrhaphy, and attachment of the cervical stump to the cardinal ligaments, although several modifications have been introduced since then. Because of the complication profile and high recurrence rates, this procedure is not commonly used now.

New techniques appeared in the 1950s and 1960s. They include abdominal sacral-colpopexy using mesh by Scali, the Sacrospinous ligament fixation by Richter, and the McCall culdoplasty procedures. These "new" techniques were aiming to restore apical support that was not possible with any of the "plication" techniques. These procedures are often technically difficult to perform and may change the vaginal axis. Even today, only trained surgeons are able to perform them routinely because of poor reproducibility and perceived complexity.

Before 1980, the trainee reproduced his master's techniques as the master himself applied his own master's procedures. There were different and very exclusive schools, each believing on their ideology. Those who tried to change techniques were considered abnormal.

Beginning in the late 1980s, the global trend toward less and less invasive and more and more ambulatory surgery encouraged surgeons to develop new concepts. Laparoscopy was one of these new concepts, just as mesh surgery is now. The revolution of the laparoscopic surgery was shifted from non- existent to golden standard within 10 years.

CONCEPT OF NEWER SURGERIES

Definitely, many concepts and techniques are replacing old and biomechanically inferior procedures because:

- Anatomy is seen differently. Fixed anatomy, as depicted in drawings or dissections, is now viewed as mobile, dynamic, and functional. The mobility of the organs and the modifications of the axes during rest or straining are considered key points to understanding the pathogenesis of pelvic floor defects and their repair.
- The philosophy of repair is new. The new surgery aims to create new connective tissue to replace broken ligaments and septa instead of trying to tighten or to suture an altered suspensory apparatus. Synthetic meshes or biologic grafts are used for this purpose. Anatomy is restored rather than distorted, and postoperative pain is tremendously reduced.
- New pathways for fixations are used, like the infracoccygeal translevatoric approach for vault prolapse or the double transobturator approach for cystocele. Surgical technique is simplified and becomes more reproducible and quicker.

TENTION-FREE VAGINAL MESH (TVM)

What is a mesh? First it is a foreign body implanted in a selected place, where collagen tissue is weak. It provokes an inflammatory reaction, attracts macrophages and other inflammation cells, and, finally fibroblasts that will produce collagen fibrosis around this foreign body. As long as the foreign body stays in place, this collagen tissue will be maintained and renewed. Thus, by implanting a nonabsorbable mesh, patient's body has to repair itself with autologous collagen.

What is mesh not? It is not a mechanical support or suspension of the pelvic floor. Its aim is to restore the correct axes of the vagina. This requires a good knowledge of the functional anatomy, skillful dissection, and repair. There is no need for big forces or very strong mesh resistance to tearing. Even the weakest mesh is stronger than the strongest ligament.

Reasons given to use a graft in pelvic organ prolapse repairs

- Almost 30% of patients requiring a reoperation indicating weakness in native tissue repairs.
- Failure rate of 70% has been reported after a "standard" anterior repair. The recurrence rate in the posterior compartment after posterior colporraphy is around 12–20 %.
- To avoid further constriction of vagina with native tissue repairs.
- Stronger repair than with autologous ligaments, correction of multiple defects vaginally and shorter stay and recovery.

MESH USE IN PROLAPSE SURGERY

It can be either "augmented" mesh repair (mesh overlay) or mesh "replacement" (needle kit).

- The first-generation needle-driven kits

  Anterior compartment: Perigee™ (American Medical Systems), Anterior PROLIFT™ (Johnson and Johnson, NJ)

  Posterior compartment and apex: Apogee™ (American Medical system), Posterior and Total PROLIFT™ (Johnson and Johnson, NJ).

- The second-generation mesh kits

  Elevate™ system (American Medical System) and Pinnacle™ (Boston Scientific).

However, use of synthetic mesh also results in increased adverse events, in some cases with serious consequences.

COMPLICATIONS

These complications often require further treatment, even within the first postoperative year.

1. *Exposure (erosion):* may occur with any reconstructive material (eg, synthetic or bio graft) and following any pelvic reconstructive procedure. Mesh exposure rates range from 3.2 to 17.2% in anterior compartment surgery and 15.6 % in multiple-compartment POP surgery. Concomitant hysterectomy may increase the risk of exposure. Trans-abdominal prolapse repair may have lower incidence of mesh exposure than transvaginal repair.
2. *Contraction:* Contraction of mesh appears to cause painful vaginal bands, resulting in dyspareunia.

3. *Pelvic pain or dyspareunia* (30%): can occur even in the absence of mesh contraction.
4. *Infection* — Urinary tract and vaginal wound infections are the most common. UTI rates 8 to 26 %; vaginal wound infection rates 1 to 18 %.
5. *Abscess formation* (pelvic, retropubic, or other sites) can occur following transvaginal placement of reconstructive materials.
6. *Voiding dysfunction* — 7 to 12 %.
7. *OAB symptoms* and urgency urinary incontinence were 18 %
8. *Other complications* — Granuloma formation 3-39%, Visceral injury (eg, bladder, rectal, and vaginal perforation) 1-4%, Bleeding complications –0-3%, Fistula formation – 1% in POP repair

As a result, the use of mesh for transvaginal POP surgery has been the source of much scrutiny, including two public health notifications from the US FDA, a change in the US regulatory process for mesh devices, and substantial litigation.

In 2008, the FDA issued its first notification informing clinicians and patients about adverse events associated with mesh use for pelvic reconstructive surgery, noting that "although rare, these complications can have serious consequences." In January 2012, the FDA issued orders requiring mesh device manufacturers to perform post-market surveillance studies which prompted a lot of litigation and legal claims, and many device companies chose to exit the market in the US and worldwide. Medical professional societies issued guidance about appropriate indications for POP mesh use, surgeon credentialing, informed consent, and risk mitigation.

The key points for preventing complications from transvaginal mesh are:

1.Optimization of modifiable risk factors (smoking cessation therapy, topical estrogen preoperatively).

2. Selection of the mesh type based upon biomechanical properties of the material. Macroporous polypropylene mesh is the most common type of synthetic mesh used for treatment of SUI and for abdominal mesh repairs. Materials with microporous structure are associated with increased complications rates and should be avoided.

3. Adequate surgical training –

- Full thickness dissection with development of a deeper surgical plane
- Tension-free mesh suspension – The mesh needs to be inserted in a tension-free fashion. Excessive tension in the arms has been associated with tight vaginal bands, pain and exposure due to mesh contraction.
- Prevention of mesh rolling or bunching – The mesh body needs to be trimmed and secured to the underlying tissue to prevent rolling or bunching.

Best role for vaginal mesh in current setting

1. Recurrent prolapse
2. Patient is not sexually active
3. No history of chronic pain or history of rejection of materials
4. In cases with theoretical high risk of recurrence – Patient with Collagen disorder, Obesity, Heavy smoker (But risk factor for exposure) .

LAPAROSCOPY

Laparoscopic surgery has possible advantages,

- Improved anatomic visualization of the peritoneal cavity, presacral space, and space of Retzius, which can be attributed to laparoscopic magnification, insufflation effects, and improved hemostasis.
- Shortened postoperative hospitalization resulting in potential cost reduction, decreased postoperative pain, more rapid recovery and return to work, and better cosmetic appearance of smaller incisions.

Disadvantages

- Prolonged learning curve for suturing and technically difficult retroperitoneal dissections.
- Increased operating time early in the surgeon's experience, with a potential for greater hospital cost secondary to increased operating time and use of disposable surgical instruments.
- Inadequate experience in postgraduate teaching.

Laparoscopic uterine suspension procedures

1. *Uterosacral ligament uterine suspension*- for patients with adequate integrity of the uterosacral ligaments. The reapproximation of the avulsed or attenuated ligament restores Level I support of the proximal vagina in a horizontal position over the levator plate. The use of a uterine manipulator may assist with identification of the uterosacral ligaments by deflecting the uterus sharply to the contralateral side.
2. *Sacrocervicopexy* - for patients with attenuated uterosacral ligaments, or for those with more advanced prolapse who desire uterine preservation. This involves suturing the posterior vagina and cervix to the sacrum using an intervening graft, which may be either synthetic (eg, polypropylene, polyester) or biologic (eg, fascia, dermis)
3. Some surgeons recommend *supracervical hysterectomy* when the patient is found to have significant anterior wall prolapse due to a transverse apical defect. By removing the uterine fundus, the surgeon has the option of using a "Y-shaped" mesh, in which one mesh segment is attached to the posterior rectovaginal fascia while another mesh segment extends over the cervix and may be used to support the anterior pubocervical fascia.
4. Laparoscopic Vaginal vault prolapse can be repaired laparoscopically by uterosacral ligament vault suspension or sacrocolpopexy with synthetic mesh (polypropylene or polyester).

