



AOGD BULLETIN



Volume 15; Issue No.11; March 2016

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Message from the President



Dear AOGD friends

Greetings to all the members for a bright and colourful Holi! I wish to thank all our esteemed members for appreciating the Critical Care Obstetrics Conference and hope that they found the deliberations during the conference useful in their daily clinical practice.

Where as critical care is successful in preventing maternal mortality, there are several long term morbidities due to pregnancy like urinary incontinence & pelvic organ prolapse which have a considerable impact on the quality of life of a woman. Urinary incontinence is a significant health problem with considerable social and economic impact. It's prevalence in Indian women is reported from 15 to 22 %, yet it is one of the most neglected problem among our women. Most women are too embarrassed to talk about it and some believe it to be untreatable. It also disturbs the sexual health of women in one third of cases.

With age comes skills of multi tasking ie one can laugh, cough, sneeze and pee all at the same time---the so called vagaries of old age put forward humorously and lightly by an unknown.

The present issue is all about urogynaecology. I am sure you will gain from the articles.

"You cannot swim for new horizons until you have courage to lose sight of the shore"

---William Faulkner

Dr Pratima Mittal

President, AOGD

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From the Secretary's Desk



Dear friends

Welcome to this season of flowers, the beautiful spring season. We have had a wonderful beginning for this New Year with a splendid conference on Critical Care in Obstetrics at Hotel Grand, which inspired us to give our best to our critically ill patients apart from our other New Year resolutions.

It is the last month when the AOGD office is with Safdarjung Hospital. It has been a great year. AOGD has reached great heights and has made a remarkable impact in FOGSI. We added 210 members to our already large family of AOGDIANS and are very near the goal of becoming the largest gynae society of India. We appreciate the active participation of all our members in our journey.

I wish to applaud the enthusiasm and participation of our esteemed members in all the scientific activities which were organized by the AOGD this year. It has indeed been a most memorable year for the AOGD Team and we will cherish every moment we spent with all of you. The Secretariat will be officially handed over to Dr Sudha Prasad and her Team on 1st April at ESI, Basaidarapur and I request all of you to be present on this occasion, to bid farewell to the outgoing Team and to welcome the incoming one.

“Change is the law of life. And those who look only to the past or present are certain to miss the future”..... John F. Kennedy

Wishing you all a very happy and colorful Holi !

Dr Achla Batra

Hon. Secretary, AOGD

achla_batra@yahoo.com

Please note that the date of AOGD monthly clinical meeting has been changed to 1st April, 2016 due to 25th March, 2016 being Good Friday; Venue: ESI Hospital Basaidarapur; Agenda includes handing over of AOGD Secretariat to MAMC Team

AOGD Monthly Meeting Schedule 2015-16

Month / Year	Institute
Friday, 1 st April, 2016	ESI Hospital, Basaidarapur
Friday, 29 th April, 2016	Apollo Hospital

From the Editor's Pen



Dear friends

Welcome aboard the penultimate issue of the 15th volume of AOGD Bulletin in this spring season when the colours of nature and Holi are splashed all around us.

The field of urogynaecology has developed into a full fledged branch of medicine over the last few years. Even though these diseases may not be life threatening but they impair the quality of life seriously and hence have to be targeted aggressively. To remain abreast with the latest developments we have included in this issue the assessment of a patient with incontinence, the surgical approach towards SUI, the role of biofeedback in UI, assessment and management of vesico vaginal fistula and recurrent UTI, principles of surgical management in vault prolapse, the various surgical options in nulliparous prolapse, the pharmacotherapy for OAB and the important topic of assessment of a case of pelvic organ prolapse. All the topics have been dealt very skilfully by experts in the field.

The glimpses of the recently concluded and highly appreciated International Conference of Critical Care Obstetrics have also been included in this issue for all our AOGD members. We are grateful to Dr M Kochhar, for consenting to give her interview for the Luminary column. Her humility and devotion to duty is truly awe inspiring and a motivation for all of us.

We hope that you all enjoy reading this issue and benefit from it in your daily practice.

"Yesterday is history, tomorrow is a mystery and today is a gift of God, which is why we call it the present" ---Bill Keane

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Pelvic Organ Prolapse: Assessment and Examination

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Pelvic organ prolapse (POP), is the herniation of the pelvic organs to or beyond the vaginal walls. Many women with prolapse experience symptoms that impact daily activities, sexual function, and exercise. The presence of POP can have a detrimental impact on body image and sexuality. Pelvic organ prolapse is a very common problem with a prevalence of 41–50 per cent of women over the age of 40 years. There is a lifetime risk of 7 per cent of having an operation for prolapse and a lifetime risk of 11 per cent of having an operation for incontinence or prolapse. The annual incidence of surgery for POP is within the range of 15–49 cases per 10 000 women years.¹ The cause of pelvic organ prolapse is multi-factorial, resulting from loss of the support maintained by a complex interaction among the levator ani, the vagina, and the connective tissue, as well as neurologic injury from stretching of the pudendal nerves that may occur during childbirth. In a healthy woman in whom the levator ani has normal tone and the vagina has adequate depth, the upper vagina lies nearly horizontal when she is upright. The result is a “flap valve” in which the upper vagina presses against the levator plate when there is an increase in intra-abdominal pressure. When the levator ani loses tone, it moves from a horizontal to a semi-vertical position, creating a widened genital hiatus (i.e., the distance between the external urethral meatus and the posterior midline hymen) that forces the pelvic structures to rely on connective tissue for support. When the connective tissue support also fails, as a result of possible collagen decrease and tearing, prolapse may occur.²

Terminology

Older terms describing pelvic organ prolapse (e.g., cystocele, urethrocele, rectocele) have been replaced because they imply an unrealistic certainty about the structures on the other side of the vaginal bulge, particularly in women who have had previous pelvic organ prolapse surgery. The current practice is to divide the pelvis into anterior, posterior, and middle or apical compartments. Following hysterectomy, prolapse of the vaginal apex with or without prolapse of the anterior and/or posterior vaginal wall is referred to as vault prolapse.^{2,3}

Classification of pelvic organ prolapse

Pelvic organ support is maintained by complex interactions between the vagina, levator ani muscle and pelvic floor connective tissue. A system of three integrated levels of vaginal support has been described by De Lancey (Fig. 1)

Level 1 The cardinal uterosacral ligament complex

Level 2 Mid vaginal supports- pubocervical and rectovaginal fascia

Level 3 Urogenital diaphragm and the perineal body

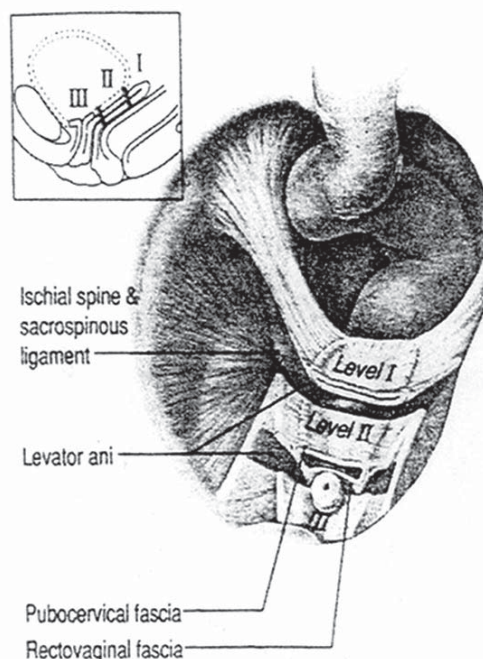


Fig.1: Three levels of vaginal support

The prolapse is usually described according to the area of the vagina in which it occurs. Assumptions are often made about which organ is behind the vaginal wall that is prolapsing.

Anatomical classification according to vaginal wall

- Anterior: cystocele (bladder most common), urethrocele (urethra)
- Middle: uterus, vault (after hysterectomy)
- Posterior: rectocele (rectum), enterocele (small bowel, omentum)

Shaw's classification

Anterior wall

- Upper 2/3 cystocele
- Lower 1/3 urethrocele

Posterior wall

- Upper 1/3 enterocele
- Middle 1/3 rectocele
- Lower 1/3 deficient perineum

Uterine prolapse

- Grade 0 normal position
- Grade 1 Descent into vagina not reaching introitus
- Grade 2 Descent up to the introitus
- Grade 3 Descent outside the introitus
- Grade 4 Procidentia

Some make a distinction between uterovaginal (uterus descends first followed by vagina) and vaginouterine prolapse (vagina descends first followed by the uterus)

Uterovaginal prolapse usually occurs in nulliparous prolapse due to congenital weakness of cervical ligaments

Vaginouterine prolapse usually occurs in cases of prolapse resulting from obstetrical trauma.

The Baden-Walker classification

The Baden-Walker (grades 0 through 4) and pelvic organ prolapse–quantification (pelvic organ prolapse–q; stages 0 through iv) are the two main systems for staging the degree of pelvic organ prolapse. Both systems measure the most distal portion of the prolapse during straining/valsalva manoeuvre (Table 1). The Baden-Walker system is a reasonable clinical method to evaluate the three pelvic compartments. The pelvic organ prolapse–q, an international system that involves taking several measurements, is more complex but highly reliable and is used in clinical assessment and research.

Pelvic organ prolapse quantification system (POP-Q)

Pelvic organ prolapse quantification system (POP-Q) refers to an objective, site-specific system for describing,

quantifying, and staging pelvic support in women (Fig. 2). It provides a standardized tool for documenting, comparing, and communicating clinical findings with proven interobserver and intraobserver reliability. The POP-Q system gained the attention of the specialists all over the world, being approved by the International Continence Society (ICS), the American Urogynecologic Society (AUGS), and the society of gynecologic surgeons for the description of female pelvic organ prolapse. It is the most common system used by gynecologists and urogynecologists, although other systems have been devised.

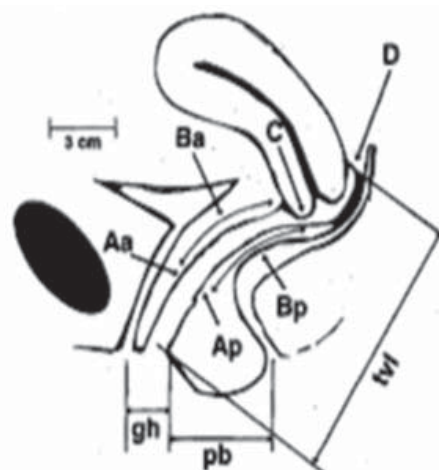


Fig. 2: POP-Q points

Aa =anterior vaginal wall 3 cm proximal to the urethral meatus (-3 cm to +3 cm)

Ba=most distal position of the remaining upper anterior vaginal wall (-3 cm to +tvl)

C =most distal edge of cervix or vaginal cuff scar

D =posterior fornix (n/a if post-hysterectomy)

Ap=posterior vaginal wall 3 cm proximal to the hymen (-3 cm to +3 cm)

Bp=most distal position of the remaining upper posterior vaginal wall (-3 cm to + tvl)

Genital hiatus (gh) – measured from middle of external urethral meatus to posterior midline hymen

perineal body (pb) – measured from posterior margin of gh to middle of anal opening

total vaginal length (tvl) – depth of vagina when point d or c is reduced to normal position

Table 1. Evaluation/staging of pelvic organ prolapse

Baden-walker system		Pelvic organ prolapse–quantification system	
Grade	Description	Stage	Description
0	Normal position for each respective site, no prolapse	0	No prolapse
1	Descent halfway to the hymen	I	> 1 cm above the hymen
2	Descent to the hymen	II	≤ 1 cm proximal or distal to the plane of the hymen
3	Descent halfway past the hymen	III	> 1 cm below the plane of the hymen, but protrudes no farther than 2 cm less than the total vaginal length
4	Maximal possible descent for each site	IV	Eversion of the lower genital tract is complete

POP-Q staging criteria

Stage 0 Aa, Ap, Ba, Bp = -3 cm and C or D \leq -(tvI - 2) cm

Stage I Stage 0 criteria not met and leading edge < -1 cm

Stage II Leading edge ≥ -1 cm but $\leq +1$ cm

Stage III Leading edge $> +1$ cm but $< + (tvI - 2)$ cm

Stage IV Leading edge $\geq + (tvI - 2)$ cm

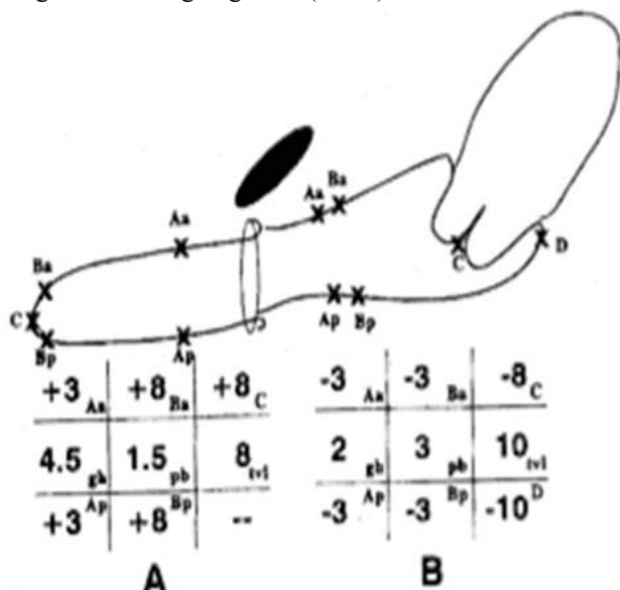


Fig. 3: POP-Q grid in vault prolapse (A) and normally supported uterus & vagina (B)

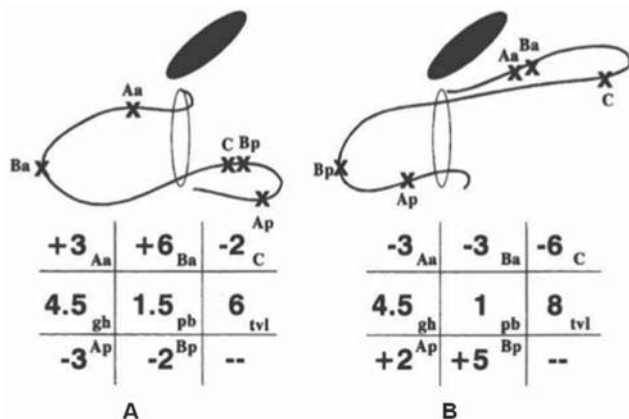


Fig. 4: POP-Q grid in a patient with anterior vaginal wall prolapse (A) and posterior vaginal wall prolapse (B)

The S-POPQ may be an easier classification system to use in routine clinical practice. It was developed by the International Urogynecology Association to provide a less cumbersome exam tool⁸. The S-POPQ stages prolapse for the anterior and posterior vaginal walls, the apex/cuff of the vagina and the cervix. For women posthysterectomy, there are three stages; for women with an intact uterus there are four. The exam is carried out similarly to the standard POPQ exam, with a half speculum placed in the vagina to visualize the vaginal walls and cervix.

