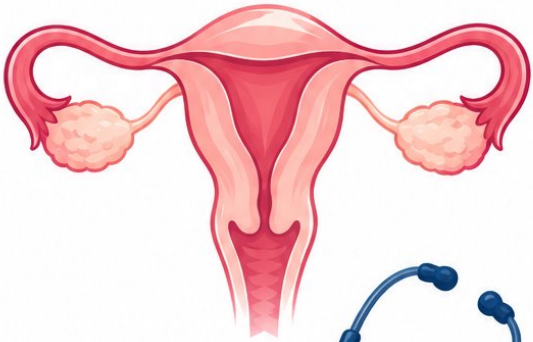
# OBG

## SS RESIDENCY

## ESSENTIAL

PART 2







28  Assessment & Management of LUTS: I
★ 4.6 | 90 Min | NEW

29  Assessment & Management of LUTS: II
★ 4.6 | 49 Min | NEW

30  Screening for Cancer Cervix : I
★ 4.3 | 50 Min | NEW

31  Screening for Cancer Cervix : II
★ 4.3 | 52 Min | NEW

32  Screening for Cancer Cervix : III
★ 4.5 | 52 Min | NEW

EXAM ESSENTIALS

33  Obstetric Drugs : Hematinics I
★ 4.4 | 65 Min

34  Obstetric Drugs: Hematinics II & Neutraceuticals
★ 4.4 | 45 Min

35  Obstetric Drugs: Ancillary Drugs
★ 4.5 | 56 Min

36  Obstetric Drugs : Progesterone & Tocolytics
★ 4.5 | 78 Min | NEW

37  Obstetric Drugs : Beyond Oxytocin
★ 4.3 | 35 Min | NEW

38  Obstetric Drugs: Anti-Hypertensives
★ 4.6 | 42 Min | New

39  Obstetric Drugs: Anti- Diabetics
★ 4.5 | 29 Min | New

40  Obstetric Drugs: Thyroid Dysfunction
★ 4.6 | 13 Min | New

41  Obstetric Drugs: Anti- Epileptics & Antibiotics
★ 4.5 | 31 Min | NEW

42  Hormones in Obstetrics & Gynaecology
★ 4.5 | 79 Min | NEW

43  Drugs used in ART
★ 4.6 | 24 Min | NEW

44  Updates in Contraception
★ 4.6 | 42 Min | NEW

45  Common Instruments
★ 4.4 | 85 Min

46  Gynaecology Instruments : I
★ 4.4 | 89 Min

47  Gynaecology Instruments: II
★ 4.5 | 58 Min

48  Gynaecology Instruments: III
★ 4.6 | 60 Min

49  Gynaecology Instruments: IV
★ 4.7 | 69 Min | NEW

50  Obstetric Instruments : I
★ 4.5 | 78 Min | NEW

51  Obstetric Instruments : II
★ 4.6 | 14 Min | New

52  Ward Rounds : I
★ 4.4 | 68 Min

53  Ward Rounds : II
★ 4.4 | 56 Min

54  Ward Rounds : III
★ 4.5 | 67 Min

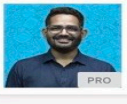
55  Post-operative Ward Rounds: Gynaecology
★ 4.7 | 58 Min

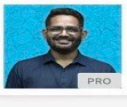
PUBLIC HEALTH & NATIONAL PROGRAMS

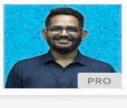
56  Safe Motherhood & Health Response Systems
★ 4.6 | 84 Min