   During uterosacral ligament vault suspension, it is important to include both the pubocervical and rectovaginal fascia to prevent development of post-operative enterocele. Therefore, after dissection of the bladder off the anterior vaginal wall, permanent or delayed-absorbable sutures are used to unite the anterior and posterior fascia before anchoring the vaginal apex to the proximal uterosacral ligaments.

   Laparoscopic sacrocolpopexy is an option when POP-Q stage II to IV vault prolapse is present. A Y-shaped synthetic graft is sutured to the anterior and posterior endopelvic fascia with a series of permanent sutures and anchored to the anterior longitudinal ligament of the sacral promontory.

SURGICAL ROBOTICS

Since the 1980s, surgical robots have been developed to address the limitations of laparoscopy. Since the introduction of da Vinci robot (one type of robotic surgical platform), there has been rapid adoption of robot-assisted laparoscopic procedures in gynecology by surgeons of all skill levels.

The major advantages of robot-assisted over conventional laparoscopy are:

- Superior visualization – Three-dimensional (3D) versus two-dimensional (2D) imaging of the operative field.
- Mechanical improvements –robotic instruments have seven degrees of freedom, similar to the human arm and hand, while rigid conventional instruments have four degrees of freedom.
- Stabilization of instruments within the surgical field – Robot-assisted surgery minimizes surgeon tremor.
- Improved ergonomics for the operating surgeon –surgeons can perform robot-assisted procedures in a seated position, rather than standing at the operating table.
- Surgical simulation, telementoring (guidance given to the surgeon by another surgeon who is not in the operating room), and telepresence surgery (surgery performed via a robot by a surgeon who is not in the operating room) are potential novel benefits of robotic technology

The limitations of robotic technology include:

- Additional surgical training
- Increased costs and operating room time

- Bulkiness of the devices-Once the robotic system is docked, the patient bed position cannot be changed.
- Instrumentation limitations (eg, lack of a robotic suction and irrigation device, size, cost)
- Lack of haptics (tactile feedback); the surgeon has to pay close attention to visual cues when placing tension on tissues or suture.
- The tip of the robotic endoscopic camera becomes very hot and must be cleaned outside of the peritoneal cavity.
- Risk of mechanical failure
- Limited number of energy sources (less than with conventional laparoscopy)

The choice of conventional laparoscopic or robotic-assisted laparoscopic access is determined by the surgeon, patient preference, the laparoscopic skill of the surgeon, and additional factors like history of pelvic or anti-incontinence surgery, previous failed transvaginal colpopexy, a shortened vagina, concern for severe abdominopelvic adhesions, patient age and weight, need for concomitant pelvic surgery, and the patient's ability to undergo general anesthesia.

The robotic sacral colpopexy is performed using a technique similar to the laparoscopic sacral colpopexy barring trocar locations, docking the robotic patient cart, and use of intracorporeal knot tying. If a hysterectomy is performed before sacrocolpopexy, a supracervical hysterectomy is advised to minimize risk of mesh erosion or exposure. If contraindications for supracervical hysterectomy exist, a double-layered closure of the vaginal apex is recommended

CONCLUSION

TVM and robotic surgery are major innovations in the field of Urogynaecology. TVMs are interesting but results and complication rates need to be reassessed at longer follow-up periods and within randomized controlled trials. Robotic hysterectomy and sacrocolpopexy are in the armamentarium of still only a few reference centers, which have to be commended for their efforts to standardize the surgical techniques. Their results have still to be reproduced and improved.

Role of minimally invasive surgery in Urogynaecology

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INTRODUCTION

The aim of any prolapse surgery is to restore pelvic anatomy and supports so as to achieve normal functions. Historically, pelvic floor reconstructive procedures have been done by vaginal or abdominal route. In the past, few years there has been a growing interest in the use of laparoscopic procedures to correct pelvic organ prolapse. The principles of the laparoscopic surgery are based upon those used in the corresponding open procedures and laparoscopic approach has been successfully adopted for many urogynaecological procedures.

Laparoscopy offers a number of advantages including excellent intraoperative visualization of the pelvic anatomy and retroperitoneal space, reduction in blood loss, decrease in post-operative pain and shorter hospital stay. Despite these many potential advantages, laparoscopy has a prolonged learning curve for suturing and technically difficult retroperitoneal dissections. Additionally, widespread adoption of traditional laparoscopic surgery for urinary incontinence and prolapse procedures may have been further thwarted by inadequate instructional experience in residency and fellowships.

LAPROSCOPIC SACROCOLPOPEXY FOR VAGINAL VAULT PROLAPSE

Vaginal vault prolapse has been estimated to occur in 0.2–43% of post-hysterectomy patients. The management of vault prolapse includes abdominal sacrocolpopexy, vaginal sacrospinous fixation or high uterosacral suspension of the vault. Abdominal sacrocolpopexy is considered gold standard with a success rate of 78-100%. When compared to other vaginal procedures it has shown to have lesser recurrence rates, less post op dyspareunia and lesser chances of re-surgery.

Laparoscopic sacrocolpopexy has evolved from classical abdominal sacrocolpopexy. The visual magnification and ability to work with relative ease deep in the pelvis, that are provided by the laparoscopic approach, have given pelvic-floor surgeons the opportunity to modify the original open procedure, by placing the mesh much lower over the posterior vaginal wall down to the level of pelvic floor (levator ani muscle) and perineal body, in an attempt to enhance its effectiveness (Figure 1). The mesh should be attached with minimal tension on the vagina. In an attempt to decrease surgical time some surgeons have utilized titanium bone tacks and hernia staplers for the mesh attachment to the anterior longitudinal ligament of the sacrum. After reducing intraabdominal pressure and inspecting the presacral space for hemostasis, the peritoneum is reapproximated with 2-0 polyglactin suture.

The success rate of laparoscopic sacrocolpopexy has been reported to be 90–96%, with a mesh erosion rate of 1–8%.

LAPAROSCOPIC UTERINE PRESERVATION SURGERIES FOR UTERINE PROLAPSE

Bonney in 1900 first proposed that uterus plays a passive role in uterovaginal prolapse. Since that time, various authors have reported their experiences with reconstructive pelvic surgery with uterine preservation. Several operations for prolapse repair with uterine preservation have been proposed, using vaginal and abdominal approaches. The potential advantages of a laparoscopic approach to prolapse repair with uterine preservation include quicker recovery and a reduction in adhesion formation, which is beneficial to women wishing to preserve fertility.

Three types of procedure have so far been described, namely laparoscopic suspension of the uterus to the round ligaments (ventrosuspension), to the uterosacral ligaments and to the sacral promontory.

Figure 1: Laparoscopic sacrocolpopexy

Although there is insufficient evidence regarding these techniques the most preferred is the sacrohysteropexy, where in a polypropylene mesh is used to suspend the uterus with the sacral promontory bilaterally with the mesh passing medial to uterine arteries.

There is a growing body of evidence supporting the concept of uterine preservation at the time of uterovaginal prolapse surgery specially in young patients. However, the current level of evidence in the medical literature is inadequate. Large follow up studies are needed to study the effect of these conservative procedures on further fertility and child birth.