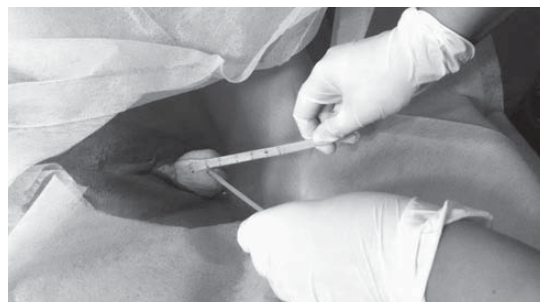


Fig. 5: point Aa being measured by graded spatula

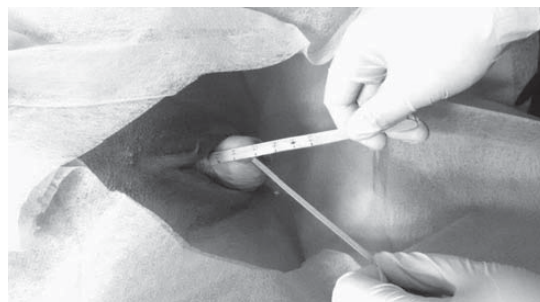


Fig. 6: point Ba being measured by a graded spatula

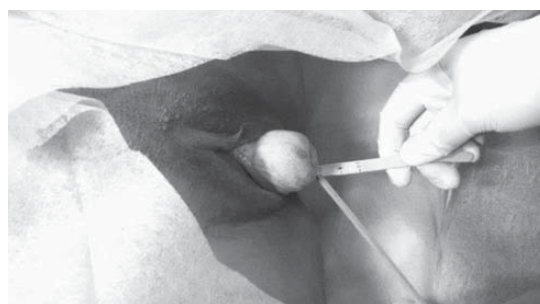


Fig. 7: point C

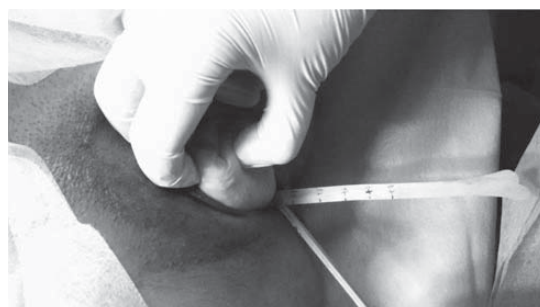


Fig. 8: point Ap

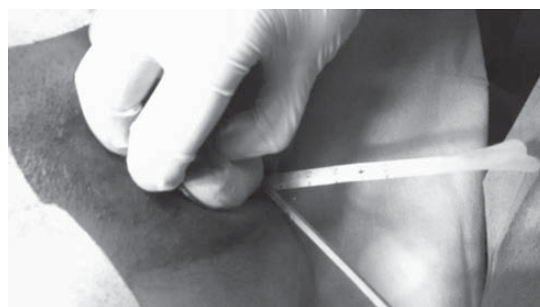


Fig. 9: point Bp



Fig 10: point D

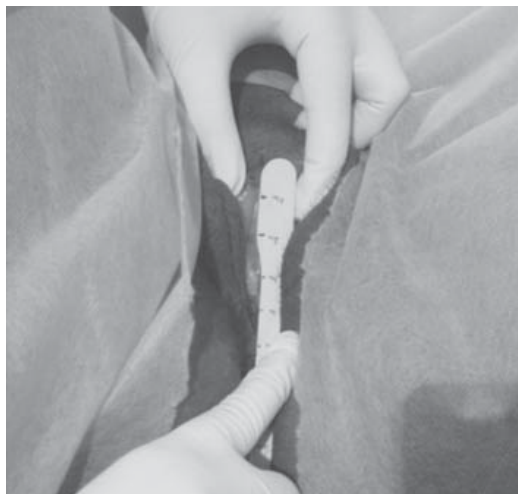


Fig. 11: genital hiatus (gh)

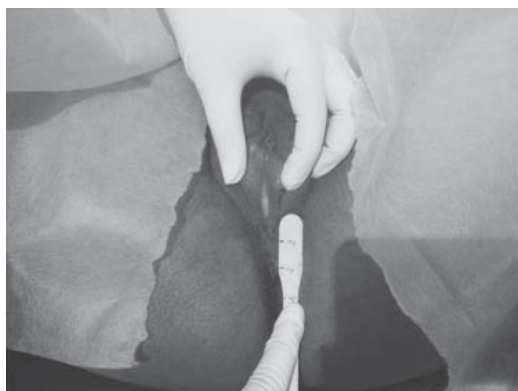


Fig. 12: perineal body (p_b)

A disadvantage of POPQ is that all points and measures are taken in the midline as a consequence, the popq does not reflect asymmetries and cannot be used to describe, for example paravaginal defects. one has also to keep in mind that the POPQ depends on cooperation of the patient and to the strength of her cough or valsalva maneuver, it is therefore unreasonable to assume that in an individual patient the POPQ will always be identical.⁴

History

Most patients with pelvic organ prolapse are asymptomatic. Seeing or feeling a bulge of tissue that

protrudes to or past the vaginal opening is the most specific symptom

Bulge in the vagina: During a well-woman examination, screening questions (e.g., “do you see or feel a bulge in your vagina?”) with a thorough pelvic examination are important. This is true of patients who are older, obese, or otherwise at risk. The report of a bulge has an 81 percent positive predictive value and a 76 percent negative predictive value for pelvic organ prolapse.

The uterus and surrounding pelvic support tend to be dynamic in prolapse, resulting in a variation of symptoms depending on the position of the uterus and pressure of the surrounding structures.¹ Consequently, as the day progresses, bulging and discomfort may increase.¹ Extensive standing, lifting, coughing, and physical exertion may increase patient awareness of discomfort in the pelvis, vagina, abdomen, and low back. Pelvic organ prolapse may progress with increasing body mass index. Weight loss does not reverse the prolapse

Vaginal discharge may be present in patients with complete uterine prolapse (i.e. procidentia) who have a decubitus ulcer of the cervix or vagina.

Urinary symptoms: Patients may have difficulty urinating—stress incontinence affects 40 percent of patients with pelvic organ prolapse; therefore, they should be asked about frequency, urgency, sensation of incomplete emptying of bladder, because they may not volunteer such information. Urinary outlet obstruction may occur because of pressure on the urethra in anterior vaginal prolapse and sometimes in large posterior vaginal prolapse. Screening is advocated for urinary tract infection, post void residual urine volume and presence or absence of bladder sensation.

Symptoms may not correlate with the location or severity of the prolapsed compartment.

Bowel symptoms: Patients with posterior vaginal prolapse sometimes use manual pressure on the perineum or posterior vagina to help with defecation. These maneuvers are called “splinting.”

Back pain: though patients of prolapse attribute back and pelvic pain to their prolapse but very little evidence is available to show that this disorder causes pain so other causes of pain should be ruled out.

Sexual discomfort: Sexual activity, body image, and quality of life may be affected.³

Examination

General physical examination

Assessment of the woman’s general state of health is

important and will include weight, body mass index and blood pressure, as well as assessment of any varicose veins or hypermobile joints, since these can be markers of a tendency to connective tissue laxity which predisposes to POP and importantly, to recurrence after surgical repair.

Abdominal examination

On examination of the abdomen, inspect for incisions of previous surgery (which may be associated with intra-abdominal adhesions affecting subsequent surgical approaches) and to exclude masses or ascites (which are embarrassing to discover later). The presence of umbilical or other herniae can again indicate underlying connective tissue weakness and may require concomitant surgical correction.

Local examination

On inspection of the vulva, note the presence of any atrophy and whether there is any ulceration of prolapsed tissues that may necessitate therapy with oestrogens, especially if surgery is planned. The normal genital hiatus is closed, with an area of only a few square centimetres, and an open hiatus with the vaginal walls visible indicates probable damage to the levator muscles, usually an avulsion injury. Another important indicator of levator avulsions is midline asymmetry, sometimes apparent with straining.

With the woman reclining, but not lying flat, ask her to strain or bear down. If there is a bulge from the vagina, note whether the pattern of rugae (formed by muscle and connective tissue deep to the skin) is present, which indicates an intact fascial layer in the midline and a probable lateral defect, or absent, suggesting a midline defect with only skin and attenuated connective tissue present. In some cases, straining or coughing will precipitate stress urinary loss or rectal prolapse, both of which are important findings.

Examination in various positions

Standing position: in some mild cases of vaginal wall and uterine prolapse, examination of the patient in standing position is the only way to explore it.

Dorsal position: mostly for demonstration of uterine prolapse. Either the uterus will be obviously protruded, or protrude when the patient is asked to strain.

Sim's position: in this position the aim is to demonstrate the different types of vaginal wall prolapse. The patient is asked to lie on her left side at the edge of the table. The left leg is extended, while the right leg is flexed. Afterward a sterile sim's speculum is inserted into the vagina gently first to expose the anterior vaginal wall. Then it is pulled

backward gradually to expose the posterior vaginal wall. Cystocele and rectocele are usually diagnosed by this examination.

Per speculum examination

Examination with a bivalve speculum allows assessment of the cervix (including a pap smear, if appropriate), but not of prolapse. The use of a Sims speculum is required to carefully assess the anterior and posterior compartments and to assess the supports of the cervix or the vault if there has been a previous hysterectomy. If prolapse is visible at the vaginal introitus or a bulge is noted during the valsalva maneuver, a systematic examination should be performed. With the patient in a supine position and the head of the examination table elevated to 45 degrees, an appropriately sized vaginal speculum is placed in the vagina to view the cervix or vaginal cuff. While the patient is performing the valsalva maneuver, the speculum is slowly removed. The extent to which the cervix or the vaginal vault follows the speculum through and out of the vagina is noted. The speculum is disassembled and the posterior or fixed blade is used for examination.

To examine the anterior vaginal wall, the posterior vaginal wall is retracted with the fixed blade and the extent of any anterior vaginal prolapse during the valsalva maneuver is noted. To examine the posterior vaginal wall, the fixed blade is inverted, the anterior vaginal wall is retracted, and the patient is instructed to repeat the valsalva maneuver. Any resulting prolapse is noted.

Decubitus ulcers are inspected and palpated. It is common to require rampley's sponge-holding forceps to aid in support of the vaginal walls, as this can obscure the view.

Per vaginal and rectovaginal examination

Bimanual examination is performed to check the uterine size and mobility, as well as to exclude unsuspected adnexal pathology, such as ovarian tumours. This also allows an assessment of vaginal muscle tone. Rectal examination may distinguish rectocele from enterocele. Make sure you ask the woman to direct your attention to any other findings she has noted, that you haven't discovered or that she wants to draw your attention to.

Bonney's stress test performed following reduction of prolapsed. If test is positive incontinence surgery should be performed at the time of prolapse surgery.

Testing for integrity of anal sphincter- Should be assessed for resting tone and voluntary squeeze and sensation around the vulva with the bulbo-cavernous reflex (Stroking lateral to clitoris contraction of bilateral bulbo-cavernous muscle is observed) The anocutaneous

reflex (anal wink sign) is triggered by stroking the skin immediately surrounding the anus and observing a reflexive contraction of the external anal sphincter; this reflex should be elicited bilaterally. Absence of these reflexes is not always abnormal and hyperreflexia or asymmetry may in fact be more suggestive of a neurologic etiology. Crude sensory testing is advocated for evidence of pudendal neuropathy.^{4,5}

Grading pelvic floor muscle strength

0- no discernible contraction

- 1- barely palpable, flickering contraction, not visible on inspection of the perineum
- 2- weak, distinctly palpable contraction, felt as slight pressure on the examining finger
- 3- moderate muscle strength, distinct pressure on the examining finger, and palpable upward and forward movement, visible on the perineal surface
- 4- good muscle strength, elevation possible against slight resistance, circular pressure can be felt around the examining finger. During simultaneous examination by the index and middle finger these are pressed against each other
- 5- very strong muscle strength, contraction possible against vigorous resistance, with suction-type effect on the examining finger. During simultaneous examination by the index and middle finger, these are pressed against each other despite resistance

Digital examination makes it possible to distinguish between the left and right side of the levator ani. It is capable of quantifying strength, strength endurance, fast contraction, and fast contraction endurance for clinical (but not scientific) purposes.

Quantifying and documenting the findings

A full description of the examination is recorded, including

- Type of examination table, speculum, and retractors
- Patient position
- Bladder and rectal fullness.

It is important to note and document any episodes of urinary, fecal, or flatal incontinence that occur during the examination.

The findings of the examination should be recorded using a quantitative and reproducible method for recording POP such as the POP-Q (Fig 5-12), Baden-Walker (Table 1) or Shaw systems.

Further evaluation

Further studies depend on the symptoms, stage of prolapse, and treatment plan. If needed for definitive treatment planning, multichannel urodynamic studies can help identify those patients with urinary symptoms who are most likely to benefit from surgery. Patients with defecatory symptoms and/or fecal incontinence may need anal manometry, dynamic defecography, and endoanal ultrasonography.

Conclusion

Taking a thorough history and performing a careful physical examination of women who are referred, helps in assessment of prolapse. Examination should be carried out with dignity and care, using some basic tools that aid in the accurate evaluation of anatomical and functional defects. Use a standardised assessment system to document findings explains everything in understandable terms.

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Approach to a Female with Urinary Incontinence

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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 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 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. Measurement of **postvoid residual (PVR)** urine volume
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.

Start with **non-pharmacologic options**. 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.

Consider adding **drug therapy** 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.

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

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 can be 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 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.

Vaginal inserts, including incontinence tampons, can be used for treating stress incontinence in pregnant women, in those who are not surgical candidates, and in those whose symptoms have not responded to previous surgeries. Vaginal inserts compress the bladder neck and urethra, thus decreasing urine loss caused by stress incontinence. Urethral plugs are devices that are inserted into the urethra to prevent urine loss during activities that cause stress incontinence (e.g., running).

Radiofrequency denaturation is a nonsurgical modality for stress UI that uses a device inserted into the urethra to deliver radiofrequency energy. This energy denatures collagen in the bladder neck and proximal urethra, causing a reduction in compliance of those structures. The 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

Medications can be used to treat urge and mixed incontinence if behavioral therapy is unsuccessful. 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. Mirabegron acts on beta3-adrenergic receptors to relax the detrusor.

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	Originally the preferred medication Highest rate of anticholinergic adverse effects
	Immediate release	
	Topical gel	
	Transdermal patch	
Tolterodine (Detrol)	Extended release	Fewer adverse effects than oxybutynin
	Immediate release	
Trospium (Sanctura)	Extended release	Renally cleared
	Immediate release	
M2/M3-selective agents		
Darifenacin (Enblex)	Extended release	Higher selectivity for M3 muscarinic receptors
	Extended release	
Solifenacin (Vesicare)		

Also recently approved by the FDA, injection of onabotulinumtoxinA (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.

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 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).

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, pessary, urethral plugs)	Alpha-adrenergic agonists (e.g., pseudoephedrine)* Duloxetine (Cymbalta)*	Sling procedures Suburethral sling with tension-free vaginal tape Pubovaginal slings Medurethral sling Urethropexy Needle urethropexy Retropubic urethropexy or colposuspension (i.e., Burch and Marshal-Marchetti-Krantz procedures) Periurethral injections of Bulking agents
Mixed	Combination of above treatments with focus on dominant symptoms	Medication 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

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.