57  Maternal Mortality & Auditing
★ 4.5 | 44 Min

58  Prevention Across Life Cycle
★ 4.4 | 61 Min

59  Pathogens: I
★ 4.5 | 63 Min

60  Pathogens: II
★ 4.6 | 86 Min

61  Fertility & Population Control
★ 4.2 | 73 Min | NEW

# ASSESSMENT & MANAGEMENT OF LUTS: I

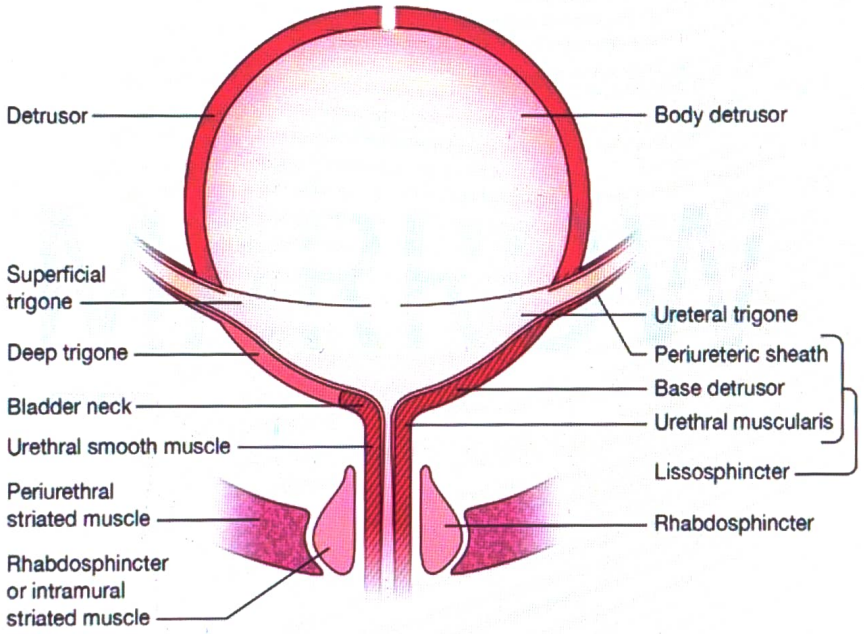
----- Active space

## Basics of micturation

00:01:52

### Anatomy of bladder :

Anatomy of bladder and its outlets




Detrusor muscle :

- The detrusor muscle is the principal musculature of the urinary bladder.
- It forms the major part of the dome of the bladder.
- It ensures the viscoelastic property of the bladder.
- It is also responsible for bladder compliance.
  - Relaxes to store urine.
  - Contracts to facilitate voiding.

Trigone :

- The trigone is a triangular area of the urinary bladder.
  - The apex of the trigone is formed by the bladder neck/Sphincter.
  - The other two angles are formed by the openings of the ureters.
- The superficial trigone blends its musculature with the sphincter.
- The deep trigone blends its musculature with the bladder musculature.

Feedback

----- Active space -----

Sphincters :

Lissosphincter (Internal urethral sphincter) :

- The lissosphincter is a soft tissue + smooth muscle structure, composed of :
  - Periureteric sheath.
  - Base of the detrusor.
  - Urethral muscularis.
- It is also known as the bladder neck or bladder outlet.
- It helps in maintaining urinary continence.
- It is under sympathetic nervous system control.
  - It contains alpha-1 adrenergic receptors.

Rhabdosphincter (External urethral sphincter) :

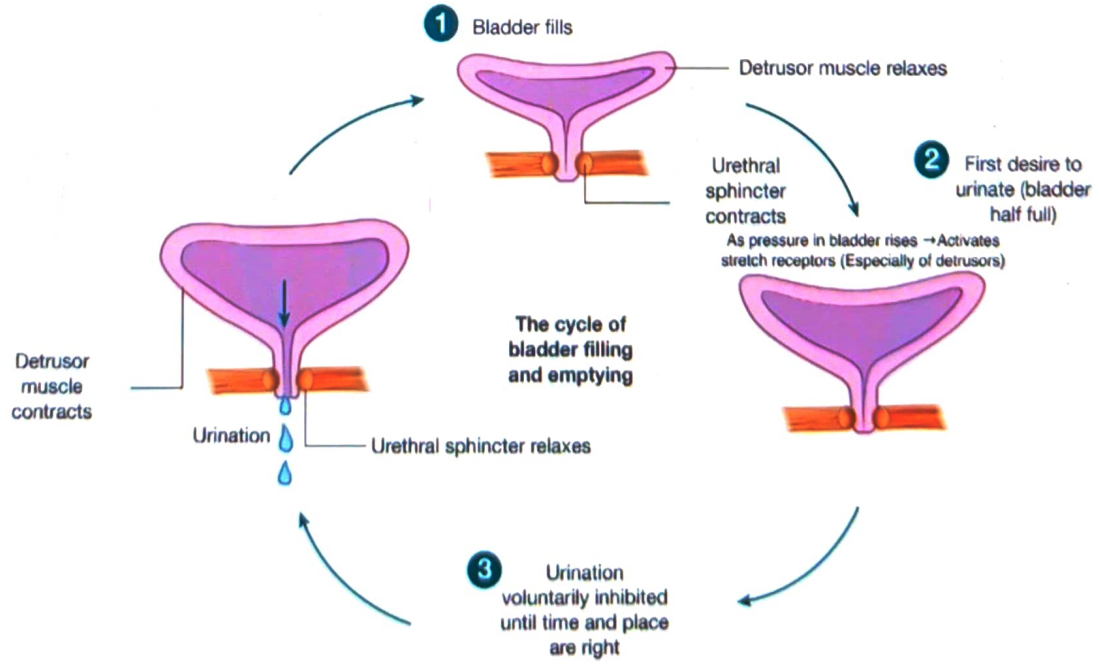
- The rhabdosphincter is a striated intramural muscle.
- It forms the external urethral sphincter.
- It is supplied by the somatic nervous system through Onuf's nucleus.
- It helps in voluntary control of urinary continence.