LAPAROSCOPY IN STRESS URINARY INCONTINENCE

Since long open Burch colposuspension has been considered gold standard for treatment of SUI. ***Laparoscopic Burch colposuspension*** was described in early 90s and has since gained a lot of popularity. A recent Cochrane review on these two approaches included nine trials. All of these favoured the laparoscopic approach, as it was associated with decreases in blood loss, post-operative pain, hospital stay and duration of catheterisation. The Burch procedure should be performed in the exact same manner as if it were being performed through a large abdominal incision. Four permanent helical sutures, two of which are placed at the level of the midurethra and other two sutures are placed at the level of the bladder neck. All sutures are passed through the Coopers ligament. Higher cure rates are achieved utilizing four suture instead of two. (Figure 2)

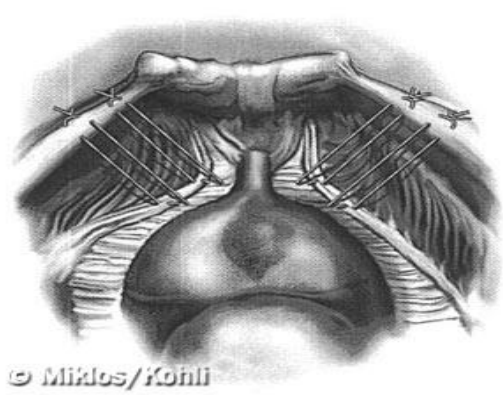

Figure 2: Burch colposuspension.

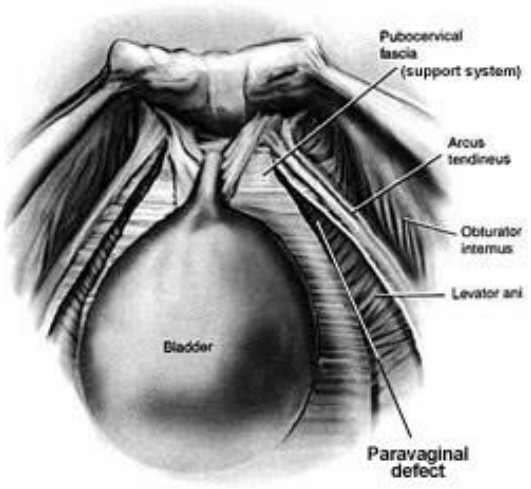

Figure 3: Paravaginal defect

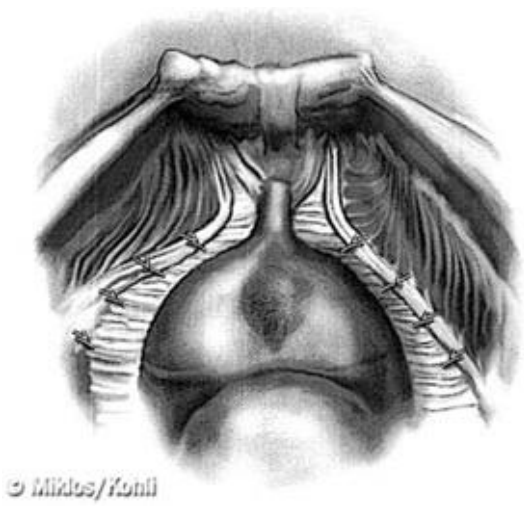

Figure 4: Paravaginal defect repair

Figure 5: The trans obturator tape (TOT) system

LAPAROSCOPIC ANTERIOR WALL PROLAPSE REPAIR

Anterior vaginal wall prolapse is the most common form of vaginal prolapse mostly aggravated by vaginal birth. Conventionally, cystocele repair is done vaginally and is called anterior colporrhaphy. It has an extremely variable success rate ranging from 36-100% in various studies. There is currently limited evidence to support the use of mesh and other graft materials for anterior repair.

The most common cause for an anterior prolapse is paravaginal defect or loss of support of lateral vagina (Figure 3). In patients with paravaginal defects, the most appropriate surgical procedure is the paravaginal repair. The laparoscopic paravaginal repair is accomplished by suturing the lateral aspect of the anterior vaginal wall back to its original point of attachment known as the arcus tendineus fascia pelvis (ATFP) or the "white line". Re-approximation of the vaginal wall to the fascia overlying the obturator internus muscle will restore the bladder and the urethra to its normal anatomical position (Figure 4).

Abdominal and vaginal paravaginal repair have shown success rates varying between 76 and 100%, although no randomized trials have been performed.

LAPAROSCOPIC POSTERIOR WALL PROLAPSE REPAIR

Vaginal posterior compartment prolapse repair is generally associated with good success rates and is preferred by most surgeons due to easy to learn technique and good results. The laparoscopic repair of high rectocele and enterocele, in women undergoing surgery for uterine or vault prolapse, is advocated to avoid a separate vaginal procedure.

Several studies that looked at the extension of the mesh over the posterior vaginal wall down to the level of levator ani muscle and perineal body reported good anatomic and functional results prolapse. The laparoscopic approach of posterior compartment prolapse, with an extension of mesh over the posterior vaginal wall at the time of sacrocolpopexy, is an effective technique for repair of enterocele and high rectocele; however, further evaluation of anatomical and functional outcomes is needed. Concomitant transvaginal repair of low rectocele at the time of sacrocolpopexy is beneficial.

TENSION FREE VAGINAL TAPE (TVT)

The advent of TVT suburethral slings brought a paradigm shift in the pelvic floor reconstructive surgery. The basic principle of action continues to be the same. TVT is unique and differs from the vaginal slings in its midurethral placement, trochar based insertion, minimal dissection and self-retaining mesh. The blind retropubic passage not only requires a sound knowledge of anatomy but also experience and practice on the part of the surgeon.

THE TRANS OBTURATOR TAPE (TOT)

De Leval introduced the trans obturator tape (TOT) sling in 2003. It is similar to the TVT in its trocar-based, midurethral placement, and self-retaining mesh materials. However, this technique passes the trocar through the obturator membrane avoiding entry into the true pelvis (Figure 5). This lateral approach seeks to reduce the likelihood of injury to pelvic organs or vasculature but is associated with more neurological complications like leg or thigh pain. A randomized trial comparing these 2 slings (TVT v/s TOT) in a population of women with intrinsic sphincter deficiency (ISD) found that the risk of failure and need for repeat surgery was 2.6 times higher among patients receiving a trans obturator sling.

CONCLUSION

Laparoscopy is a means of less-invasive surgical access, but should not be considered a unique procedure. The minimally invasive and open sacral colpopexy and colposuspension procedures should be identical in operative techniques. The benefits of improved visualization of anatomic structures and the small incisions associated with minimally invasive approaches are desirable, particularly in obese patients. The advantages of less postoperative pain, shorter hospitalization, shortened recovery period, and earlier return to work are very popular with patients, but these advantages are partially offset by increased operating time and, in many cases, increased cost.

A high level of laparoscopic suturing skill and thorough knowledge of anatomy are essential to achieve outcomes equivalent to those of the traditional open techniques. Although the quality of surgical trials for minimally invasive prolapse and continence procedures has increased over the past 5 years, the field of pelvic reconstructive surgery still needs long-term outcomes from multicenter, prospective, randomized trials. Surgical recovery and health-related quality of life indices must be included in further work. These patient-centered outcomes, along with surgical efficiency and cost containment, must be emphasized when training the new generation of minimally invasive pelvic reconstructive surgeons.

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Plugging the Breach in the Dam - Incontinence Devices

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INTRODUCTION

Treatment options for Stress Urinary Incontinence (SUI) in women are designed to prevent the involuntary loss of urine from the urethra during increases in intraabdominal pressure that occur during physical activity, coughing, or sneezing. The first line of treatment for SUI is Pelvic floor muscle training (PFMT) and drugs such as Duloxitene whereas therapy with biofeedback and electrical stimulation are the second line options. Surgical repair is the third line approach to treatment.

Some women who do not respond to conservative therapy may prefer to avoid surgical treatment or may not be candidates for surgery. Incontinent devices could be included in the treatment options of such women dependent upon the availability of product, patient acceptance and cost.

INCONTINENCE DEVICES

There are specifically designed continence devices to manage stress incontinence – with or without prolapse. These include

a. Intravaginal devices that support the bladder neck, or

b. Occlusion devices that are (i) external to the meatus, or (ii) intraurethral.

INTRAVAGINAL SUPPORTIVE DEVICES (PESSARIES)

Vaginal pessaries have been used for the treatment of symptomatic pelvic prolapse in patients unable or unwilling to undergo surgical correction, they may also be used to treat SUI, especially in patients with mild to moderate anterior vaginal wall prolapse with urethral and bladder neck hypermobility.