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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Biofeedback Therapy for Pelvic Floor Dysfunction

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Biofeedback is a treatment technique in which people are trained to improve their health by using signals from their own bodies. Pelvic floor biofeedback therapy is a treatment intended to help patients learn to strengthen and relax their pelvic muscles in order to improve pelvic floor function and decrease pelvic pain. Biofeedback uses electronic and mechanical instruments to accurately measure the action of the pelvic floor muscles, and provides 'feedback' information to the patient so that the patient can learn to better use the pelvic muscles. Pelvic floor muscle training (PFMT) has been found to be effective and is recommended as first line treatment for stress urinary incontinence¹. There is trial evidence for its use in urgency incontinence and to lessen certain types of pelvic pain². An important part of pelvic floor biofeedback therapy is to teach correct PFMT.

Rationale of biofeedback therapy

For PFMT to be effective correct muscles have to be used in correct way. Pelvic floor muscles are not visible externally therefore women often are not able to locate them when trying to perform contraction. They keep performing incorrect exercise using abdominal gluteal or hip adductors and therefore no improvement occurs in symptoms and they are demotivated. Feedback or biofeedback is used as ways to teach women to identify and contract the pelvic floor muscles for optimal time. A common method of feedback is that health professional feels for the pelvic floor muscles during vaginal examination and describes to the women during contraction how well is her squeeze & lift. Biofeedback uses a vaginal or anal sensor device to measure the muscle squeeze pressure and electrical activity in the muscle. This information goes back to women using a device that converts it to auditory or visual signal. Thus biofeedback therapy works by training the brain and pelvic muscles to work together to contract or relax the pelvic muscles.

Goal of biofeedback therapy

The goal of biofeedback therapy in the treatment of incontinence is to strengthen the pelvic muscles that help to hold back the urine, and also to help teach the patient methods of pelvic floor muscle contraction that can improve

bladder control. Contraction of the pelvic floor muscles, called "quick flicks", can sometimes make unwanted urges to urinate go away. Strengthening the pelvic floor muscles can also help to decrease leaking of urine that happens with cough, laughing, work, or exercise. Pelvic floor therapy strengthens the vaginal muscles, which can benefit sexual relations. Patients with chronic pelvic pain may have pelvic floor muscle tightness, or spasm, that contributes to the pelvic pain. Pelvic floor biofeedback therapy can teach patients how to relax the pelvic floor muscles, which can help to reduce pelvic pain.

Equipment for biofeedback therapy

There are various kind of biofeedback devices available. The basic component of the system is surface and internal sensors which are inserted in vagina or placed over perineum and abdomen. These are connected to an electronic device and muscle activity is transmitted to this device which converts it into signals which can be in form of sound or visual signals. The system can also deliver a painless electrical stimulation to the pelvic muscles which causes them to contract, and this stimulation both exercises the muscles and teaches the patient the sensation of pelvic muscle contraction.

Components

- Biofeedback electronic system connected to computer (Fig 1).
- Vaginal and anal sensor for manometry (Fig 2).
- Vaginal and surface sensors for electromyography (Fig3,4).
- Software with programmed protocols

BIOFEEDBACK SYSTEM



Fig 1: Electronic system



Fig 2: Internal sensors for manometry



Fig 3: Surface electrodes



Fig 4: Internal EMG and stimulation sensor

How is biofeedback therapy performed?

Women are explained about the procedure and consent is taken to perform the procedure. The woman is asked to lie in supine position. A vaginal sensor or perineal surface electrode is put and a surface electrode is also put over the abdomen so that if any activity of abdominal muscle occurs it is recorded and seen on display and women can be instructed not to use them.

The firststep is that the clinician determines the baseline tone by surface or internal sensor. After determining the baseline tone the biofeedback helps to locate the pelvic

muscles by changing the graph of light when the right muscle is contracted. The clinician then chooses the protocol of exercise best suited for the patient. The woman can see the action of her muscles on computer screen in form of graph or animated figures showing, crossing of a line or hurdle only if the preset desired contraction pressure is generated. The pressure to be achieved is gradually increased according to patient's capacity. The woman is also given homework to do the exercises at home. In the next session again the baseline tone is measured to see improvement. The woman generally needs 6-8 sessions of 30 minutes.

Pelvic muscle massage, also called trigger point release, is performed in patients who have specific areas of the pelvic floor muscles that cause pain. The pelvic therapist can perform massage of these areas through the vagina or rectum at each weekly session.

Home use devices

Home use devices are hand-held electronic biofeedback devices with a display screen and a vaginal or anal electrode to measures the muscle activity in the pelvic floor (Fig 5). They can be set to provide timed workouts, with variable work and rest times, and variable repetitions. The display screen of the device signals the work and rest intervals. Visual feedback on the strength of the muscle activity is provided both on the display screen and on the continuous light display. Audio feedback is also available on a variable setting, if desired. At the end of a workout, the device displays the average muscle readings for the session. It's therefore very easy to judge progress as this figure increases over time



Fig 5: Home use devices

Up till now, there is no consensus on recommendation for clinical practice regarding BF-assisted PFMT of PFD. A few good quality randomized controlled studies compared the effectiveness of BF-assisted PFMT to PFMT alone in women with PFD, with the treatment duration ranging from 4 weeks to 6 months and found it to be more effective.^{3,4,5} On the other hand, another study found no significant differences in the outcomes measured including objective or subjective cure rates, quality of life or social activity.⁶

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Surgical Treatment of Genital Prolapse in Nulliparous Women

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Uterovaginal prolapse is predominantly a disease of post menopausal women, however nulliparous women constitute about 1.5-2% cases of genital prolapse. In nulliparous prolapse there is congenital weakness of supportive tissues. The desire to preserve the menstrual & reproductive function in young women presents a challenge regarding the choice of a suitable surgery. The operations aim at replacing the weak ligament by various slings abdominally. The point of attachment of various slings varies according to the technique used.

Etiology¹

- Connective tissue disorders
- Congenital defect of pelvic floor muscle along with exstrophy of bladder or congenital spine defect or spina bifida occulta.

If a woman is found to have uterovaginal prolapse on examination but has no symptoms, then it would be inappropriate to offer any surgical treatment and either observation or conservative therapy would be best. If symptoms are mild, then pelvic floor physiotherapy is offered but there are no randomized controlled trials examining the effectiveness of physiotherapy on prolapse. Silicon rubber-based ring pessaries are the most popular form of conservative therapy. They are inserted into the vagina in much the same way as a contraceptive diaphragm and need replacement at annual intervals.²

The aim of surgical repair is to

- Restore anatomy and function.
- Prevent recurrence in future.
- Maintain child bearing potential.
- Maintain menstrual function.
- Course of normal labor and delivery should not affect the repair.
- Definite treatment for nulliparous prolapse patients.

Operations for nulliparous prolapse

1. Sling-abdominal, laparoscopic
2. Transvaginal sacrospinous fixation

Abdominal sling operations

These procedures are indicated when the ligaments are extremely weak and reproductive function is to be preserved. Principle of the procedure is that a fascial strip or prosthetic material is fixed to the cervix and then to the abdominal wall, sacrum or pelvis. Cystocele, rectocele repair if needed can be done vaginally before or after but enterocele repair can be done abdominally if required.

The various abdominal sling surgeries are:

- Shirodkars posterior sling
- Purandare's anterior cervicopexy
- Khanna's sling
- Virkud's composite sling
- Joshi's sling
- Sacrocervicopexy.

Shirodkars sling operation

Dr V.N. Shirodkar used fascia lata femoris for strengthening the uterosacral ligaments and fixation to the sacral promontory retroperitoneally, now replaced by mersilene tape. Mersilene tape has a definite advantage over fascia lata as it is inert material, non absorbable, non irritant with predictable tensile strength.

Shirodkar's Sling operation plays an important role in the conservative management of prolapse in the child bearing age group. It does not affect fertility and course of normal labour in fact it improves it by maintaining the pelvic anatomy.³ Tape is fixed to the posterior aspect of isthmus and sacral promontory which is difficult to perform but anatomically correct (Fig 1).

Advantages:

Conception rate post surgery is reported as 41.37% and most patients delivered normally. Only 0.02% required L.S.C.S. for obstetric indications.³

Disadvantages:

Technically difficult because of mobilization of sigmoid colon, hence short sigmoid mesocolon is relative contraindication for this surgery.

Complications that can occur include sigmoid colon and sigmoid mesocolon injury, geintofemoral nerve irritation, damage to ureter, recurrence, osteomyelitis and bowel obstruction.

Recurrence rate: is less than 1%.

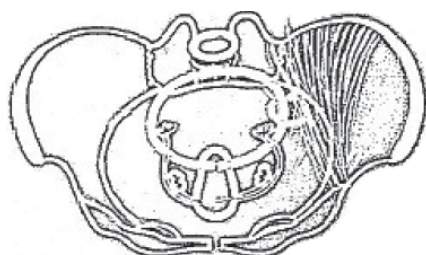


Fig 1: Shirodkar Sling Operation

Purandare's cerviophe

Fascial strips of rectus sheath are anchored to the anterior aspect of uterine isthmus. The sling is fashioned out of the rectus sheath and directed extraperitoneally between the leaves of the broad ligament on either side, to be fixed at uterine isthmus (Fig 2).

Advantages:

It is easy to perform, provides dynamic support with minimal blood loss.

Disadvantages:

- It alters pelvic anatomy by obliterating UV fold
- Vagina is being pulled forward so there are increased chances of enterocele formation
- Uterus does not stay anteverted, its axis get altered
- It interferes with cervical dilatation during labour; and in case of caesarean section, lower segment incision can cut through the support
- Recurrence rates are high.⁴



Fig 2: Purandare Cervicophe

Modification of Purandare sling surgery: Purandare and Mahatre attempted to modify the procedure by drawing the slings behind through avascular gaps between the uterine side wall and the uterine wall and fixed the slings behind the uterus at its isthmus. they further replaced the fascial slings with non tissue reactive mersilene tapes which are attached to the uterine isthmus posteriorly and to the rectus sheath anteriorly at the level of the anterior superior iliac spines.⁵

Khanna's sling operation

In this operation, the sling is fixed posteriorly with three sutures of 4.0 black silk. The ends of the tapes

are directed laterally between the leaves of the broad ligament on either side and anchored to ant superior iliac spine close to the attachments of the inguinal ligaments (Fig 3). These artificial supports mimic the Makenrodt's ligament in holding up the uterus.

They do not interfere with uterine anteversion.

It is easier to perform and safer.⁶



Fig 3: Khanna's Posterior Sling Operaton

Joshi's sling

Anterior surface of uterus at the level of internal os is suspended to the pectineal ligament on both sides with mersilene tape through Cherney incision (Fig 4).

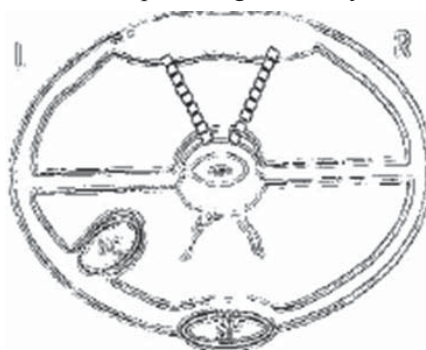


Fig 4: Joshi's Sling Operation

Virkud's composite sling operation

Tape is anchored from the posterior aspect of isthmus to sacral promontory on the right side and anterior abdominal wall on the left side with plication of uterosacral ligament.

This operation combines the principles of the Shirodkar and Purandare procedures to evolve a composite operation in which a 30 cm long mersilene tape is affixed at its centre to the uterine isthmus posteriorly, the right limb of the tape is brought in front of the sacral promontory extraperitoneally, and fixed to the front of the sacrum, the left limb of the tape is directed between the leaves of the left broad ligament into the internal inguinal ring to pierce the transversalis fascia, then turned medially to fix at linea semilunaris between rectus muscle and the sheath (Fig 5). To prevent dextrorotation, the left uterosacral ligament is plicated.

Advantage:- It combines the virtues of a static (attached to bone- a fixed point) and a dynamic (attached to the rectus sheath sling). Since it provides an open sling support, there is no risk of bowel obstruction later on.⁵

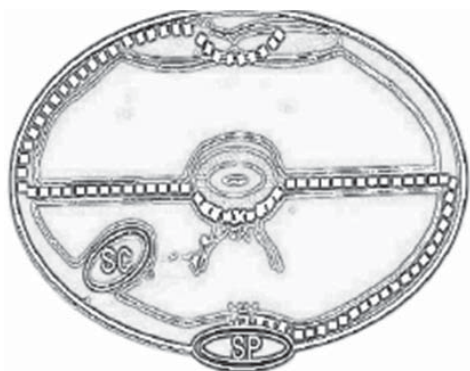


Fig 5: Virkud's Sling Operation

Soonawala's unilateral posterior sling

A double stranded prolene no.1 mounted on a large atraumatic needle is used. It is anchored posteriorly to the anterior longitudinal ligament close to the promontory. The needle is then passed extraperitoneally anteriorly along the right uterosacral ligament towards the isthmus of the uterus posteriorly and anchored there by taking a bite into the uterine musculature. The path is retraced extra-peritoneally to come back to the front of sacrum and anchored to S1 vertebra. The two ends are pulled to elevate the uterus to the desired level in the pelvis and then tied securely. The incised peritoneal edges are approximated (Fig 6).

Advantages: It does not interfere with cervical dilatation during labour

Recurrence of prolapse after child birth is very small.

It does not carry the risk of injuring or adversely affecting ureter or large bowel because it is restricted to the right side only.⁵

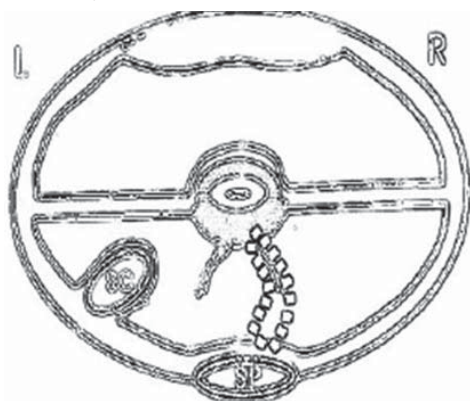


Fig 6: Soonawala's Sling Operation

Sacrocervicopexy

Synthetic mesh is attached to the anterior endopelvic fascia and to the anterior longitudinal ligament of the sacral promontory. Anterior and posterior colporrhaphy is performed when necessary. The success rate is 98.4% for the central compartment, 94.2% for the anterior compartment, and 99.2% for the posterior compartment.

It is effective in correction of descent, maintains anteversion, no compression on rectum or ureter.⁷

Laparoscopic cervicopexy/ sling operations

All types of sling operations can be better performed by laparoscopy. Associated vaginal prolapse can also be repaired laparoscopically (paravaginal repair). Vaginal anterior and posterior colporrhaphy can be done before and after laparoscopy.

Advantages: small incision, better view, no packing, minimal tissue and bowel handling, short recovery, less pain, insignificant scar.

References

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Meet the Luminary

Dr M Kochhar

It was indeed a pleasant experience for us to meet the gentle and calm dignitary, Dr M Kochhar, a passionate clinician and a prodigious teacher who has instituted prevailing technologies in the field of female sterilization. As she started recollecting the experiences of her professional life, we were simply intimidated by her prescience, diligence and the opulence of her achievements.