Pelvic support :

- Pelvic support includes the periurethral musculature & pelvic floor muscles.
- It also helps in maintaining bladder compliance and urinary continence.

## Physiology of micturation :

Micturation cycle :






Feedback

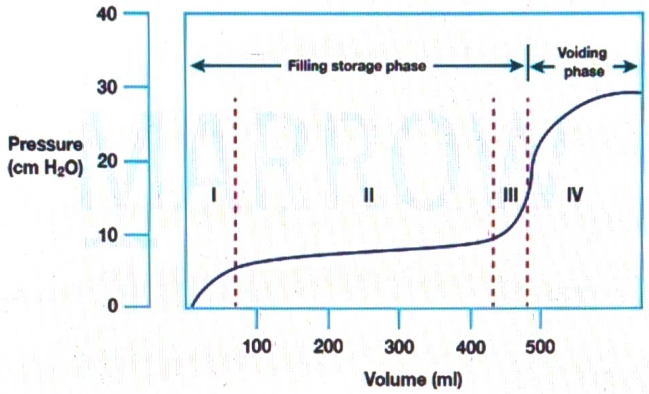
Bladder compliance :

----- Active space -----

$$\text{Compliance} = \frac{\text{Change in volume}}{\text{Change in pressure (Detrusor pressure)}}$$

- Urinary bladder can be approximated as a compliant hollow sphere.
- A normal cystometrogram plots intravesical/detrusor pressure against bladder volume during filling.

Bladder Compliance




- According to Laplace law :

$$\text{Pressure} = \frac{2 \times \text{Tension}}{\text{Radius}}$$

| Phase of bladder filling | Anatomical changes | Laplace explanation | Cystometrogram |
|---|---|---|---|
| Initial filling | Bladder unfolds; rugae flatten | Small increase in radius and wall tension | Small initial rise in pressure |
| Main filling phase | Bladder radius progressively increases | Increasing r offsets increasing wall tension (T) → (P=2T/r) changes very little | Long, nearly flat plateau |
| Near capacity (400–450 ml) | Bladder wall becomes increasingly stretched | Compliance falls; tension rises disproportionately to radius | Pressure begins to rise steeply |
| Micturition | Detrusor actively contracts | Large active increase in wall tension | Sharp pressure rise → voiding contraction |

- A large increase in bladder volume produces only a small increase in intravesical pressure because :
  i. Stress relaxation/receptive relaxation of detrusor/coaptation :
     - As the bladder fills, the detrusor initially stretches but then undergoes viscoelastic relaxation (Explains for high bladder compliance).
  ii. Laplace relationship :
     - As bladder volume increases, its radius increases.
     - The ↑ radius tends to counteract the effect of ↑ wall tension on pressure.
- Flat filling phase = Detrusor stress relaxation/↑ compliance + Laplace effect.