Various pessaries have been developed for SUI, they have a knob that sits under the urethra which compresses the urethra against the upper posterior portion of the symphysis pubis and elevates the bladder neck (Figure 1). This causes an increase in outflow resistance and corrects the angle between the bladder and the urethra so that Valsalva's maneuvers alone are not strong enough to cause leakage of urine.

OTHER REUSABLE VAGINAL INCONTINENCE DEVICES

Introl

Introl, was developed by an Australian gynecologist and provided continence in 86% of patients with stress incontinence. The device is similar to a ring pessary but has two anterior prongs that fit behind the pubic symphysis, hence it can elevate quite severe prolapse (Figure 2). This silastic device can be worn for up to 4 months, then sterilized and reused. Introl was available in 28 sizes to fit a range of pelvic anatomies; the fitting process can therefore be time consuming and requires the help of an experienced gynecologist. The device is not available commercially now.

Contiform

The Contiform device is shaped like a hollow tampon so that self-insertion by patients is feasible. The front arch sits underneath the urethra, creating a support in a similar fashion to a suburethral sling (Figure 3). The device is made of Santoprene, which is a medical grade non-allergenic thermoplastic rubber. It fulfills the FDA ISOI 0993 criteria for direct contact with body surfaces for 24 h to 30 days, and is non-carcinogenic, non-cytotoxic and non-hemolytic. Santoprene is elastic but non-compressible, hence once it is placed in the vagina it retains its shape and supports the urethra during episodes of varied intraabdominal pressure. The device can be worn continuously for 1 month. It is currently manufactured in only three sizes, to simplify the fitting process Contiform is not suitable for use in patients with significant uterovaginal prolapse. There is a small reported trial on the Contiform that revealed that only 20% of women were dry using the device.

Incostress

Incostress is shaped like a tampon (Figure 4). It is made from non-allergenic medical grade silicone. It supports urethra, bladder neck and the pelvic floor muscles and helps to identify the pelvic floor muscles for performing exercises. Incostress is to be

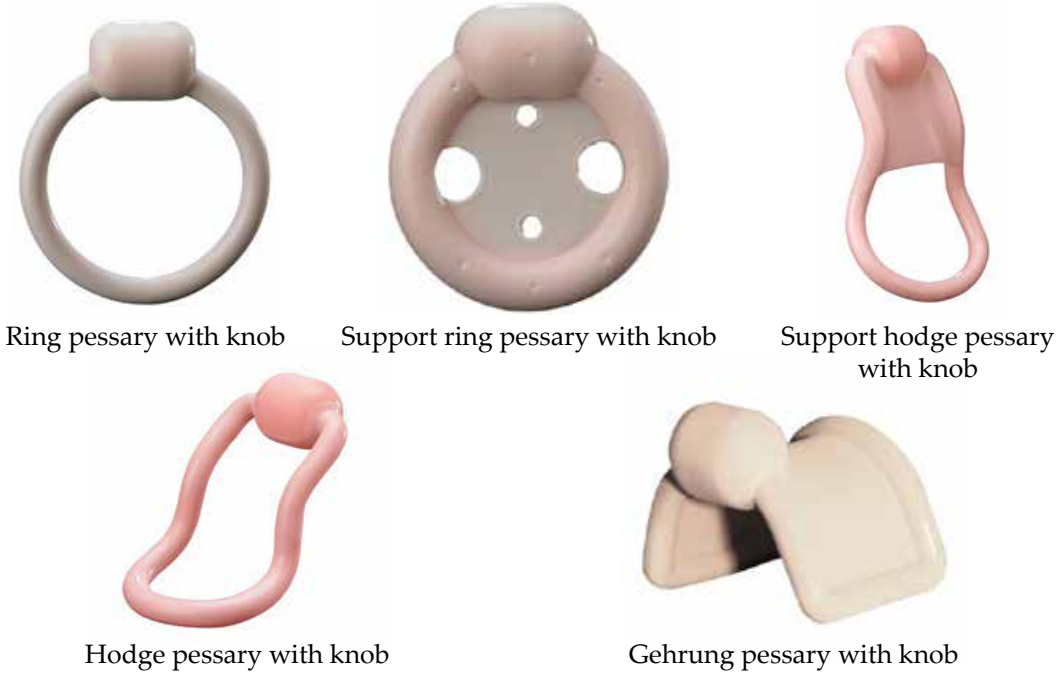

Figure 1: Intravaginal incontinence Devices

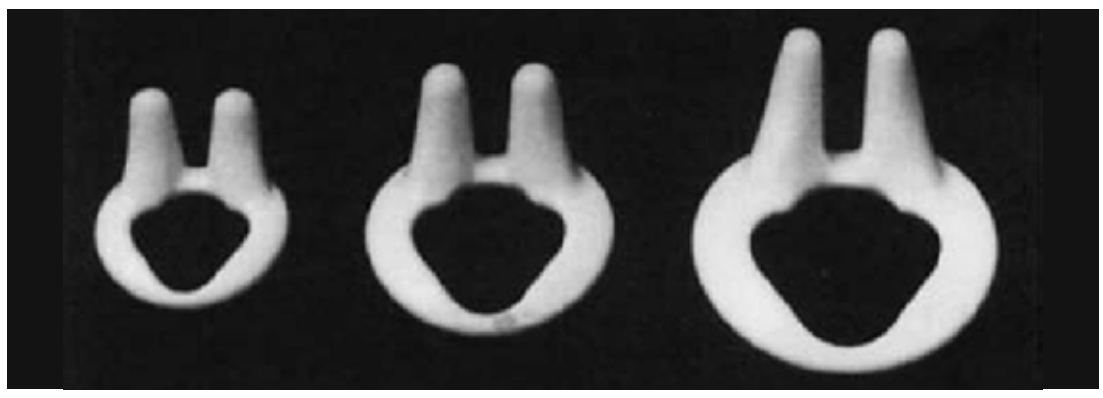

Figure 2: Introl

Figure 3: Contiform

Figure 5: Contrelle Activgard

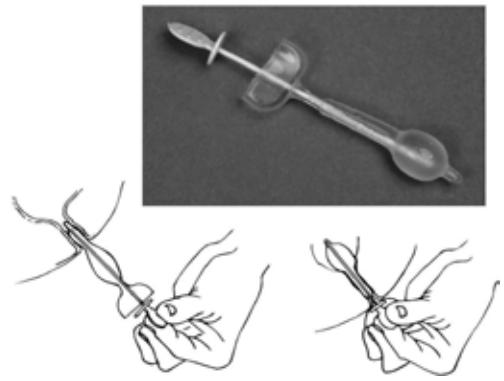

Figure 7: Intraurethral device

Figure 4: Incostress

Figure 6: Impressa

removed, cleaned and inspected daily. It may be used night and day between 3-6 months depending on daily use. It should be stored in a clean dry environment.

Contiguard

It is a single-use disposable device made of polyurethrane foam. It is presoaked, folded and placed into the sagittal plane in the vagina using an applicator. It forms a supportive cushion under the urethrovesical junction and when dampened, it expands by 30%.

Contrelle Activgard

It is a disposable insert made of soft, moulded foam plastic. When it is folded double before insertion, its elasticity makes it unfold inside the vagina (Figure 5). This gives a gentle support that lifts the bladder at the same time as adapting perfectly to the movements of the body. The outer surfaces of the Activgard are specially shaped to fit snugly against the bladder neck and rectum. Contrelle Activgard is placed in the vagina and is just as invisible and discreet as a menstrual tampon. It can be used for up to 16 hours a day, without needing to be changed.

Impressa

Recently, a single use, disposable pessary has been approved by the U.S. Food and Drug Administration (FDA). It is available over-the-counter without a prescription. This device is inserted by the woman herself, using an applicator similar to a tampon (Figure 6). Once inserted into the vagina, the core and cover of the device provide tension-free mid urethral support. It is designed for the temporary, situational management of stress SUI. This device is designed for a maximum of 8 hours of use in a 24- hour period. The device is removed from the vagina using a pull string. After use, it is discarded.

Devices that aim to support the bladder neck seem to demonstrate a mild to moderate level of efficacy in women with light to moderate incontinence. Although there are minimal serious side-effects, local irritation can be a problem. There are no long-term data looking at efficacy or the issues of cost

OCCLUSIVE DEVICES

External devices

Occlusive devices block urinary leakage at the external urethral meatus. They use adhesive or gentle suction to obstruct urinary loss. Mild compression to the wall of the distal urethra caused by the device is also thought to achieve continence. They have been found to be of varying efficacy, with minimal morbidity. Few of the commonly available devices are Miniguard, FemAssist and Capsure

Miniguard is a triangular device made of foam which adheres to perimeatal area with help of hydrogel.