Dr Rekha Bharti, Dr Harsha S Gaikwad

Birthday 16 th July	Place of birth Rawalpindi, Pakistan	Graduation Lady Hardinge Medical College (1955)	Post-graduation DGO, University of Bombay; MRCOG; FRCS; ECFMG; FRCOG
If not a doctor, what would you have been? Since childhood only I wanted to become a doctor.		Any regrets? No regrets, achieved almost everything.	What ruins your day? Seeing poverty
One habit you want to leave? I talk too much & advise a lot, I feel I should not be doing this		What makes your day? At this stage, coming to the hospital and working makes my day.	
High point of your life- When my IVF patient conceives		Your favourite book- Reader Digest	Your favourite pastime- Listening to kirtan
		Favourite Food- Papri chaat, Bhalla chaat and non-vegetarian food	



How do you de-stress? By watching TV, reading newspaper, going to the library or gossiping with colleagues. The faculty at Gangaram Hospital is very cooperative, we are like a family.

One habit that you are proud of- I don't scold or fight, try to ignore remarks. I never shout at anyone. During my 20 years at Kasturba Hospital none of my staff ever participated in any kind of strike.

Your professional journey- After premedical from Lucknow, I came to Delhi and did MBBS from Lady Hardinge Medical College. Those days there was only one seat for MD Gynae which I could not get, so did my DGO from Bombay and then went to England, there I did FRCS and then MRCOG. After working for 5 years in England I came to Delhi in 1963 and joined as a senior gynaecologist at Hindu Rao Hospital, thereafter I was made Medical Superintendent of Kasturba Hospital, it was a 10-15 bedded hospital that got expanded to a 500 bedded hospital during my tenure. I was the Medical Superintendent for 20 years, started laparoscopic sterilization and Intrauterine insemination at Kasturba Hospital. I took training in infertility from America and laparoscopy training from Japan. I was the first one to start laparoscopic sterilization in Delhi and first to start IUI in North India. Government of India and JHPIEGO recognized me as a trainer for culdoscopy and laparoscopic sterilization. In 1988, I joined Sir Gangaram Hospital. I worked for 2-3 years in gynae department and then shifted to infertility unit, since then I am working in infertility department. My first IVF baby was born in 1991; we celebrated his 25th birthday last

week. I am still doing ovum aspirations and embryo transfers, come in the morning at 9 am for academic classes and enjoy learning from the fellows.

What motivated you to take up this profession- I belong to a conservative family in Pakistan, but my maternal grandfather and uncle were doctors. I also wanted to become a doctor and wanted to serve people

What inspired you to become a gynaecologist? I was interested in surgical field and so I choose gynae.

Any unfulfilled tasks? Wanted to start IVF centre at Kasturba Hospital

Helpless moment of your early professional life? Never felt helpless till my first IVF baby failed.

Your current state of mind – Satisfied and peaceful.

A piece of advice you want to give to budding gynaecologist- Be honest in your work, keep your knowledge up to date, do what you feel like but be nice to your patients, take help of others if needed, don't feel ashamed. Keep good health and be nice to your husband, mother-in-law and servants.

What does AOGD mean to you? AOGD, FOGSI and IFS hold a very special place in my life.

Awards & Achievements-

Awards- Long service in Gangaram Hospital, 2009; Life time achievement by Indian Fertility Society, 2011; 25 years of service in Gangaram Hospital, 2013.

Achievements- Programme director, Govt. of India, post-Partum Programme, since 1969; Recognized by JHPIEGO in 1978 to train senior Gynaecologists in laparoscopy; Under Dr M Kochhar, MOHFW established one of the three centres in the country for training in laparoscopic technique; In 1976, held a laparoscopy course in Kasturba Hospital and trained 20-25 gynaecologists from all over the country; WHO consultant for obst. & gynae for short term at Kathmandu, Nepal, Kabul, Afghanistan and Dhaka, Bangladesh; Member of International Editorial Advisory Committee of the population information programme (USA), since 1970, Elected member for American Association of Gynaecologic Laparoscopists, since 1970; Ex member of the technical Advisory Committee of the GOI on all technical problems in connection with Family Welfare Programme.

Pre Congress Workshops of the International Conference on Critical Care in Obstetrics

The two pre-Congress workshops- ABC of critical care obstetrics and medicolegal issues in critical care obstetrics were highly appreciated by the delegates. Both the workshops were held at Safdarjung Hospital on 12th February 2016. The halls were jam packed and the enthusiasm of the delegates was so great that the sessions carried on till late in the evening! The formal inauguration of the Critical Care Unit (Obs & Gyane) at Safdarjung Hospital by DGHS Dr Jagdish Prasad was one of the highlights of the day.



International Conference on Critical Care in Obstetrics

International Conference on Critical Care Obstetrics was held at Hotel Grand on 13th and 14th February 2016. It was organised by AOGD under the aegis of FOGSI. The dynamic leadership of Dr Alka Kriplani and Dr Pratima Mittal and the exemplary organisational skills of Dr Alpesh Gandhi, Dr Sunita Malik and Team AOGD, made this unique conference a wonderful academic treat for the delegates. The scientific content of the conference included total of 17 scientific sessions, 8 panel discussions, 7 key note addresses, 2 pre-congress workshops and a novel idea of 4 round table discussions to formulate various protocols and check lists. The presence of stalwarts like, FIGO President, Dr C.N Purandare, RCOG Senior Vice President, Dr Paul Fogarty and Dr Arulkumaran took the conference to a different level altogether. A very lively exhibition was also put up, the highlight of which was an obstetric ICU set up with all the essential equipments on display. A very useful souvenir comprising of 18 different topics related to obstetric critical care was released on the occasion which has been highly appreciated by the delegates.







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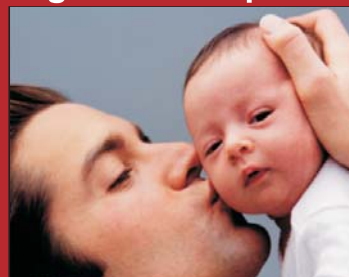
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Subfertility and Reproductive Endocrinology Course Monday 11 – Tuesday 12 April 2016	The Assisted Conception Course Wednesday 13 – Thursday 14 April 2016
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Registration Fee (less than 13% of UK registration charges £730). No spot or late registration after 31 March 2016

For a complete coverage of the subject, it is recommended to attend all 4 days. However delegates have the option of attending only "Subfertility and Reproductive Endocrinology Course" on 11 & 12 April or "The Assisted Conception course" on 13 & 14 April 2016, at the specified registration fee.

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Vesico Vaginal Fistula: Investigations and Principles of Management

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Vesico-vaginal fistula (VVF) is epithelium lined communication between urinary bladder and vagina. Aetiology of VVF varies between developed and developing countries: in developed countries, it is usually a result of gynaecological surgery, radiotherapy, trauma, severe pelvic pathology, whereas prolonged and obstructed labour is a major contributor in developing countries.^{1,2} It has profound social impact and is distressing to the patient and her family therefore meriting prompt diagnostic work up and timely planned management.

Clinical presentation

VVF usually appear between 1-6 weeks after gynaecological or obstetric surgery, whereas radiation induced fistula can present years after the primary insult. Patient presents with either continuous leakage of urine per vagina or intermittent leakage accompanied by normal voiding depending on the location and size of fistula.¹⁻³

Diagnosis

The plan for surgical treatment depends upon proper evaluation of size, number and anatomical site of fistula. Diagnosis can be confirmed by instilling methylene blue into the bladder through Foley's catheter and asking patient to ambulate. Double dye test is useful to differentiate between VVF and uretero- vaginal fistula (UVF). It includes oral administration of pyridium (200mg TDS) a day prior to test. On the next day, three cotton swabs or a tampon is placed in the vagina and 100ml methylene blue instilled into bladder with Foley's catheter. After removing the catheter patient is allowed to ambulate. After 2 hours, swabs or tampon is inspected for the colour of staining. If stained blue, it confirms VVF, whereas orange stain indicates UVF. If stained both blue and orange, it indicates complex fistula. Care should be taken for urethral leak of blue stained urine which can stain outermost swab or distal end of tampon. Further, cystoscopy and vaginoscopy should be used to confirm size, site and number in relation to ureteric orifices. To confirm smaller fistula, an attempt to pass small calibre ureteric catheter into the fistulous tract should be made.¹⁻³

Intravenous pyeloureterogram may be required to rule out concomitant UVF prior to surgery. Other advanced but costly available tests include 3D CT-Urography,

magnetic resonance fistulography and endocavitary ultrasound. Biopsy from fistula margin should be taken, if there is history or suspicion of malignancy. Physical examination prior to surgery is vital to success as signs of acute inflammation, edema and necrosis mandates surgery to be postponed till its resolution.^{1,2}

Conservative treatment

Trial of conservative treatment is recommended for small (preferably <0.5cm), clean, non-malignant VVF, which include continuous catheter drainage, antibiotic, if indicated, fulguration of fistulous tract and use of fibrin glue. If fistula is diagnosed early and tract is not epithelised then continuous catheter drainage and anticholinergic drugs upto 4-8 weeks can result in closure of fistula. Once the fistulous tract gets epithelised, electrocoagulation of mucosal layer with or without fibrin glue and continuous catheter drainage can lead to closure. Fibrin glue plugs the fistula and inhibits fibrosis allowing healing to occur by in growth of tissue from the margin. All these approach had varying degree of success depending on etiology, size and site of fistula. Large case series are lacking in literature to draw a definite conclusion.¹⁻⁴

Surgical treatment

Timing of surgery: Although there is no consensus on the timing of surgery, it should aim to find balance between the wish of the patient to be free from urinary loss and to wait for the optimal conditions of fistula for closure. The classical approach is to wait for 3-6 months to allow for inflammatory changes to subside. However, early repair of simple, iatrogenic fistula has been found to be highly successful and helps minimizes the social and psychological disruption to the patient's life.^{1,4}

Surgical repair: The principals of VVF repair remains the same irrespective of surgical technique used. The repair include: a] separation of vaginal and bladder wall, b] tension free, multilayered and watertight closure of healthy bladder and vaginal wall, c] avoid overlapping suture lines, d] placement of vascularised interposition flap (omentum, Martius flap, etc), e] adequate drainage of urinary bladder postoperatively. Care should be taken during the repair as first repair is most successful.^{2,4}

Type of surgical approach depends on type and location of fistula, surgeon's experience, patient's choice among others.

Transvaginal repair: Advantages of this approach include a] avoids laparotomy and splitting of bladder and thus consequent postoperative bladder irritability, b] lesser morbidity and blood loss, c] less postoperative pain, d] results as successful as abdominal approach.

Contraindications: circumferential induration of vaginal epithelium around the fistula >2cm, concomitant abdominal pathology, fistula requiring ureteral reimplantation, involvement of other pelvic structures, vaginal stenosis, or inability to obtain proper exposure.

The two common transvaginal technique include: a] Latzko procedure or partial colpocleisis for small vaginal vault VVF and b] vaginal flap technique with interposition Martius flap for larger fistula. Transvaginal repair has success rate in the range of 92-98%.^{1,2,4-6}

Transabdominal approach: Indications for this include a] Inadequate per vaginal exposure of fistula, b] multiple supratriangular fistula, c] ureteric reimplantation is required, d] coexisting pelvic pathology, e] complex fistula including recurrent and radiation fistula, f] bladder augmentation is required. This approach allows use of omentum as well vascularised interposition flap.

The commonest technique is O'Connor procedure with the modification limiting bladder bi-valving to posterior wall cystotomy extending to the fistula. Abdominal approach has success rate in the range of 94-100%.^{1,2,4,6}

Laparoscopic repair: Indications of laparoscopic approach are same as transabdominal one. Advantages include: a] less morbidity, b] Lesser blood loss, c] shorter hospital stay, d] excellent magnified view. Disadvantage of laparoscopic repair of VVF include steep learning curve including challenging intracorporeal suturing.

Success rate of laparoscopic repair is reported as high as 100%.^{1,4,7,8}

Robotic repair: It has the advantage of 3D magnified vision and ease in intracorporeal suturing in the pelvis, whereas the cost of installing robotic system and consumable are major hurdle. Early reports suggest excellent outcome but it need to be evaluated further in randomized controlled trials to confirm the reported success.⁴

Postoperative care: The aim of post operative care is to keep suture line dry and uninfected. Vaginal pack should be kept for a day. Continuous catheter drainage is of utmost importance either by per urethral Foley's catheter alone or in combination with a suprapubic catheter. Care should be taken so that catheter does not get blocked as it may lead to failure of surgery. High input-output is maintained till urine becomes clear. The use of antibiotics is advised for the period till the catheters are in situ. Anticholinergics should be added in postoperative period

to keep detrusor muscle silent and thereby no tension on the suture line. In case of doubt, cystography should be done 3-4 weeks after surgery to confirm the success of repair. Catheter can be removed after 3 weeks. Sexual intercourse should be avoided for three months.^{1,2}

Complications: It includes urinary frequency, urgency, stress/urge/mixed incontinence, ureteric obstruction, recurrence.

Recurrent fistula

Success rate of non radiation VVF repair is reported be in the range of 70-100% with either vaginal or abdominal route. Multiple fistula, large fistula, complex fistula involving cervix or urethra, obstetric fistula, urinary infection are some of the risk factors for recurrence. Complete evaluation of kidney, ureter, bladder, urethra and vagina should be done prior to attempting repair of recurrent fistula.^{1,2}

Ureterovaginal fistula

In early stages, a DJ stenting of affected ureter can lead to healing. Once the fistula tract matured, it can be repaired by separating the ureter from vagina and reimplanting the ureter.¹

Summary

VVF is one of the most distressing complications of obstetrics and gynecological surgery, having profound psycho-social impact on the patient and her family. It needs thorough evaluation of VVF and timely repair by the technique the operating surgeon is experienced with, as the argument regarding best route of repair is still on. Principles of repair of fistula need to be adhered with as first attempt has the maximum chance of successful repair.

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Surgical Management of Stress Urinary Incontinence

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The urinary continence in women is maintained by complex interplay of anatomic and physiologic properties of lower urinary tract including bladder, urethra, sphincter and pelvic floor muscles which are under the control of central and peripheral nervous system. The pelvic floor supports both the bladder and the urethra and also facilitates normal abdominal pressure transmission to proximal urethra and hence maintains continence. Stress urinary incontinence is a symptom, sign and a clinical diagnosis in which there is an involuntary leakage of urine associated with increased intra abdominal pressure such as sneezing, coughing or straining. The International Continence Society defines urodynamic stress incontinence as the involuntary loss of urine during increased intra-abdominal pressure during filling cystometry, in the absence of detrusor (bladder wall muscle) contraction¹.

The approach to treatment of incontinence is contingent on a clear understanding of the cause and pathophysiology underlying the patient's symptoms. The clinician must first determine whether the cause of the symptom is a bladder or an outlet problem, or, not uncommonly, a combination of both. The treatment includes conservative techniques, pharmacologic and surgical interventions. The aim of surgical procedures is to provide support to the urethrovesical junction and improve deficient urethral closure. The surgery usually addresses the failure of normal anatomic support of bladder neck and proximal urethra and intrinsic sphincter deficiency.