FemAssist is a hat-shaped silicone device that is placed over the urethral meatus. Before placement, an adhesive gel is applied to the edge of the device and the central dome is squeezed to create a vacuum. The device is then placed over the meatus and the dome is released to create a suction-like seal. This is a reusable device that can be worn for a maximum of 4 hours or until voiding and then washed with hot soapy water and reinserted. It can be reused for a week

Capsure device creates negative pressure and causes cooptation of uretheral side walls and increased uretheral resistence

Studies of these devices have demonstrated significant improvements in subjective and objective (pad test) outcomes. Adverse effects are transient and include vulvar and lower urinary tract irritation, vaginal irritation, and urinary tract infections.

Intrauretheral devices

Devices that are inserted into the urethra to block urinary leakage include the Urethral Plug, Reliance Insert and Femsoft

All these devices have a small meatal plate to prevent intravesical migration (Figure 7). They are disposable, single use and need to be removed to void. They have all reported high rates of efficacy but with associated high morbidity. Most patients who utilize intraurethral devices report dryness or improvement in the laboratory and on diaries. The major morbidities are discomfort, urinary tract infections and hematuria. The most serious problem is migration of the device, which requires endoscopic intervention for removal. The role of intraurethral devices is in patients, who do not achieve the desired efficacy with other forms of conservative therapy, and wish to avoid surgery, requires further study.

Patient selection based on motivation, appropriate anatomy, and manual dexterity, in combination with efficacy and morbidity determines overall satisfaction.

SUMMARY

Incontinence devices represent a promising alternative or complementary non-surgical approach to temporary treatment of stress incontinence but are however underused due to a lack of knowledge regarding their use in SUI as well as unwillingness of women to use it. Women need to be highly motivated, have adequate manual dexterity and be willing to insert the particular device.

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- **Prospective and randomized clinical trial comparing transobturator versus retropubic sling in terms of efficacy and safety.**

  Palos CC, Maturana HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Maturana%20AP%5BAuthor%5D&cauthor=true&cauthor_uid=28971224" AP, GherselHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Ghersel%20FR%5BAuthor%5D&cauthor=true&cauthor_uid=28971224" FR, FernandesHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Fernandes%20CE%5BAuthor%5D&cauthor=true&cauthor_uid=28971224" CE, Oliveira E.

  Int Urogynecol J. 2017 Oct 2. doi: 10.1007/s00192-017-3495-0. [Epub ahead of print]

INTRODUCTION AND HYPOTHESIS: The midurethral sling is the most commonly performed surgical procedure for stress urinary incontinence (SUI). We compared the efficacy of transobturator tape (TOT) and retropubic (RP) slings by evaluating objective and subjective cure rates at 12 months postsurgery and evaluate the impact on quality of life (QoL) and record intra- and postoperative complications.

METHODS: This was a randomized, controlled, prospective, clinical trial with analysis of noninferiority. The hypothesis was that the TOT sling is not inferior to the RP sling. A total of 92 women with SUI were selected and randomized into two groups: TOT and RP slings.

RESULTS: Eighty-one patients maintained follow-up 12 months postoperatively. In the per-protocol analysis, the objective cure rates were 100% for the RP sling and 93% for the TOT sling (p = 0.029). The subjective cure rates were 92% for the RP sling and 90% for the TOT sling (p = 0.02). Because none of the upper limits of the confidence interval (CI) were above the noninferiority margin, noninferiority of the TOT sling could be concluded. In contrast, the intention-to-treat analysis could not show that the TOT sling was not inferior to the RP sling, because the upper limit of the CI surpassed the noninferiority margin. Postoperative complications were similar for both groups, except for higher urinary retention rates in the RP group. Regarding QoL, there was a significant improvement.

CONCLUSIONS: The cure rates of the per-protocol analysis showed the noninferiority of the TOT relative to the RP sling. The RP sling group exhibited higher urinary retention. Quality of life improved significantly in both groups.

- **Prolapse Recurrence Following Sacrocolpopexy Versus Uterosacral Ligament Suspension: A Comparison Statified by POPQ Stage.**

  Lavelle ES, GiugaleHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Giugale%20L%5BAuthor%5D&cauthor=true&cauthor_uid=28951262" L, Winger DG, Wang L, Carter-Brooks CM, Shepherd JP.

  Am J Obstet Gynecol. 2017 Sep 23. pii: S0002-9378(17)31130-4. [Epub ahead of print]

BACKGROUND: Insufficient evidence evaluates which pelvic organ prolapse surgery is best suited to an individual woman based on the stage of her prolapse.

OBJECTIVE: To compare prolapse recurrence rates following sacrocolpopexy and uterosacral ligament suspension after stratifying by preoperative POPQ stage.

STUDY DESIGN: We compared all women who underwent minimally invasive sacrocolpopexy (SCP) or vaginal or minimally invasive uterosacral ligament suspension (USLS) from 2009-2015 at a large academic center. All women with pre- and postoperative POPQ data were included. Patients were grouped by preoperative POPQ stage for analysis. Recurrence rates following SCP and USLS were compared for patients presenting with stage II, III and IV prolapse, adjusting for potential confounders in regression models. Prolapse recurrence was defined as any retreatment for prolapse or any POPQ point beyond the hymen.

RESULTS: Of 756 women, 633 underwent SCP (83.7%) and 123 (16.3%) underwent USLS. 189 (25%) had preoperative POPQ stage II prolapse, 527 (69.7%) stage III and 40 (5.3%) stage IV. Patients were predominantly Caucasian (97.3%) with mean age 59.8 ± 9.5 years. Compared to USLS patients, more SCP patients had undergone prior prolapse repair (20.9% vs 5.7%, p<0.001) and fewer had known diabetes mellitus (7.9% vs 13.8%, p=0.034). Characteristics of the groups were otherwise similar. Median follow-up was 41.0 weeks (IQR 13.0-88.8). Women with stage II patients had similar recurrence rates following SCP or USLS (6.0% vs 5.0 p=1.00). However, stage III prolapse patients were more likely to experience recurrence following USLS (25.7% vs 7.8%, p<0.001). This difference persisted after controlling for age, BMI, smoking, diabetes and prior prolapse repair (OR 4.257 95% CI 2.210-8.200). There was no discernable difference in recurrence rates for women with stage IV prolapse, although sample size was limited.

CONCLUSION: SCP results in a lower prolapse recurrence rate than USLS for stage III prolapse. However, there was no difference in recurrence rate among women with preoperative stage II prolapse, suggesting mesh augmentation may not be indicated for these patients. Larger prospective trials are necessary for confirmation.

- **Comparison of strength of sacrocolpopexy mesh attachment using barbed and nonbarbed sutures.**

  Pilkinton ML, Levine GC, Bennett L, Winkler HA, Shalom DF, Finamore PS.

  Int Urogynecol J. 2017 Oct 4. doi: 10.1007/s00192-017-3451-z. [Epub ahead of print]

INTRODUCTION AND HYPOTHESIS: We aimed to assess the pull-out strength of barbed and nonbarbed sutures used in sacrocolpopexy mesh fixation. We hypothesized there are no differences in the force needed to dislodge mesh from tissue using barbed and nonbarbed sutures of similar size.

METHODS: Using the rectus fascia of three unembalmed cadavers, a 6 × 3 cm strip of polypropylene mesh was anchored to the fascia with sutures. The barbed sutures investigated were 2-0 V-Loc 180 (nine trials) and 3-0 bidirectional Quill™ SRS PDO (five trials). The nonbarbed sutures included 2-0 PDS (nine trials), CV-2 GORE-TEX (nine trials) and 2-0 Prolene (nine trials). The free-end of the mesh was anchored to a pulley

system fixed to a tensiometer to measure the peak force applied at the moment of mesh dislodgement (termed the pull-out force). The pull-out force was recorded. Continuous variables are presented as medians and interquartile ranges (IQR). Analysis of variance was used to compare the forces across the suture types.

RESULTS: The highest pull-out force observed was with GORE-TEX (median 65.14 N, IQR 53.37-68.77 N) followed by Prolene (median 58.98 N, IQR 54.64-62.59 N), V-Loc (median 55.23 N, IQR 51.60-58.57 N), PDS (53.96 N, IQR 51.60-57.88 N), and Quill (44.44 N, IQR 17.27-47.38 N). All 2-0 and CV-2 caliber sutures had greater pull-out forces than 3-0 Quill sutures ($p < 0.01$). No significant differences in pull-out forces were observed between 2-0 and CV-2 caliber sutures ($p > 0.05$). In 35 of the 41 trials (85%), the mesh sheared from the tissue.

CONCLUSION: CV-2 ad 2-0 barbed and nonbarbed sutures had similar pull-out forces in an assessment of mesh fixation strength.

- **Pelvic Floor 3D Ultrasound of Women with a TVT, TVT-O, or TVT-S for Stress Urinary Incontinence at the Three-year Follow-up.**

  Rodrigues CA, Bianchi-Ferraro AMHM, Zucchi EVM, SartoriHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Sartori%20MGF%5BAuthor%5D&cauthor=true&cauthor_uid=28847028" MGF, GirãoHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Gir%C3%A3o%20MJBC%5BAuthor%5D&cauthor=true&cauthor_uid=28847028" MJBC, Jarmy-HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Jarmy-Di%20Bella%20ZIK%5BAuthor%5D&cauthor=true&cauthor_uid=28847028"-Di Bella ZIK.

  Rev Bras Ginecol Obstet. 2017;39(9):471-479.

OBJECTIVE: Using three-dimensional ultrasound (3D-US), we aimed to compare the tape position and the angle formed by the sling arms in different techniques of mid-urethral sling insertion for the surgical treatment of stress urinary incontinence, three years after surgery. In addition, we examined the correlations between the US findings and the clinical late postoperative results.

METHODS: A prospective cross-sectional cohort study of 170 patients who underwent a sling procedure between May 2009 and December 2011 was performed. The final sample, with US images of sufficient quality, included 26 retropubic slings (tension-free vaginal tape, TVT), 42 transobturator slings (tension-free vaginal tape-obturator, TVT-O), and 37 single-incision slings (tension-free vaginal tape-Secur, TVT-S). The images (at rest, during the Valsalva maneuver, and during pelvic floor contraction) were analyzed offline by 2 different observers blinded against the surgical and urinary continence status. Group comparisons were performed using the Student *t*-test, the chi-squared and the Kruskal-Wallis tests, and analyses of variance with Tukey multiple comparisons.

RESULTS: Differences among the groups were found in the mean angle of the tape arms (TVT = 119.94°, TVT-O = 141.93°, TVT-S = 121.06°; $p < 0.001$) and in the distance between the bladder neck and the tape at rest (TVT = 1.65 cm, TVT-O = 1.93 cm, TVT-S = 1.95 cm; $p = 0.010$). The global objective cure rate was of 87.8% (TVT = 88.5%, TVT-O = 90.5%, TVT-S = 83.8%; $p = 0.701$). The overall subjective cure rate was of 83.8% (TVT = 88.5%, TVT-O = 88.5% and TVT-S = 78.4%; $p = 0.514$). The slings were located in the mid-urethra in 85.7% of the patients (TVT = 100%, TVT-O = 73.8%, TVT-S = 89.2%; $p = 0.001$), with a more distal location associated with obesity (distal: 66.7% obese; mid-urethra: 34% obese; $p = 0.003$). Urgency-related symptoms were observed in 23.8% of the patients (TVT = 30.8%, TVT-O = 21.4%, TVT-S = 21.6%; $p = 0.630$).

CONCLUSIONS: The angle formed by the arms of the sling tape was more obtuse for the transobturator slings compared with the angles for the retropubic or single-incision slings. Retropubic slings were more frequently located in the mid-urethra compared with the other slings, regardless of obesity. However, the analyzed sonographic measures did not correlate with the urinary symptoms three years after the surgery.

- **Hysterectomy technique and risk of pelvic organ prolapse repair: a Danish nationwide cohort study.**

  LykkeHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Lykke%20R%5BAuthor%5D&cauthor=true&cauthor_uid=28733916" R, Løwenstein E, BlaakærHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Blaak%C3%A6r%20J%5BAuthor%5D&cauthor=true&cauthor_uid=28733916" J, Gimbel H.

  Arch Gynecol Obstet. 2017 Jul 21. doi: 10.1007/s00404-017-4470-1. [Epub ahead of print]

OBJECTIVE: The purpose was to investigate, in a large cohort, how hysterectomy technique influences the incidence of subsequent pelvic organ prolapse (POP) repair among women hysterectomized for benign conditions.

METHODS: From the Danish National Patient Registry, we collected data on all hysterectomies on benign indications, and all POP operations performed in Denmark from January 1, 1977 to June 10, 2016. We excluded patients with prior POP repair. We analyzed the incidence of POP surgery by cumulative incidence curves and hazard ratio (HR) for women with and without POP diagnoses or concomitant POP repair at hysterectomy.

RESULTS: In all, 178,282 women underwent hysterectomy in the study period and were included in the cohort. When examining the crude HR for the risk of POP repair after hysterectomy, vaginal hysterectomy (VH) had a threefold rise in HR compared to total abdominal hysterectomy (TAH). When restricting the analyses to women without POP at time of hysterectomy, the HR for VH decreased to 1.25. The same tendency was noticed when stratifying by compartment. In the subgroup of women without POP at hysterectomy, we found that supravaginal abdominal hysterectomy had a small increase in risk compared to TAH. Laparoscopic hysterectomy had the same risk of POP as TAH.

CONCLUSIONS: Overall, we found only small differences in risk of POP repair between the different hysterectomy techniques after restricting the analyses to women without POP at hysterectomy.

- **Trends in Hysteropexy and Apical Support for Uterovaginal Prolapse in the United States from 2002 to 2012.**

  Madsen AM, RakerHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Raker%20C%5BAuthor%5D&cauthor=true&cauthor_uid=28723720" C, Sung VW.

  Female Pelvic Med Reconstr Surg. 2017 Jul 19. doi: 10.1097/SPV.0000000000000426. [Epub ahead of print]

OBJECTIVES: Our objective was to describe trends in hysteropexy and apical support for uterovaginal prolapse (UVP) from 2002 to 2012 in the United States. We identified patient and hospital variables associated with hysteropexy and apical support.

METHODS: We used the Nationwide Inpatient Sample and International Classification of Diseases, Ninth Revision codes to identify a population of women 18 years or older with UVP undergoing pelvic organ prolapse surgery from January 1, 2002, to December 31, 2012. Procedures were categorized as (1) hysteropexy, (2) obliterative with uterine preservation, (3) hysterectomy with apical support, (4) hysterectomy without apical support, and (5) other reconstruction without apical support. Categories were dichotomized into those with and without apical support. We used survey weights to obtain nationally representative estimates; χ and linear and logistic regression compared procedure groups.

RESULTS: An estimated 815,184 hospital discharges of pelvic organ prolapse procedures for UVP occurred from 2002 to 2012. During this time, hysteropexies increased from 1.81% to 5.00% ($P < 0.0001$). From 2002 to 2012, hysterectomies with apical support increased (10.07% to 32.51%, $P < 0.0001$), hysterectomy without apical support decreased (27.14% to 17.12%, $P <$

0.0001), and reconstruction without apical support decreased (59.07% to 40.48%, P < 0.0001). In most recent years 2011 to 2012, 60% of women with UVP underwent inpatient surgery without an apical procedure. Age 52 years or older, Medicare payment, Northeast region, and urban teaching hospitals were associated with increased odds of apical support for UVP (P < 0.001 for all).

CONCLUSIONS: Hysteropexy significantly increased in the United States from 2002 to 2012, although the overall proportion remains low. While hysterectomy without apical support is decreasing, approximately 60% of inpatient procedures performed for UVP do not address the apex.

- **Labia Majora Augmentation with Hyaluronic Acid Filler: Technique and Results.**

  Fasola HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Fasola%20E%5BAuthor%5D&cauthor=true&cauthor_uid=27241363" E, GazzolaHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Gazzola%20R%5BAuthor%5D&cauthor=true&cauthor_uid=27241363" R

  Aesthet HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/27241363" HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/27241363"SurgHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/27241363" J. 2016;36(10):1155-1163.