The operator's preference, anatomic features of the patient, co existing problems and general condition influence the type of the procedure. The various surgical methods described are open retropubic colposuspension, laparoscopic retropubic colposuspension, suburethral sling procedure, needle suspension, periurethral injection, artificial sphincter and vaginal anterior repair (anterior colporrhaphy).

Open retropubic colposuspension

This is the surgical approach of lifting the tissues near the bladder neck and proximal urethra into the area of the pelvis behind the anterior pubic bones. There are four variations of open retropubic colposuspension: **Marshall-Marchetti-Krantz (MMK)**, **Burch, vagino-obturator-shelf (VOS)**, and **paravaginal procedures**.

The *Burch colposuspension* is the elevation of the anterior vaginal wall and paravesical tissues toward the ilio-pectineal line of the pelvic sidewall with use of two to four sutures on either side (Burch, 1961).

The *VOS repair* aims to anchor the vagina to the internal obturator fascia and is a modification of a combination of the Burch and paravaginal defect repair, with placement of the sutures laterally, anchored to the internal obturator fascia rather than hitching the vagina up to the iliopectineal line².

The *paravaginal defect repair* aims to close a presumed fascial weakness laterally at the site of attachment of the pelvic fascia to the internal obturator fascia (Richardson et al, 1976).

The *MMK procedure* is the suspension of the vesicourethral junction (bladder neck) toward the periosteum of the symphysis pubis (Marshall et al, 1949) and was thought to act by buttressing the paraurethral area and bringing the vesicourethral junction into a more elevated "intra-abdominal" position. Laparoscopic colposuspension is the most popular of the laparoscopic incontinence procedures that was first introduced in the early 1990s (Vancaillie and Schuessler, 1991).

The intraoperative and perioperative complications that may occur after a retropubic suspension include-bleeding, injury to genitourinary organs, pulmonary atelectasis and infection, wound infection or dehiscence, abscess formation, venous thrombosis or embolism, postoperative voiding difficulty, detrusor over activity, and vaginal prolapse. Potentially, it is over correction of the urethrovesical angle that may be a major contributory factor in the development of the long-term complications of urgency, voiding dysfunction, and enterocele formation.

Urethral slings

Urethral slings are currently the procedure of choice for the surgical correction of female SUI. A variety of materials (autologous, allograft, xenograft, and synthetic) and techniques have been pursued for sling placement. The concept of slings for urethral support was first introduced in 1907 by D. Von Giordano (1907) as a gracilis muscle graft wrapping around the urethra.

The pubovaginal sling is positioned at the bladder neck to provide urethral compression without obstruction during

times of increased intra abdominal pressure. The ultimate goal is to provide adequate urethral coaptation and increase urethral responsiveness to abdominal pressure. This must be balanced against the risks of ischemia, retention and erosion from unnecessary tension. Aldridge's (1942) earliest anatomic descriptions left the sling attached to the rectus fascia in the midline. This limits sling mobility and provides no method for avoiding excess tension, often resulting in outlet obstruction. McGuire and Lytton (1978) modified this technique with a longer, 12-cm strip of rectus fascia that remained attached to the rest of the rectus fascia laterally on one side. Again, this technique was limited because with one side attached there was also no way to adjust the tension. The present concept of the PVS comes from Blaivas and Olsson (1988), who modified McGuire's technique by using a shorter free graft of rectus fascia whose tension could be adjusted. It is the incorporation of the sling into the endopelvic fascia and subsequent fibrosis, and not entry into the retropubic space, that prevents SUI. The width (2 to 3 cm) of the PVS ensures that there is sufficient support to provide the needed urethral compression and a cross-sectional area adequate to avoid the formation of a narrow constricting band. The ideal PVS material requires longevity and durability to allow for strong sling scaffolding, and the material should be incorporated and remain intact, with limited tissue reaction. Autologous, allograft, xenograft, and synthetic materials have been used for the construction of a PVS.

The autologous PVS is associated with cure rates of 46% to 97% with variable measurements of outcome used. De novo urgency and urgency incontinence rates are also variable. There are no risk factors that consistently predict outcomes after a PVS. The reported cure rate of PVS surgery for recurrent SUI is excellent. Autologous PVSs serve an important role for providing continence and robust tissue coverage in urethral reconstruction (urethral fistula, urethral diverticulum, destroyed urethra).

The incidence of PVS perforation and exposure is partially dependent on the composition of sling material. Synthetic slings perforate 15 times more often into the urethra and are exposed 14 times more often in the vagina than autologous, allograft, and xenograft slings.

Ideally, a retropubic or transobturator mid urethral sling is placed loosely at the midurethra. Its function does not require it to be tight. The sling is anchored in the endopelvic fascia for retropubic-directed slings and in the obturator internus and externus muscle and fascia for transobturator-directed slings. Over time the synthetic mesh sling becomes fixed in either of these two locations and provides support along its entire course

inferior to the pubic symphysis and ischiopubic rami and not just at the midline area posterior to the urethra. For a retropubic mid urethral sling the trocars must pass through the retropubic space, which is also known as the space of Retzius or prevesical space. The transobturator MUS surgery begins with dissection in the vesicovaginal space. This dissection is carried out lateral to the urethra until the inferior border of the ischiopubic rami and pubic symphysis can be easily palpated. A trocar must traverse the obturator internus muscle, obturator membrane, and obturator externus muscle as it goes through the obturator foramen³. The obturator nerve and vessels are located in the obturator canal at the superior aspect of the obturator foramen. UraTape was the first transobturator MUS, and outcomes related to its use were first reported by Delorme and colleagues in 2003⁴. UraTape is a polypropylene microporous sling with a central silicone core. UraTape was replaced by ObTape (Mentor-Porgés) because of a high rate of vaginal exposure, probably related to the silicone core. A second-generation transobturator sling developed by Mentor-Porgés is known as the Aris transobturator tape; it has a larger 200- μ m pore size that allows improved tissue in growth with less encapsulation. A unique transobturator mesh is the BioArc, which has a biologic (porcine dermis, InteXen) graft material that is sutured on either end to the polypropylene mesh. The biologic material actually occupies a suburethral position⁵.

Single incision sling was first approved (Gynecare, TVT Secur) by the FDA in 2006⁶. For single-incision slings the plane of dissection is only in the vesicovaginal space. Although the trocars are much shorter, they are passed into the retropubic space or through the obturator foramen. There are fewer data available regarding the safety and efficacy of this new generation of slings.

A deficient sphincter mechanism is an important risk factor for failure of conventional anti-incontinence procedures. It is difficult to evaluate the efficacy of surgical treatment for ISD because no universally accepted definition presently exists. Artificial urinary sphincter (AUS) insertion dates back to the 1970s. AUS insertion is often carried out after failure of other surgical treatments, but high continence rates have been reported after primary AUS insertion. Webster *et al* published over 90% continence rates at 2.5 years in women with no previous surgery for SUI.

FDA became aware of problems related to synthetic mesh because of information contained in the Manufacturer and User Facility Device Experience (MAUDE) database. According to MAUDE data, from 2008 to 2010 there were 1371 voluntary and involuntary self-reported medical device reports of complications related to MUSs, and a significant portion of those were mesh perforation

and exposure. Small areas of mesh exposure should be treated with sequentially increasing invasiveness. The first treatment should involve observation and then the addition of conjugated estrogen and possibly antibiotic creams. Operative management typically involves excision of the exposed mesh, thorough irrigation with antibiotic solution, and closure of vaginal flaps. Perforation (or injury) of the bladder or urethra refer to trocar passage into the urinary tract at the time of surgery. Trocar injury is generally thought of as a benign condition and no study has shown a link between trocar injury and perioperative hemorrhage, hematomas, or subsequent mesh perforation of the bladder or urethra. Groin and suprapubic pain are potential problems after MUS placement. Thigh and groin pain appear to be more commonly associated with the transobturator approach. Voiding dysfunction is also a common problem. These voiding symptoms are typically the result of obstruction from the sling as a consequence of the sling being placed too tightly or in the wrong location (too proximally) or associated with pelvic organ prolapse (unrecognized preoperatively or denovo); however, some patients may have voiding dysfunction without evidence of obstruction. Varying degrees of sexual impairment have been reported after MUS surgery.

Although pubo-vaginal slings, bulking agents, retropubic suspensions, and AUS insertion are effective treatments for SUI as described above, their use is limited to individual cases and current practice appears to suggest an overwhelming preference for sub-urethral tapes. Newer techniques should be compared to TVT and evaluated in terms of clinical efficacy, patient acceptability, and cost-effectiveness.

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FORTHCOMING EVENTS

- **CME Cervical Cancer Screening and Update on Vaccination** on 3rd March, 2016 from 2.00pm-4.00pm under the aegis of Endometriosis and Endoscopy committee of AOGD. 5th Floor Conference Hall, Fortis Flt Rajan Dhall Hospital, Vasant Kunj.
- **Maternal Fetal Medicine Workshop** on 5th - 6th March, 2016 at MAMC Registration Fee is Rs 1000 for two days. For further details, please contact- M.9968604345; 9968604341.
- **Vistas in Gynae Endoscopic Surgery & Infertility**- Conference & Live Operative Workshop on 5th & 6th March, 2016, organized by Jaypee Hospital, Noida, in association with FOGSI Endoscopy Committee.
- **CME on Cervical Cancer Screening and Colposcopy** with Hands on LEEP Workshop on 12th March, 2016 at MAMC
- **FOGSI - Dr Usha Krishna Quiz** on "Gynaecological Oncology" will be held at VMMC and Safdarjung Hospital on 19th March, 2016. The quiz is open to young FOGSI members only who have completed internship on or after 1st February, 2008. Please send the names of the participants to AOGD Office.
- **CME on Prolapse-revisited** on 25th March, 2016 from 1.00pm-5.00pm at Sir Ganga Ram Hospital, New Delhi.
- Akola Endoscopic Centre & Saket City Hospital will conduct a **Live Laparoscopic Workshop** on 27th March, 2016 at PVR Cinema Theatre, Select Citywalk Mall, Saket, for registrations, Contact - Dr Madhu Goel M. 9810480920
- **North Zone Yuva FOGSI 2016**, organized by Ghaziabad Obstetric & Gynaecological Society at Hotel Country Inn & Suites in Ghaziabad from 1st -3rd April, 2016. Theme topics are Medical Disorders in Pregnancy; Fertility Optimization, Miscellaneous.
- **CME on Urodynamic - Demystified** on 3rd April, 2016, under the aegis of Urogynecology committee of AOGD at Medanta Medicity
- **FABCON 2016** - Fertility & Beyond, FOGSI National Congress on 8th - 10th July, 2016 at Hotel Marriott Jaipur.
- **AOGD Monthly Clinical Meeting** on 1st April, 2016 at ESI Hospital, Basaidarapur.

Recurrent Urinary Tract Infections in Females

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Urinary tract infections (UTI) are the most common adult bacterial infection in the world¹. Until 2000 there was no generally accepted and broadly used definition for recurrent UTI (RUTI) in women. RUTI is defined as three episodes of UTI in previous 12 months or 2 episodes in last 6 months¹⁻³. Every 4th female with history of UTI suffers from RUTI⁴. Considering the magnitude of UTI, recurrence represents a substantial social cost⁵. Despite its common occurrence RUTI is still widely misunderstood and is a challenging problem for treating clinicians.

Etiology: RUTI is caused by repeated ascending infection or chronic/persistent infection in bladder. Repeated ascending infection occurs by the intestinal flora through fecal-perineal- urethral route. It begins with colonization of vagina and peri-urethral area with the uropathogens such as E. coli. The uro-pathogens subsequently colonize and infect the urinary bladder. The persistent or chronic bladder infection is as a result of progression of transient intracellular bacterial communities (IBC) into persistent quiescent intracellular reservoirs (QIR). It has been seen that within 12 hours post infection 50 percent of bacteria are intra-cellular⁶. These IBC can stay quiescent for long time and start creating new acute infection in suitable time. Bacterial persistence must be segregated from re-infections through an analysis of the recurrence pattern. Bacterial persistence tends to manifest as frequent infections caused by same organisms that occurs at short intervals. On the other hand, re-infections may be spaced by long and irregular periods and caused by different bacterial species.

Risk Factors: There are many risk factors for RUTI In premenopausal and postmenopausal patients (Table 1). Certain behaviors such as pre and post coital voiding, frequency of urination, delayed voiding habits, wiping patterns, douching, hot tub usages, choice of clothing and body mass index are not significant risk factors for RUTI.

Table1. Risk Factors for RUTI

Premenopausal	Postmenopausal
Frequency of intercourse	High PVR
Use of spermicides	Cystocele
Age of first UTI < 15 years	Vaginal prolapse
UTI in mother	Change in vaginal flora
Significantly shorter anal- urethral distance of < 4.5cm.	Urinary incontinence.

RUTI is due to **relapse** (infection with same bacteria with in 2 weeks despite complete treatment) or by **re-infection** (with same bacteria after a negative urine culture or at least 2 weeks after the previous episode).

Classification of RUTI: Recurrent UTI is classified as

1. Uncomplicated Recurrent UTI: Recurrent UTI without any co-existing anatomical or functional abnormality in the urinary tract.
2. Complicated UTI: RUTI with an underlying anatomical or functional abnormality in the urinary tract (see Table 2)

Recurrent UTI can also be classified according to part of the urinary system involved e.g cystitis (infection of urinary bladder) or pyelo-nephritis (infection of renal parenchyma). These classifications are important for epidemiological and data collection along with being a guide to the treating doctor for the appropriate treatment.

Table 2: Causes of Complicated UTI

Cystocele,
Urethral/ bladder diverticulum,
Uro-genital fistulas,
Foreign bodies any surgery or hospital acquired infections),
Functional abnormalities (neurogenic bladder, pelvic floor abnormalities, urinary incontinence),
Obstructive Uropathy (bladder outflow obstruction, urinary strictures, UPJ obstruction, indwelling catheter, ureteral stent or nephrostomy tube)
Others: diabetes, pregnancy, renal failure and immunosuppressant

Pathogenesis: The bacteria originate from the rectal flora colonize the introital area and from there ascends up in urinary bladder causing inflammation and, occasionally sepsis. The pathogenesis involves a complex interaction between the uropathogen and the host (Table 3). E.Coli is the commonest uropathogen in ambulatory (85%) as well as unambulatory (50%) women. Staphylococcus Saprophyticus is responsible for 10 to 15 percent of cases of RUTI. Other less common uropathogens are Enterococcus, Klebsella, Enterobactor and Proteus sp. Psuedomonas and Proteus sp are relatively more common in patients with chronic catheterization or spinal cord injured patient with indwelling catheter or any other structural abnormality of urinary tract.

Table 3: Pathogenesis of RUTI

Host Factors	Uro-pathogen factors
Unobstructed urine flow washouts the uropathogen and prevents colonization	Fimbriae (Pili) facilitates the adherence of uropathogens to the urothelial cells
Uro-mucoid, mucopolysaccharides and immunoglobulin inhibits bacterial adherence to bladder mucosa	Virulence due to endotoxins, exotoxins, hemolysins help bacterial invasion
Vaginal lactobacilli reduce the growth of uropathogens by maintaining low pH in premenopausal women.	Antibiotic resistance due to reduced drug accumulation by active efflux or antibiotics inactivation (by beta-lactamases)

Diagnosis: The clinical features and diagnostic testing are similar to those of single cases of UTI. The classical symptoms of cystitis are frequency of urine, dysuria, urgency, urge incontinence and supra-pubic pain. Presence of flank pain, fever or hematuria indicates to rule out upper tract involvement. The physical examination should be done for supra-pubic tenderness or renal angle tenderness.

Investigations: *Urine routine microscopy* has high sensitivity and specificity (pyuria is more sensitive parameter than bacteriuria). Pyuria is defined as > 10 WBCs per high power field in centrifuged urine specimen or >10 WBCs per cubic ml by hemo-cytometer.

A positive urine culture with colony count of > 1, 00,000 per ml is gold standard to diagnose the UTI however in symptomatic patient > 100 CFU per ml is the standard for diagnosing the UTI⁷.

Imaging studies: USG should be done in case of complicated Recurrent UTI to detect hydronephrosis, pyonephrosis or any renal damage. Role of Plain X Ray KUB is present if suspicion of foreign body or stone is there. Cystourethroscopy is rarely needed when the foreign body is not radio-opaque. Overall cystoscopy and radiological investigations are not required frequently⁸.

Management of RUTI: All the reversible risk factors should be corrected. Treatment for UTI and RUTI is similar in that the first line of defense involves antibiotic therapy. Trimethoprim/sulfamethoxazole (TMP-SMX), fluoroquinolones (Ciprofloxacin), b-lactams, and nitrofurantoin (Macrobid) are the most common antimicrobial agents used in daily practice. For better treatment of RUTI it is important that the clinician feels confident and competent in the following areas

1. Appropriate conditions where long term antibiotic prophylaxis is needed and what should be considered prior to antibiotic prophylaxis.
2. What are the first line choices for antibiotic prophylaxis

3. When it is appropriate to stop the antibiotic prophylaxis
4. What action to take if the patient relapses after the cessation of prophylaxis.
5. Episodes of asymptomatic bacteruria appear to prevent symptomatic recurrence and should not be treated except in pregnant women.

Treatment of initial presentation of Recurrent UTI

Following measures to be taken prior to starting the antibiotics

- a. Encourage better hydration to ensure frequent urination to flush the uropathogens.
- b. Request for urge initiated urine voiding and postcoital urine voiding.
- c. Sexually active females should be explained about the risk factors like diaphragm and spermicidal and discourage their use.
- d. Cranberry juice to be used for the recurrence.
- e. Start symptomatic treatment with paracetamol (preferable) or ibuprofen.
- f. Check the compliance for the previously used antibiotics for original UTI.
- g. Urine sample for culture should be collected before starting the antibiotics.
- h. If the infection is not confirmed on culture consider for other possible causes for the symptoms.
- i. If Symptoms are mild consider withholding antibiotics until culture results available.
- j. If the symptoms are moderate to severe offer nitrofurantoin or trimethoprim while waiting for culture.
- k. If the urine culture shows that the organism is resistant to the current antibiotics, change to culture sensitive antibiotics (use trimethoprim, nitrofurantoin or amoxicillin over quinolones, cephalosporins and co-amoxiclav to reduce the risk of C. difficile infection).
- l. For recurrent cystitis associated with sexual intercourse offer trimethoprim 100 mg to be taken with in 2 hours of intercourse.
- m. For post menopausal women with risk factors i.e atrophic vaginitis prescribe intra-vaginal or oral estrogens. This is more useful in patients with infected with antibiotic-resistant uropathogens.
- n. For post menopausal women with no obvious risk factors, consider referring to the urologist for further evaluation.

If above measures fails to treat the problem then follow as below:

- a. Consider urinary tract ultrasound and PVR (to detect stones, cysts or tumors or other abnormalities or any voiding dysfunction).
- b. If investigations are normal and problem continues consider prescribing low dose prophylactic antibiotics for 6 months.

Use of Prophylactic antibiotics: If the simple steps have not resolved the infection, prophylactic antibiotics may be considered. There are no ideal antibiotics for the prophylaxis of UTI because all are associated with either resistance or adverse effects.

Continuous low dose antibiotics: Continuous low dose antibiotic prophylaxis is effective in preventing the RUTI especially when the degree of discomfort is high during the episode of infection. The long term antibiotic prophylaxis can be given at night using nitrofurantoin, trimethoprim alone or with sulphamethoxazole or norfloxacin. Long term prophylaxis can be given for 6 to 12 months and in exceptional cases up to 2 to 5 years

Self commencement antibiotics: Women who are not willing to take long term antibiotics can be advised to initiate antibiotics at the onset of their symptoms⁹⁻¹⁰

Conclusion

RUTI is a prevalent and challenging condition among women of all ages. Majority of the infections are as a result of repeated re-infection or bacterial persistence. The majority of infections are uncomplicated and respond well to appropriate antibiotics. Few women have complicated UTI and need further evaluation and treatment. RUTI management remains difficult with treatment largely based on antibiotic regimens of various durations. The use of prophylactic antibiotics for 6 to 12 months is effective in reducing the number of recurrent UTI but no antibiotic is significantly better than others at decreasing the number of recurrence. Use of cranberry juice and oestrogen cream in post menopausal women is thought to decrease the exposure of antibiotics.

Important practice points

- Every fourth female with UTI will suffer from recurrence.
- Sexual intercourse is the most common risk factor in healthy young female.

- Commonest uropathogen causing recurrent UTI is *E. coli*.
- Patients should be investigated to find any cause of recurrence.
- There is no association between pre- and post-coital voiding patterns, douching, use of hot tubs, frequent use of pantyhose or tights or BMI.
- There are various approaches to prevent recurrences i.e. long term or post-coital prophylaxis and self initiated therapy.
- Recurrence may happen when long term antibiotic prophylaxis is stopped.
- Use of oestrogen and cranberry juice are useful prophylactic adjuncts.

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Vault Prolapse: Management Principles

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The numerous attempts to repair vault prolapse in the literature suggest that this condition is a significant problem and remains a challenge for the gynecologist. The incidence of post-hysterectomy vaginal prolapse (PHVP) varies from 0.2% to 43 %¹. Preventing vaginal vault prolapse is an essential part of both abdominal and vaginal hysterectomy. Although more than 40 procedures to prevent vault prolapse have been proposed, few have succeeded in fixing the vagina in its normal anatomic position, which is 5 cms below the S2 and 5 cms medial to the ipsilateral ischial spine. Distortion of the position of the vaginal apex, whether in an anterior or posterior direction, or skewed laterally, can contribute to dyspareunia and recurrent prolapse opposite the vaginal vault. The normal vaginal axis lies superior to the levator plate almost horizontally, parallel to the levator ani and not in the axis of the genital hiatus². At the time of increased intra-abdominal pressure, the levator plate and endopelvic fascia (especially the cardinal-uterosacral complex) hold the cervix and upper vagina in their proper positions. Stretching and laceration of the supportive structures can result in uterine or vaginal prolapse. Etiologic factors include trauma, menopausal atrophy and attenuation & possibly pudendal neuropathy, with loss of levator and endopelvic fascia integrity. The uterus and vagina then overlie the genital hiatus, which leads to prolapse of the organs.

Limiting treatment to repair of the vaginal vault prolapse without correction of a cystocele, enterocoele, rectocele, or paravaginal defect can result in other anatomic hernias and failure of the initial repair.

Diagnosis and assessment

Use of a standardised classification system for assessment of prolapse and documentation, helps in assessing surgical outcome, comparing results, and future research even in a case of vault prolapse.

While investigating and planning management, it is extremely important to determine whether lower urinary tract dysfunction, sexual dysfunction, and bowel dysfunction exist. Surgery for POP may offer an opportunity to address other pelvic floor problems, including stress urinary incontinence and rectal prolapse. Stress urinary incontinence (SUI) may be masked in

advanced pelvic organ prolapse by obstructing and kinking of the urethra. Thus, assessment for “occult” SUI with reduction maneuvers has been proposed to identify those patients who would benefit from an incontinent procedure in conjunction with their pelvic reconstructive surgery. However the value of testing for occult incontinence remains controversial³.

An important consideration in selecting a procedure is whether the patient will remain sexually active along with quality of life issues.

Conservative management

- Pelvic floor muscle training (PFMT) is an effective treatment option for women with stage I–II vaginal prolapse, including post hysterectomy vault prolapse (PHVP).
- Vaginal pessaries are an alternative treatment option for women with stage II–IV PHVP.

Surgical management

Surgical treatment should be offered to women with symptomatic PHVP after appropriate counseling. The type of operation performed should be tailored to the individual patient's circumstances such as clinical symptoms and the patient's expectation; correct assessment of the site and degree of prolapse; the optimum approach to vault prolapse and other associated vaginal defects that may be present.

Below is a list of some procedures performed and recommended to repair vault prolapse. The available length of the vagina for suspension is an important factor in deciding the most appropriate reconstructive procedure for sexually active women.

Sacrocolpopexy: Women should be aware that both open abdominal sacrocolpopexy (ASC) and vaginal sacrospinous fixation (SSF) are effective treatments for primary PHVP⁴. The Green-top guideline of RCOG (July 2015) stated that ‘Laparoscopic sacrocolpopexy (LSC) can be equally effective as abdominal sacrocolpopexy in selected women’. However, based on a more recent report from the Scientific Committee on Emerging and Newly Identified Health Risk, (a committee that advises the European Commission), that was published in December 2015 that included further data that was available, RCOG

now recommends the laparoscopic approach in women with pelvic organ prolapse undergoing sacrocolpopexy. The recurrence of prolapse after sacrocolpopexy suggests that the process of deteriorating pelvic support is not completely prevented by sacrocolpopexy and we are still looking for the best approach for vault prolapse correction. The peri-operative complications could be ileus, small bowel obstruction, wound complications and difficult haemostasis. The most common long term complication has been mesh exposure in the vagina in 3-4 %⁴. ASC is associated with significantly lower rates of recurrent vault prolapse, dyspareunia and postoperative stress urinary incontinence (SUI) when compared with SSF. However, this is not reflected in significantly lower reoperation rates or higher patient satisfaction. Sacrospinous ligament fixation (SSF) is associated with earlier recovery compared with ASC⁴.

Sacrospinous ligament fixation (SSF): To perform sacrospinous ligament fixation, it is imperative that the surgeon be familiar with the anatomy of the sacrospinous ligament complex and the para-rectal space. Obtaining adequate exposure is critical. Vascular complications, when encountered, may be life threatening. To avoid trauma to the pudendal nerve and vessels, inferior gluteal vessels, the hypogastric venous plexus, and the sciatic nerve, it is important to place the fixation suture two centimeters medial to the ischial spine. When tying the fixation suture, suture bridging should be avoided, since this could predispose to recurrent prolapse. SSF may not be appropriate in women with short vaginal length and should be carefully considered in women with pre-existing dyspareunia.

Laparoscopic and robotic sacrocolpopexy (LSC and RSC): LSC can be equally effective as ASC in selected women with vault prolapse. Being a new approach, there is limited evidence on RSC.

High uterosacral ligament suspension (HUSLS): Potential complications of HUSLS are ureteral injury or kinking, and injury to the sacral nerve roots. HUSLS should only be offered as first-line management in women with PHVP within the context of research or prospective audit. Clinicians should be aware of the risk of ureteric injury.

Transvaginal mesh (TVM): The limited evidence on TVM kits does not support their use as first-line treatment of PHVP.

If TVM is considered, women should be fully informed of the permanent nature of the mesh and potential mesh complications, some of which are serious and have long-term effects that can be difficult to treat. They should also be fully informed of alternative surgical and nonsurgical options.

Colpocleisis: Colpocleisis is a safe and effective procedure that can be considered for frail women and/or

women who do not wish to retain sexual function. Recent studies of the Neugebauer Le Fort⁵, an obliterative procedure, reported good results. However, it is of paramount importance to verify that a woman will not be sexually active if it is to be performed.

Of the various procedures for vaginal vault prolapse described over the past century, three major categories have evolved:

- Abdominal sacrocolpopexy or vaginal sacrospinous fixation, or a modification
- Colpocleisis
- Anterior abdominal wall ventral fixation, which is not popular because the normal anatomy is not restored.

Post-procedure cystoscopy

It is advisable to perform post-procedure cystoscopy following most surgical procedures for correction of vault prolapse to evaluate ureteral patency and to exclude lower urinary tract injury.

Concomitant surgery for occult SUI

Colposuspension performed at the time of sacrocolpopexy is an effective measure to reduce postoperative symptomatic SUI in previously continent women^{4,6}. However, colposuspension at the time of ASC does not appear to be effective treatment for overt SUI^{4,7}. Concomitant mid-urethral sling surgery may be considered when vaginal surgical approaches are used for the treatment of PHVP^{4,8}.

Prevention

Every effort should be made to prevent vault prolapse by fixing the vault in its anatomic position following hysterectomy, vaginal or abdominal.

Suturing the cardinal and uterosacral ligaments to the vaginal cuff at the time of hysterectomy is effective in preventing PHVP following both abdominal and vaginal hysterectomies⁴. By securing the pedicles to the lateral angles of the vagina, tying the suture draws the posterior vaginal apex up to the supporting structures, elevating it to a normal position and prevents PHVP. Any modification of these procedures to attach the supporting structures (uterosacral, cardinals) to the vagina should work.

McCall culdoplasty: McCall culdoplasty at the time of vaginal hysterectomy is effective in preventing subsequent PHVP^{4,9}.

McCall used several non-absorbable sutures to obliterate the enterocoele by approximating both uterosacral ligaments and a running suture through the posterior peritoneum. Delayed absorbable sutures are then inserted through the full thickness of the posterior

vagina just lateral to the midline and passed through each uterosacral ligament and back out the posterior vaginal wall. Additional external sutures are placed as required by the amount of prolapse. The internal sutures are then tied, and the external sutures are tied after the vaginal cuff is closed. This procedure obliterates the cu-de-sac, supports the vaginal apex, and lengthens the posterior vaginal wall. It is recommended to perform cystoscopy to evaluate the integrity of the ureters and exclude lower urinary tract injury.

Sacrospinous fixation (SSF) at the time of vaginal hysterectomy should be considered when the vault descends to the introitus during closure⁴.

Preventing enterocoele

Enterocoele formation is more common than often recognized. Ranny reported an incidence of 18.1% in patients undergoing major gynecologic operations¹⁰. Whether a normal cul-de-sac, a deep cul-de-sac, or an obvious enterocoele is found, an attempt should be made to identify and correct an obvious enterocoele and avert future enterocoele formation. Closure of the peritoneum itself is unnecessary for proper healing; however, closure of the peritoneum should be performed during vaginal hysterectomy as part of the attempt to prevent enterocoele formation¹¹.

Support to the vaginal cuff: Most transvaginal hysterectomies have some degree of uterovaginal descent. In some cases, the primary indication for hysterectomy is symptomatic pelvic relaxation. In patients who have stage I to stage IV uterovaginal prolapse, adjunct vaginal apex support may be necessary. Patients with these degrees of relaxation before surgery may be candidates for more than uterosacral-cardinal ligament complex attachment to the vagina. Moreover, in some patients, preoperative presentation will differ from the intra-operative assessment, and after vault support and vaginal repair procedures have been performed, the vaginal vault still may be pulled to or past the hymen. This condition, although diagnosed intraoperatively, will need correction. Both preoperative and intraoperative evaluation of pelvic support must be performed to repair all the defects that are present.