BACKGROUND: External female genitalia lose elasticity and volume with age. In the literature several techniques address the redundancy of the labia minora, but only few reports describe the augmentation of labia majora with fat grafting. At present, no studies describe the augmentation of the labia majora with hyaluronic acid.

OBJECTIVES: This study aims to present our technique of infiltration of hyaluronic acid filler, analyzing effectiveness, patient satisfaction, and complications.

METHODS: We retrospectively analyzed 54 patients affected by hypotrophy of the labia majora; they were treated with hyaluronic acid filler between November 2010 and December 2014. The Global Aesthetic Improvement Scale (GAIS) filled out by the doctor and the patients was used to evaluate the results 12 months after the infiltration. Complications were recorded.

RESULTS: A total of 31 patients affected by mild to moderate labia majora hypotrophy were treated with 19 mg/mL HA filler; 23 patients affected by severe labia majora hypotrophy were treated with 21 mg/mL HA filler. Among the first group of patients, one underwent a second infiltration 6 months later with 19 mg/mL HA filler (maximum 1 mL). A significant improvement (P < .0001) in GAIS score was observed, both in the scores provided by the patients and by the doctor. A greater relative improvement was observed in patients affected by severe hypotrophy. No complications were recorded.

CONCLUSIONS: Hyaluronic acid infiltration of the labia majora is able to provide a significant rejuvenation with a simple outpatient procedure. We achieved significant improvements with one infiltration in all cases. The treatment is repeatable, has virtually no complications and it is reversible.

- **Validation of a single summary score for the Prolapse/Incontinence Sexual Questionnaire-IUGA revised (PISQ-IR).**

  Constantine ML, PaulsHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Pauls%20RN%5BAuthor%5D&cauthor=true&cauthor_uid=28589290" RN, Rogers RR, Rockwood TH.

  Int Urogynecol J. 2017 Jun 6. doi: 10.1007/s00192-017-3373-9. [Epub ahead of print]

INTRODUCTION AND HYPOTHESIS: The Prolapse/Incontinence Sexual Questionnaire-International Urogynecology Association (IUGA) Revised (PISQ-IR) measures sexual function in women with pelvic floor disorders (PFDs) yet is unwieldy, with six individual subscale scores for sexually active women and four for women who are not. We hypothesized that a valid and responsive summary score could be created for the PISQ-IR.

METHODS: Item response data from participating women who completed a revised version of the PISQ-IR at three clinical sites were used to generate item weights using a magnitude estimation (ME) and Q-sort (Q) approaches. Item weights were applied to data from the original PISQ-IR validation to generate summary scores. Correlation and factor analysis methods were used to evaluate validity and responsiveness of summary scores.

RESULTS: Weighted and nonweighted summary scores for the sexually active PISQ-IR demonstrated good criterion validity with condition-specific measures: Incontinence Severity Index = 0.12, 0.11, 0.11; Pelvic Floor Distress Inventory-20 = 0.39, 0.39, 0.12; Epidemiology of Prolapse and Incontinence Questionnaire-Q35 = 0.26 0,.25, 0.40); Female Sexual Functioning Index subscale total score = 0.72, 0.75, 0.72 for nonweighted, ME, and Q summary scores, respectively. Responsiveness evaluation showed weighted and nonweighted summary scores detected moderate effect sizes (Cohen's d > 0.5). Weighted items for those NSA demonstrated significant floor effects and did not meet criterion validity.

CONCLUSIONS: A PISQ-IR summary score for use with sexually active women, nonweighted or calculated with ME or Q item weights, is a valid and reliable measure for clinical use. The summary scores provide value for assesing clinical treatment of pelvic floor disorders.

- **Female double incontinence: prevalence, incidence, and risk factors from the SABE (Health, Wellbeing and Aging) study.**

  Yuaso HYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Yuaso%20DR%5BAuthor%5D&cauthor=true&cauthor_uid=28620790" DR, Santos JLF, Castro RA, Duarte YAO, GirãoHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Gir%C3%A3o%20MJBC%5BAuthor%5D&cauthor=true&cauthor_uid=28620790" MJBC, BerghmansHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Berghmans%20B%5BAuthor%5D&cauthor=true&cauthor_uid=28620790" B, TamaniniHYPERLINK "https://www.ncbi.nlm.nih.gov/pubmed/?term=Tamanini%20JTN%5BAuthor%5D&cauthor=true&cauthor_uid=28620790" JTN.

  Int Urogynecol J. 2017 Jun 15. doi: 10.1007/s00192-017-3365-9. [Epub ahead of print]

INTRODUCTION AND HYPOTHESIS: Double Incontinence (DI) is incontinence of urine and stool and is an extreme manifestation of pelvic floor dysfunction. The objective of this study was to estimate the prevalence and incidence of DI and the risk factors in elderly women in São Paulo, Brazil.

METHODS: This was a prospective study in women aged 65 years or older evaluated in 2006 and re-evaluated in 2010. The sample was selected by two-phase stratified sampling with replacement and probability proportional to size. The likelihood ratio test was performed and Cox regression curves were generated to evaluate the equality of survival. Poisson's regression was used to evaluate risk factors.

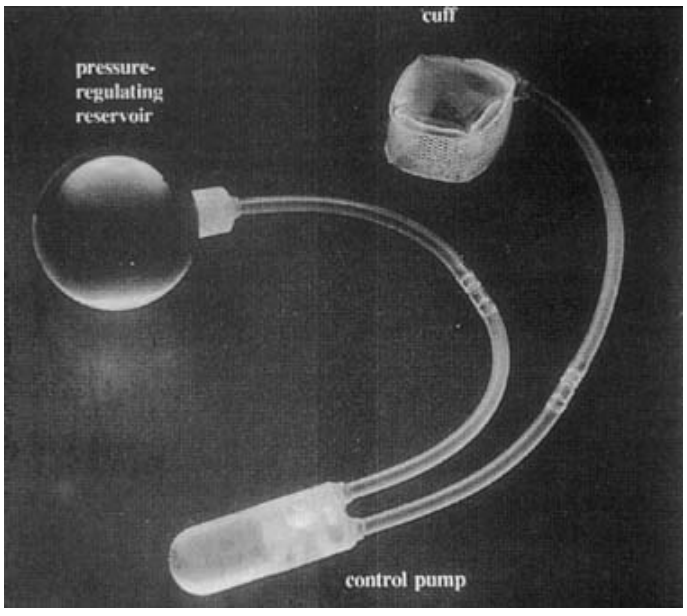
RESULTS: This is the first study on the incidence of DI in elderly women. A total of 864 elderly women were interviewed in 2006. The prevalence rate of DI was 4.9%. The incidence rate of DI in the period between 2006 and 2010 was 13.8/1,000 person-years. Associated factors were the presence of chronic obstructive pulmonary disease, hypertension, difficulty with basic activities of daily living (BADL) and instrumental activities of daily living (IADL), polypharmacy and falls in the last year. Poisson's regression analysis showed that falls in the last year and difficulty with at least three IADL were risk factors for DI.

CONCLUSIONS: The incidence of DI seems to be high in this population. Falls in the last year and difficulty with at least three IADL were identified as risk factors. Preventive measures must be implemented with public health policies to prevent increases in DI.