Various principles of vaginal fixation during hysterectomy are currently recognized. It is crucial for the surgeon to note the laxity of the supporting structures and to attempt to repair this laxity at the initial operation. Hysterectomy offers a good opportunity to evaluate all the anatomic aspects of pelvic support and to prevent future vaginal prolapse. Attaching the pelvic supportive structures to the vagina, repairing an obvious or potential enterocoele, and using appropriate adjunct procedures are some of the surgical approaches to providing support to the vaginal cuff.

Subtotal hysterectomy is not recommended for the prevention of PHVP^{4,12}.

The suture: There is inadequate and conflicting evidence over the use of permanent sutures for vault support at the time of hysterectomy in the short term and no evidence of benefit in the long term; they can be associated with high suture exposure rates⁴.

The cure: Subjective cure (patient-reported outcomes), including success rates and relief of presenting symptoms, should be the primary assessment outcomes. Objective cure is also important as it correlates to symptoms of vaginal bulge. Pelvic Organ Prolapse Quantification (POP-Q) stage of I or O in the apical compartment seems to be acceptable and widely used as the optimum postoperative result⁴.

Failures

With any reconstructive procedure, some operative failures will occur. Age, poor tissue condition, scar tissue, increased abdominal pressure, and neuropathies may prevent optimal reconstruction and lead to a less than perfect outcome. Apart from these inevitable factors, recurrences frequently have the following causes:

- An ignored enterocoele.
- Suspension of the vaginal vault too far anterior, thereby predisposing the patient to a rapid recurrence of enterocoele
- Incorrectly performed procedure

As preventing recurrence is one of the goals in reconstructive surgery attention to the above is mandatory at vaginal vault prolapse repair.

Conclusion

Objectives of vault prolapse reconstructive surgery are to normalize support of all anatomic compartments; alleviate clinical symptoms; and optimize sexual, bowel, and bladder function—without precipitating new support or functional problems.

The procedures for vaginal vault prolapse that offer the best anatomic outcome are:

- transabdominal sacrocolpopexy with the use of either an artificial or a fascial graft
- transvaginal sacrospinous fixation
- high uterosacral ligament attachment to the vagina (or a high modified McCall culdoplasty)

Every effort should be made to preserve vaginal length and axis to prevent distortion of anatomy, enterocoele formation, and loss of vaginal function. When considering an obliterative procedure such as Le Fort colpocleisis, it is of paramount importance to verify that a woman will not be sexually active.

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Pharmacotherapy of Overactive Bladder

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Introduction

Overactive bladder (OAB) is a clinical diagnosis and is defined by the International Continence Society (ICS) 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 or other obvious pathology”¹

**Urinary Urgency* is the complaint of a sudden compelling desire to pass urine which is difficult to defer.

***Frequency* is the complaint by the patient who considers that he/she voids too often by day.

+Nocturia is the complaint that the individual has to wake at night one or more times to void.

++Urgency incontinence is the complaint of involuntary leakage accompanied by or immediately preceded by urgency.

Population based studies have shown that OAB is fairly common, with over 10% of individuals living in the community having OAB. Although the overall prevalence of OAB is the same for women and men, women tend to have a higher prevalence of OAB “wet” (OAB with urinary urge incontinence) in contrast to men who have a higher prevalence of OAB “dry” (OAB without urinary urge incontinence).² While OAB may not be a life threatening condition, the negative impact that it has on psychosocial functioning and quality of life is well documented.

A careful history, physical examination and urinalysis are essential components of evaluation of all patients with suspected OAB. In some, additional measures like urine culture and/or post void residual urine estimation along with bladder diary assessment may be required before a diagnosis of OAB can be established. Ultrasound, Cystoscopy and Urodynamics are not routinely used in the initial work up of the uncomplicated patient with OAB.³

Treatment of the OAB symptom complex may involve behavioural modifications, medications, neuromodulation techniques and intravesical botulinum toxin injections. The caregiver must have a detailed discussion with the patient regarding the various treatment options available. Information regarding a) effort required from the patient and b) effectiveness, risk of adverse events, invasiveness

and reversibility of each available treatment must be shared. Also, patient expectations of treatment and setting of realistic goals are important in the overall management of such patients.

Pharmacotherapeutic options

Constitutes second line therapy for patients with OAB.

A) Oral Anti Muscarinics:

Rationale of Anti Muscarinic Drug Usage in OAB:

Physiological bladder contraction results from acetylcholine-induced stimulation of muscarinic (cholinergic) receptors in the bladder. Of the pharmacologically identified 5 subtypes of muscarinic receptors (M1-M5), it is the M2 and M3 subtypes that predominate in the human urinary bladder. During the filling-storage phase also, acetylcholine, may be released from both neuronal and non-neuronal sources (e.g., the urothelium-suburothelium), leading to excitation of afferent nerves in the suburothelium and within the detrusor. Antimuscarinics drugs inhibit involuntary detrusor contractions/detrusor overactivity, decrease sensory input and increase bladder capacity.

In general, antimuscarinics can be divided into tertiary and quaternary amines. Tertiary amine antimuscarinics are more lipophilic than quaternary compounds and hence pass across the blood brain barrier more readily. Further, the commonly available tertiary amine antimuscarinics i.e oxybutynin, Tolterodine, Solifenacin and Darifenacin, are metabolized via the cytochrome P450 enzyme system and so, in patients receiving other drugs, risk of drug interaction must be kept in mind. Trospium Chloride is the quaternary amine antimuscarinic that is available in the Indian market. Due to low lipophilicity, it passes across blood brain barrier to limited extent and majority of it is excreted unchanged from the kidney.

Efficacy and Durability of Response:

Antimuscarinic drugs have been shown to be more effective than placebo in terms of the mean change in a) the number of urgency episodes per day (0.64 to 1.56 episodes/day) (b) the number of incontinence episodes per day (0.4 to 1.1 episodes/day), (c) the number of micturations per day (0.5 to 1.3 episodes/day) and also (d) the volume voided per micturation (13–40 ml)⁴ While

there are a range of Antimuscarinic agents and doses available, there is no compelling evidence for differential efficacy across medications i.e. similar efficacy has been observed for all oral anti-muscarinic medications³In general, patients who have more severe symptoms, on average, experience greater symptom reduction. The durability of the effects of antimuscarinics is not known, with a study reporting that 62% of patients who discontinued antimuscarinics had symptom relapse.⁵

Adverse Events:

The currently available antimuscarinics are not “uroselective”. Since muscarinic receptors are distributed throughout the body, clinical usefulness of antimuscarinic therapy is limited by side effects associated with these medications which include dry mouth, pruritis, constipation, urinary retention, cognitive effects, visual impairment, increase in heart rate etc.

Optimal antimuscarinic treatment should be individualized, implying that the patient’s comorbidities and concomitant medications, and the pharmacologic profiles of the different drugs, should be taken into consideration. Further, the idiosyncratic nature of responses means that it may take some adjustment to find the optimum regimen for an individual. So, if a patient experiences inadequate symptom control and/or unacceptable adverse drug events with one antimuscarinic medication, then a dose modification or a different anti-muscarinic medication or a b3- adrenoceptor agonist may be tried.”

B) Oral β -3 adrenergic agonists:

Rationale of β -3 adrenergic agonist usage in OAB:

β -1, 2 and 3 adrenergic receptors are identified in human bladder urothelium and detrusor muscle, of which β -3 adrenergic receptor is predominant. β -3 adrenergic receptor agonists help in bladder relaxation by activation of adenylyl cyclase.⁶

Efficacy and Adverse Events:

β -3 adrenergic receptor agonist Mirabegron was approved by FDA in 2012 for the indication of OAB. It has been shown to be significantly more effective than placebo in terms of urgency incontinence episode (-1.10), voids per day (-1.20), mean voided volume/micturition, mean level of urgency, mean number of urgency episodes (grade 3 or 4)/day and mean number nocturia episodes per day. The usual prescribed dose of mirabegron is 25-50 mg per day. In so far as adverse events are concerned, the incidence of dry mouth and constipation are not significantly different to placebo with upto 100mg/day of dose.

Overall, mirabegron appears to have similar efficacy

with a lower rate of dry mouth when compared to antimuscarinic drugs. This drug, to date, is not available in India.

Patients who are refractory to both first and second line therapies (behavioural, Antimuscarinics, β -3 adrenergic agonist) should be evaluated by an appropriate specialist if they desire additional therapy. A refractory patient is someone who has failed a trial of symptom-appropriate behavioral therapy of sufficient length (8 to 12 weeks) and who has failed a trial of at least one anti-muscarinic medication administered for 4 to 8 weeks. Failure of an anti-muscarinic medication may include lack of efficacy and/or inability to tolerate adverse drug effects.³

Botulinum toxin in OAB

Rationale of Botulinum Toxin injection in OAB

Most of the effects of botulinum toxin are thought to result from the inhibition of Ach release from the presynaptic nerve terminal. When this occurs, Ach receptors in the muscle are not stimulated. With intravesical injections, muscarinic receptors in the bladder cannot be stimulated and detrusor contractions are suppressed.

Efficacy and Safety

Intravesical botulinum toxin type A injection is a safe and effective third line treatment for patients with OAB that is refractory to behavioural therapy and antimuscarinics and approved by FDA for this indication in 2013. The two most studied preparations are onabotulinumtoxinA (Botox™, Allergan, Inc., Irvine, CA, USA) and abobotulinumtoxinA (Dysport®, Ipsen Biopharm Ltd, Slough, UK). Significant and comparable efficacy was reported with both preparations, however abobotulinumtoxinA compared to onabotulinumtoxinA was associated with significantly higher rate of urinary retention requiring clean intermittent self catheterization (CISC) {42 vs 23%}.⁷

Two large phase three trials including 1105 patients have reported clinically relevant and statistically significant improvement in all OAB parameters after intravesical onabotulinumtoxin 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).^{8,9} Cui Y et al in a systematic review and meta-analysis including 1320 patients observed that intravesical onabotulinumtoxin A significantly improves the OAB parameters compared to placebo including the mean number of urinary incontinence (UI) per day (-2.77 vs -1.01), number of micturitions per day (-1.61 vs -0.87),

maximum cystometric capacity (91.39 vs 32.32), volume voided (44.29 vs 7.36) and incontinence free patients (29.20% vs 7.95%).¹⁰

While intravesical botulinum toxin A therapy is now established as a standard third line option in OAB, the injection technique including site of injection, depth of injection, injection volume and number of injections is yet to be standardized. Different authors have reported various techniques e.g. trigone-including or trigone-sparing and intradetrusor or suburothelial, but the superiority of one over the other is not established.¹¹ Dose ranging studies have reported 100U of onabotulinumtoxin A as optimum for a balance between effective, durable response and adverse events. The number of injection varies between 10-40 sites, with most authors having injected at 15-20 sites. We, in our institute, commonly use 100U of intradetrusor, trigone sparing injections of onabotulinumtoxin A at 20 different sites (5U each) separated by 1cm each.

After botulinum toxin injection, duration of symptom relief is reported to be between 6.3 to 10.6 months. The mean interval of repeat intravesical onabotulinumtoxin A injection varies from 3-18 months and there is significant reduction in frequency, urgency and urge incontinence after each injection.

Complications reported with intravesical onabotulinumtoxin A include UTI (15.5-24.1%), rise in Post void residual volume >200ml from baseline (8.7-8.8%) and the need for CISC (6.1-12%). Risk factors associated with increased incidence of complications include male sex, baseline Postvoid residual urine volume ≥ 100 mL, associated comorbidity and botulinum toxin A dose >100 U among others.¹²

Before considering botulinum toxin A injection, it is imperative that the patient must be well aware of (a) limited duration of efficacy, (b) risk of UTI, (c) urinary retention and (d) need for Clean intermittent self catheterization, if required.

Newer Drug Development

Many new drugs are currently being investigated for their possible role in the management of OAB. These include Monoamine reuptake inhibitors, Agents acting on serotonin receptors, Drugs acting on the nitric oxide (NO)/cyclic guanosine monophosphate (cGMP) pathway, Prostaglandin receptor antagonists, Neurokinin receptor antagonists, TRP antagonists, Potassium channel openers, Calcium channel modulators, Vitamin D3 receptor agonists, Opioid receptor agonists etc.¹³

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Journal Scan

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Genital hiatus size is associated with and predictive of apical vaginal support loss

Jerry L. Lowder, MD, MSc; Sallie S. Oliphant, MD, MSc; Jonathan P. Shepherd, MD, MSc;

Chiara Ghatti, MD, MSc; Gary Sutkin, MD, American Journal of Obstetrics & Gynecology Feb 2016 <http://dx.doi.org/10.1016/j.ajog.2015.12.027>

Background: Recognition and assessment of apical vaginal support defects remains a significant challenge in the evaluation and management of prolapse. There are several reasons that this is likely: (1) Although the Pelvic Organ Prolapse-Quantification examination is the standard prolapse staging system used in the Female Pelvic Medicine and Reconstructive Surgery field for reporting outcomes, this assessment is not used commonly in clinical care outside the subspecialty; (2) no clinically useful and accepted definition of apical support loss exists, and (3) no consensus or guidelines address the degree of apical support loss at which an apical support procedure should be performed routinely.

Objective: The purpose of this study was to identify a simple screening measure for significant loss of apical vaginal support.

Study design: This was an analysis of women with Pelvic Organ Prolapse-Quantification stage 0-IV prolapse. Women with total vaginal length of ≥ 7 cm were included to define a population with “normal” vaginal length. Univariable and linear regression analyses were used to identify Pelvic Organ Prolapse-Quantification points that were associated with 3 definitions of apical support loss: the International Continence

Society, the Pelvic Floor Disorders Network revised e-CARE, and a Pelvic Organ Prolapse-Quantification point C cut-point developed by Dietz et al. Linear and logistic regression models were created to assess predictors of overall apical support loss according to these definitions. Receiver operator characteristic curves were generated to determine test characteristics of the predictor variables and the areas under the curves were calculated.

Results: Of 469 women, 453 women met the inclusion criterion. The median Pelvic Organ Prolapse-Quantification stage was III, and the median leading edge of prolapse was ≥ 2 cm (range, ≥ 3 to 12 cm). By

stage of prolapse (0-IV), mean genital hiatus size (genital hiatus; mid urethra to posterior fourchette) increased: 2.0 ± 0.5 , 3.0 ± 0.5 , 4.0 ± 1.0 , 5.0 ± 1.0 , and 6.5 ± 1.5 cm, respectively ($P < .01$). Pelvic Organ Prolapse-

Quantification points B anterior, B posterior and genital hiatus had moderate-to-strong associations with overall apical support loss and all definitions of apical support loss. Linear regression models that predict overall apical support loss and logistic regression models predict apical support loss as defined by International Continence Society, e-CARE, and the point C; cut-point definitions were fit with points B anterior, B posterior, and genital hiatus; these 3 points explained more than one-half of the model variance. Receiver operator characteristic analysis for all definitions of apical support loss found that genital hiatus > 3.75 cm was highly predictive of apical support loss (area under the curve, > 0.8 in all models).