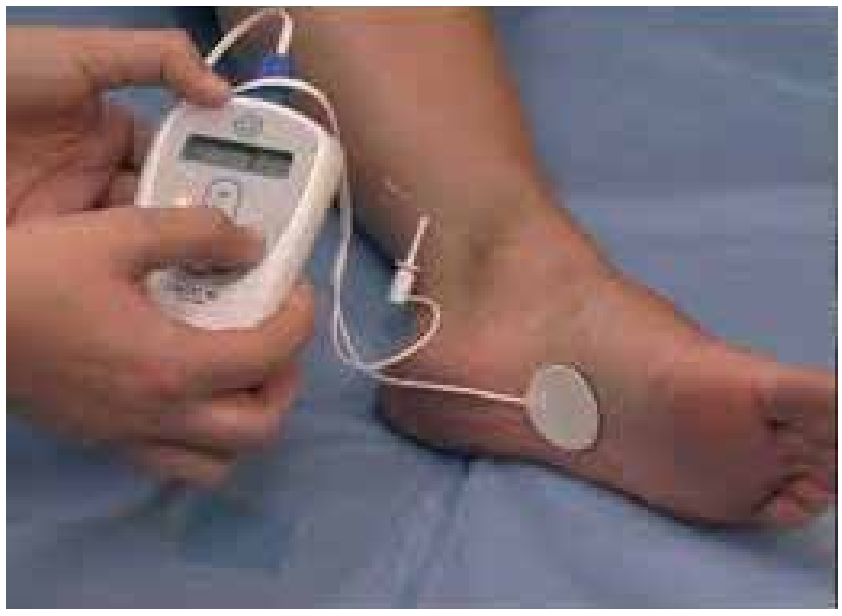
Brain Teasers

Dr. Abha Rani Sinha
Associate Professor, Obst & Gynae, Patna Medical College, Patna,
Chairperson Quiz Committee FOGSI (2015-2017)

Q. 1. Identify. When is it indicated ?



Q. 2. Identify



Q. 3. Which of the following statement is true

a. Offer systemic oestrogens for the treatment of Overactive Bladder symptoms in postmenopausal women with vaginal atrophy
b. Use duloxetine as a first-line treatment for women with predominant stress UI
c. Offer bladder training lasting for a minimum of 6 weeks as first-line treatment to women with urgency or mixed UI
d. Offer laparoscopic colposuspension as a routine procedure for the treatment of stress UI in women

Q 4. Which of the following statement is correct

a. Cystoscopy should be performed routinely in the initial assessment of urinary incontinence
b. Flavoxate and Imipramine are recommended for the treatment of urinary incontinence.
c. Nice recommends Q tip test , Bonney, Marshal test for urethral incompetence
d. Offer a trial of supervised pelvic floor muscle training of at least 3 months' duration as first-line treatment in stress or mixed UI

Q 5. Which Mnemonic score is used for assessment of pelvic floor muscle strength

ANSWERS TO BRAIN TEASERS – SEPTEMBER ISSUE

1. PRES (Posterior reversible Encephalopathy Syndrome)
2. HELLP Syndrome
3. MEOWS Chart (Modified early obstetric warning score)
4. It interferes with platelet function and Cross matching
5. Compression Duplex Ultrasound

INDIAN COLLEGE OF OBSTETRICIANS & GYNAECOLOGISTS
of
The Federation of Obstetric & Gynaecological Societies of India

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S. B. Marg, Lower Parel (West), Mumbai 400 013.
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icogoffice@gmail.com / www.icogonline.org

Passport size Photo

Application for Fellowship

I desire to be an Fellow of the Indian College of Obstetricians & Gynaecologists. I hereby apply for the same. I am paying the Fellowship fee in advance. If duly elected, I shall abide by all the rules and regulations of the College. I hereby furnish my bio-data.

Date of Application _____ Date of Receipt _____ _____
(By Office) Signature of Applicant

Name (in Capital) _____ _____ _____
(Surname) (First Name) (Middle Name)

Degrees & Diplomas	University / College / Institution	Year of Qualifying

Permanent Address _____
_____
_____ Pin Code No._____

Telephone Nos. _____ _____ _____
(Residence) (Office) (Mobile)

Fax No. _____ **Email :** _____

Medical Council Registration Number and date, mentioning the name of the State Register _____

Years of practice in Obstetrics & Gynaecology _____

State / National/ International Conferences Attended: (Use additional Sheet of paper, if required)

Year	Place	Which Congress

Papers presented as FIRST Author at State / National / International Congresses
(Use additional Sheet of paper, if required)

Year	Place	Title

P.T.O.

Papers Published in any recognised Journal/chapters in textbooks/articles in FOGSI Focus etc.
(Use additional Sheet of paper, if required)

Name of the Publication	Year	Volume No.	Page Nos.	Title of the Paper / Chapter / article

Proposed by : _____ _____ _____
(Surname) (First Name) (Middle Name)

Address : _____
_____ Pin Code No._____

Member of Society : _____ **Signature of the Proposer** _____

Seconded by : _____ _____ _____
(Surname) (First Name) (Middle Name)

Address : _____
_____ Pin Code No._____

Member of Society : _____ **Signature of the Proposer** _____

To be filled by the Member Society (Certificate by the Member Society)

This is to Certify that Dr._____ is a continuous active Member of the Society for the last _____ years (Date of joining _____) and holds the qualification mentioned above.

_____ Sea l _____
Signature of the President Signature of the Hon.Secretary

To be filled in by the College Office

Serial No._____ Date when application & Payment received _____

Amount Rs._____ by Cash / Cheque /Draft

Receipt No._____ Date _____

Date when application is approved by the Governing Council _____

Remarks _____
_____

Date and Place of the Convocation when Fellowship Conferred _____

_____ _____ _____
President, FOGSI-ICOG **Chairperson, ICOG** **Secretary, ICOG**

The eligibility for the Fellowship is as follows : ***(Kindly attach Certified copies for proof).***

1. Holding of MD/DGO or equivalent qualification for 10 years.
2. Membership of FOGSI for 5 years.
3. Publication of 3 papers in any reputed Journal / Newsletter / FOGSI Focus etc in the last 10 years **or** 100 ICOG Credit Points over any 3 years.
4. Attendance of 2 FOGSI sponsored Congresses in the last 10 years.
5. Presentation of atleast 2 papers at FOGSI / FIGO / AOFOG / National / State Level Congresses as 1st author in the last 10 years.
6. Fellowship payment of Rs.15,500/- by Demand Draft payable at Mumbai in favour of “F.O.G.S.I.”
7. Last date: October 31.

Lower Segment Caesarean Section - Gynaecologists' Survey

Dear ICOG fellows & members

Cesarean section is the commonest surgery performed by the obstetrician. We are sending you a link to questionnaire on your practice preferences during this surgery.

Kindly fill this 1 minute survey within this week on google survey

We shall be sending you the evidence based guidelines fir the above soon.

Thanks & Regards

Mala Arora & Padma Rekha Jirge
Chairperson & Fellow ICOG

* Required

1. **What antiseptic / disinfectant solution do you routinely use to paint the abdomen? ***
   - ☐ Betadine
   - ☐ Savlon
   - ☐ Alcohol
   - ☐ Other: .....

2. **What solution do you use to clean the vulval area before catheterisation? ***
   - ☐ Betadine
   - ☐ Savlon
   - ☐ Alcohol
   - ☐ Other: .....

3. **Do you clean the vagina while cleaning the vulval area? ***
   - ☐ Yes
   - ☐ No

4. **Do you always take a low transverse abdominal incision? ***
   - ☐ Yes
   - ☐ No

5. **When do you take vertical incision? ***
   - ☐ Never
   - ☐ Only if a previous vertical scar is present
   - ☐ Always
   - ☐ Other: .....

6. **What uterotonics do you use for active management of third stage (prevention of PPH) ***
   - ☐ Syntocinon 10 IU IM
   - ☐ Syntocinon and Ergometrine IM
   - ☐ Syntocinon 5 IU slow IV
   - ☐ Prostaglandin F2alfa
   - ☐ Other:

7. **Following delivery of the baby, how do you deliver the placenta? ***
   - ☐ Manually separate the placenta
   - ☐ Wait for it to seperate
   - ☐ Other: .....

8. **Do you clean the uterine cavity with a mop after delivery of the palcenta? ***
   - ☐ Yes
   - ☐ No

9. **How do you close the uterine incision? ***
   - ☐ One layer
   - ☐ Two layers
   - ☐ Other: .....

10. **What suture material do you use? ***
    - ☐ Vicryl
    - ☐ Catgut
    - ☐ Other: .....

11. **Do you personalise the uterus? ***
    - ☐ Yes
    - ☐ No

12. **How do you close the rectus sheath? ***
    - ☐ Vicryl
    - ☐ Catgut
    - ☐ Prolene
    - ☐ Other: .....

13. **Do you use cautery for achieving haemostasis? ***
    - ☐ Yes
    - ☐ No

14. **How do you close the skin? ***
    - ☐ Continuous suture
    - ☐ Interrupted suture
    - ☐ Staples
    - ☐ Other: .....