Conclusion: Increasing genital hiatus size is associated highly with and predictive of apical vaginal support loss. Specifically, the Pelvic Organ Prolapse-Quantification measurement genital hiatus of ≥ 3.75 cm is highly predictive of apical support loss by all study definitions. This simple measurement can be used to screen for apical support loss and the need for further evaluation of apical vaginal support before planning a hysterectomy or prolapse surgery.

Prevention of iatrogenic ureteral injuries during robotic gynecologic surgery: a review

Ziho Lee, MD; Joshua Kaplan, MD; Laura Giusto, MD; Daniel Eun, MD, American Journal of Obstetrics & Gynecology January 2016 <http://dx.doi.org/10.1016/j.ajog.2015.10.150>

Iatrogenic ureteral injuries, more than half of which occur during gynecologic surgery, may have devastating consequences for both patients and physicians. Gynecologists have employed various techniques such as cystoscopy, ureteral stents, and lighted ureteral stents to prevent ureteral injuries. The emergence and increasing prevalence of robotic surgery necessitates that we not only reevaluate the utility of these techniques, but also develop new ones specific for the robotic modality. In the robotic setting, the surgeon lacks tactile feedback and must rely primarily on visual cues. The use of intraureteral

indocyanine green and subsequent visualization under near-infrared fluorescence appears to be a promising technique to primarily and secondarily prevent ureteral injuries during robotic gynecologic surgery.

How to prevent mesh erosion in Transobturator Tension-Free Incontinence Cystocele Treatment (TICT): a comparative survey

V. Leanza, G. Zanghi, R. Vecchio, G. Leanza

G Chir Vol. 36 - N. 1 - Pp. 21-25 January-February 2015

Background. Tension-Free Incontinence Cystocele Treatment (TICT) was introduced by Leanza-Gasbarro-Caschetto in 2001, on the basis of experimental and clinical investigations to obtain a physiologic mechanism of closure and opening of the urethra in the event of genuine stress urinary incontinence (S.U.I.) and cystocele. TICT took origin from the previous retropubic tension-free vaginal tape (TVT) based on the integral theory according which mid-urethra has a main role for urinary continence but differs in that the former restores the anatomy and physiology of the entire anterior compartment. Simultaneously Delorme in 2001 spread the TOT (Trans-Obturator Tape) technique, emphasizing the needle passage across the obturator foramen which represents a new and less invasive route in comparison with the retropubic one. Trans-obturator TICT exploits the advantages of TOT, adding the anatomical repair of bladder prolapse. Introduction of mesh for treatment of pelvic defects gives a lower rate of recurrence, but introduces new complications due to the extraneous materials, among which the most common is represented by mesh erosion. At present the rate of mesh erosion

reported is 4.7% in the TOT. Aim of our survey was to verify a technique allowing post-operative erosion prevention.

Patients and Methods. 230 women with urodynamic stress incontinence and cystocele after diagnostic phase were allocated to 2 treatment groups (A and B-group), with open alternative method. A group women underwent transobturator TICT procedure after preparation of anterior compartment by means of a transversal incision taking care to preserve the integrity of the vaginal skin in the site where the mesh would be allocated. Conversely, B-group transobturator TICT was carried out in a classical way, through a longitudinal incision of anterior vaginal skin and suturing after placing the mesh. Each of the two groups was initially constituted by 115 subjects. There were 14 preoperative dropouts among which 6 (115-6=109) in A-group and 8 (115-8=107) in B-group and, after, 16 postoperative dropouts including 7 (109-7=102) in the former and 9 (107-9=98) in the latter. Other pelvic defects were solved during the same operation for a complete repair of pelvic floor.

Results. A-group: subjectively SUI was cured in 87/102 (85.3%) objectively, SUI was cured in 88/102 (86.3%) of patients; cystocele in 87/102 (85.3%). B-group: subjectively SUI was cured in 86/98 (87.7%) and objectively in 87/98 (88.8%) of patients; cystocele was solved in 86/98 (87.7%). Between the two groups both anti-incontinence and cystocele treatment was superimposable (p value > 0.05). Nevertheless regarding mesh erosion, a percentage of 5.1% (5/98) was found among B-group while none among A-group patients where integrity of vaginal skin beneath the mesh was preserved.

Conclusion. Integrity of the vagina beneath the mesh is the right key to prevent ad externum mesh erosion.

Proceedings of Monthly AOGD Clinical Meeting held at LHMC & SSK Hospital on 30th January, 2016

Compiled by Archana Misra

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Case 1

Post-partum fulminant fungal infection: a rare presentation

Karishma Thariani, Ratna Biswas, Abha Singh

ABSTRACT: A 33yr old P3L2 post LSCS patient with gestational diabetes controlled on diet developed left earache followed by swelling in the periauricular and submandibular region on the 6th post-operative day. The swelling was preceded by necrosis of the area with involvement of 2, 3, 4, 6, 7 & 12 cranial nerves with ophthalmoplegia of the left eye. Swelling in the parapharyngeal spaces lead to severe respiratory distress for which the patient had to be tracheostomised and put on ventilatory support. In view of the microscopy report and the fulminant course of the disease a provisional clinical diagnosis of Mucor mycosis with secondary cavernous sinus thrombosis was made and patient was started on Amphotericin B along with other higher antibiotics. She subsequently developed MODS with dyselektrolytemia from which she did not recover. The patient had no other evidence of immunodeficiency besides that caused by pregnancy and her controlled diabetic status.

Discussion: Mucor mycosis is a devastating invasive fungal infection, with high mortality rates even after active management. Diagnosis requires high clinical suspicion and fungal cultures are required for confirmation. A multidisciplinary approach is needed for appropriate management.

Case2

Intractable obstetric hemorrhage: Does packing rescue?

Kiran Aggarwal, Abha Singh, Manju Puri, Shilpi, Nivedita, Meenakshi

In intractable hemorrhage when DIC sets in then like the last possibility with the obstetrician: "packing" comes to rescue. 27 year old 3rd gravida presented with 39wks gestation in labor with IUD. Vitals were stable with a term pregnancy in cephalic presentation with intrauterine death.

Investigations revealed thrombocytopenia (55000) and deranged liver function tests with normal coagulation.

Patient delivered with a second degree tear which was stitched. After 4hrs hematoma developed which

was evacuated in OT. Patient reformed hematoma. Reevacuation was done but patient kept on bleeding from left ischiorectal fossa. Laparotomy and internal iliac ligation could not be done due to thrombocytopenia. Arterial embolisation was not available. As a last resort ischiorectal fossa packing was done with ribbon gauze. Components were transfused and pack removed after 48hrs. Patient recovered.

Second case was of 15 wks abdominal pregnancy where patient presented with massive hemoperitoneum in shock. She was resuscitated and laparotomy was done. Placenta adherent to gut was left behind after removing fetus and bleeding site was packed with mops. Skin was closed. Patient recovered with components are blood. Abdominal packs were removed after 48hrs.

Uterine tamponade, pelvic pressure pack and towel packing are all methods of packing. Beltfort-Dildy obstetrical Tamponade System is a new system. It has two balloons allow which allow secure treatment of both uterine and vaginal bleeding. In massive obstetric hemorrhage and coagulation failure when all other surgical procedures have been done or cannot be done for one or other reasons the obstetrician should keep packing as one of the possibilities which may save a life.

Case 3

A comparative study of clinical outcomes of post placental insertion versus interval insertion of copper t 380a intrauterine device

Suchi Gupta

Background: The objective of this study was to study the safety and efficacy of PPIUCD insertion and to compare it with interval insertion.

Methodology: A prospective study was conducted enrolling 100 women as study group (PPIUCD) and 100 as control group (interval CuT insertion). All women were followed up for 6 months and clinical outcomes were measured in terms of safety, efficacy, effect on menstrual cycles and continuation rates. Chi square test was used to detect differences in the rate of clinical outcomes, and $P < 0.05$ was considered statistically significant.

Results: Spontaneous expulsions were more in study group, but the difference was not significant. Number of

women having missing thread was significantly higher in study group. Total number of CuT removals and incidence of pain lower abdomen were significantly higher in controls. Number of women complaining of menorrhagia and pelvic infection were more in control group and continuation rate at 6 months was higher in

study group, but this difference was not statistically significant. No case of pregnancy or perforation occurred in either group

Conclusion: PPIUCD is an effective, safe, convenient, low cost and long term method of post partum contraception.

Proceedings of Monthly AOGD Clinical Meeting held at UCMS & GTB Hospital on 26th February, 2016

Compiled by Archana Misra

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Case 1

Collision tumor of Endometrial stromal sarcoma & squamous cell cancer: A rare entity

Bindiya Gupta, Shalini Rajaram, Sandhya Jain, Neerja Goel, Nadeem Tanveer

Abstract: A collision tumor is defined by the presence of two separate tumors in one organ on gross, microscopic, and immunohistochemical studies with a small area of mingling and they should be distinguished from malignant mullerian mixed tumors. A 60 year old lady P8L8 presented with blood stained vaginal discharge and post menopausal bleeding. Examination revealed a 1x 2 cm cervical growth on the anterior lip, bilateral parametria were free; clinical staging Carcinoma cervix IB1. The biopsy from the growth was well differentiated non keratinising squamous cell carcinoma cervix. On transvaginal sonography, there was myohyperplasia with indistinct endometrial lining.

The patient underwent Type III radical hysterectomy, bilateral salphingo-oophorectomy and bilateral pelvic lymphadenectomy. The uterine corpus revealed 5 cm growth in uterine cavity which was reported as high grade endometrial stromal sarcoma and the cervical growth was non keratinising squamous cell carcinoma infiltrating the former and a final diagnosis of collision tumor was made. The lymph nodes, parametria and vaginal cuff were free of tumor. The patient was referred for adjuvant chemotherapy. To conclude, this entity has been reported for the first time. Surgery is the mainstay in management, adjuvant therapy and prognosis depends on the more aggressive variant which was the undifferentiated sarcoma in this case.

Case 2

A bizarre self inflicted injury resulting in a "Near-Miss"

Rachna Agarwal, A.G. Radhika, Gita Radhakrishnan, Bindiya Gupta, Riya Malik

A 32 year old, para 3 woman presented in state of collapse with profuse bleeding per vaginum in mid night. History as given by the husband revealed that she had chopped off some part of her genitalia and flushed it in the bathroom. Her previous treatment papers revealed she had been visiting various gynaecologist for treatment of uterine prolapse since last child birth 3 years back. On examination, pulse and BP were unrecordable. On per speculum cervix could not be seen, and vaginal edges were seen bleeding. Patient was taken up for emergency surgery. EUA showed a partially amputated cervix with retracted vaginal edges. A vaginal hysterectomy was done. On cut section of hysterectomy specimen, only 1 cm of cervix was identifiable, and uterus otherwise being normal on gross examination. The post operative period was uneventful. In view of extreme nature of affliction, a history of intoxication was obtained but denied by both husband and the patient. No history of prior psychiatric illness or symptomatology was reported. Psychiatric consultation revealed it to be a case of first episode of psychosis and accordingly antipsychotic treatment was started.

The unusual self mutilation of genitalia can have bizarre presentation amounting to suicidal attempt. The psychological effects of prolapse are often missed by gynaecologists and may lead to extreme steps by patients with sexual disharmony.

Case 3

Post hysterectomy VVF- A simple solution to a dreaded complication

Sharma A, Motwani Y, Suneja A, Guleria K, NB Vaid, N Singh

Background: Various surgical procedures are currently performed for the treatment of post hysterectomy vesicovaginal fistula. Most of them are carried out by abdominal route. Latzko operation is one of the techniques for the repair of post hysterectomy VVF by vaginal route.

Objective: Report of our experience with Latzko operation, a simple purely transvaginal procedure.

Method: Case series of 9 patients with VVF treated by Latzko operation from Nov 2013 to Aug 2015 at G.T.B.Hospital Delhi, with age ranging 25 - 60 yrs.

Results: 9 patients were operated on over two years (2013-15). Average size of fistula was 5mm (range 2-10mm). Average operative duration was 60 (range 45-90 min). No intra operative complications were observed. 1 patient had fever in postoperative period. Patients were catheterized for 14 days. Average hospital stay was 14 days. All fistulas healed giving a success rate of 100%. Review of literature also revealed a success rate of 94-100%. There was no recurrence or sexual dysfunction as a result of shortening of vaginal length.

Conclusion: Due to simplicity of the procedure and excellent success rates, this age old technique has stood the test of time rather than other more complex surgeries like abdominal repair, flap splitting technique etc and should be considered the first choice for post hysterectomy VVF.



AOGD Monthly Meeting at GTB Hospital

Brain Teasers

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We have a **lucky dip** for all the right answers received and winner's name will be announced in the next monthly AOGD clinical meeting. So, mail your answers to **aogdsjh2015@gmail.com** within **7 days of receipt of the bulletin**.

1. All of the following about Shirodkar's Sling operation are true except:
 - a. Conservative management of prolapse in child-bearing age
 - b. Mersilene tape used as sling material
 - c. LSCS required for future deliveries
 - d. Recurrence rate is less than 1%
2. Posterior Tibial Nerve Stimulation is one of the treatment modality for
 - a. Stress Incontinence
 - b. Urge incontinence
 - c. Mixed incontinence
 - d. Overflow incontinence
3. According to the latest recommendation by RCOG (December 2015) preferred approach for females with pelvic organ prolapse undergoing vault suspension
 - a. Abdominal Sacrocolpopexy
 - b. Laparoscopic Sacrocolpopexy
 - c. Sacrospinous Fixation
 - d. High Uterosacral ligament suspension
4. In Khanna's sling operation, support of sling mimics which of the following ligaments
 - a. Mackenrodt's ligament
 - b. Round ligament
 - c. Uterosacral ligament
 - d. Sacrospinous ligament
5. Mirabegron used in the treatment of Urge incontinence is following category of drug
 - a. Beta Adrenergic
 - b. Anticholinergic
 - c. Antidepressant
 - d. Muscle relaxant
6. Relapse of urinary tract infection means recurrence of infection despite complete treatment by
 - a. Same bacteria within 2 weeks
 - b. Different bacteria within 2 weeks
 - c. Same bacteria within 4 weeks
 - d. Different bacteria within 4 weeks
7. Which of the following is not a cause of complicated urinary tract infection
 - a. Pregnancy
 - b. Urethral diverticulum
 - c. Acute Pelvic inflammatory disease
 - d. Hospital acquired infection
8. Which of the following is not related to biofeedback therapy for pelvic muscle strengthening
 - a. Abdominal surface electrode
 - b. Vaginal sensor
 - c. Multichannel catheter
 - d. Trigger point release
9. All of the following are part of conservative management of small vesicovaginal fistula (VVF) except
 - a. Catheter drainage
 - b. Fibrin glue
 - c. Fulguration of fistulous tract
 - d. Antiadrenergic drugs
10. Which of the following is not a contraindication for transvaginal repair of VVF
 - a. Fistula requiring ureteral implantation
 - b. Vaginal cyst
 - c. Circumferential induration of vaginal epithelium
 - d. Vaginal stenosis

Answers to Quiz 8 : 1. c; 2. d; 3. b; 4. b; 5. d; 6. d; 7. b; 8. a; 9. b; 10. a

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