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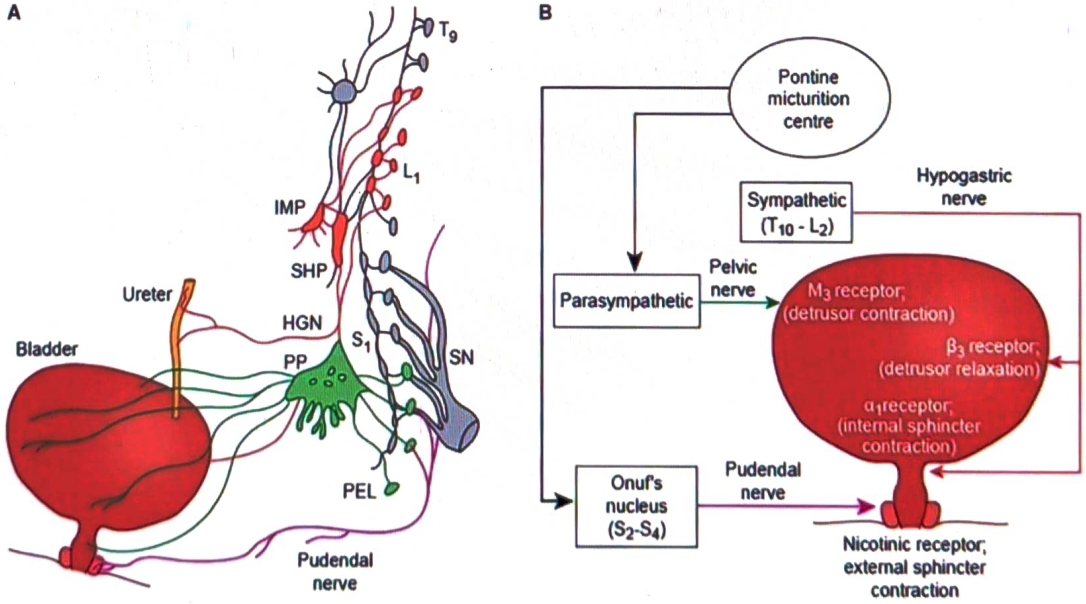
Bladder innervation :

Innervation of the detrusor :

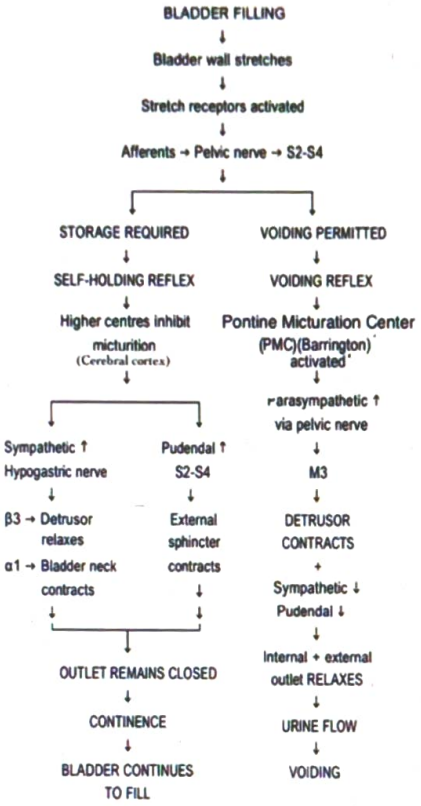
- Parasympathetic innervation :
  - The detrusor muscle contains $M_3$ muscarinic receptors.
  - Activation causes contraction of the detrusor muscle.
- Sympathetic innervation :
  - The detrusor muscle contains $\beta_3$ adrenergic receptors.
  - Activation causes relaxation of the detrusor muscle.
  - Sympathetic innervation arises from $T_{10}$ to $L_2$ spinal segments through the hypogastric nerve.

Innervation of the sphincters :

- Internal urethral sphincter :
  - The internal urethral sphincter contains $\alpha_1$ adrenergic receptors.
  - Sympathetic nervous system activation causes contraction of the internal urethral sphincter.
- External urethral sphincter :
  - Innervated by the somatic nervous system.
  - Somatic innervation arises from Onuf's nucleus from S2 to S4 spinal segments through the pudendal nerve.
  - It contains nicotinic receptors.



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## Lower urinary tract symptoms

00:25:12

### Major symptoms :

Overview :

- Storage symptoms : Increased urgency/frequency, nocturia.
- Voiding symptoms : Hesitancy, poor flow/, intermittent flow.
- Post micturation symptoms : Incomplete voiding, persistent sensation.

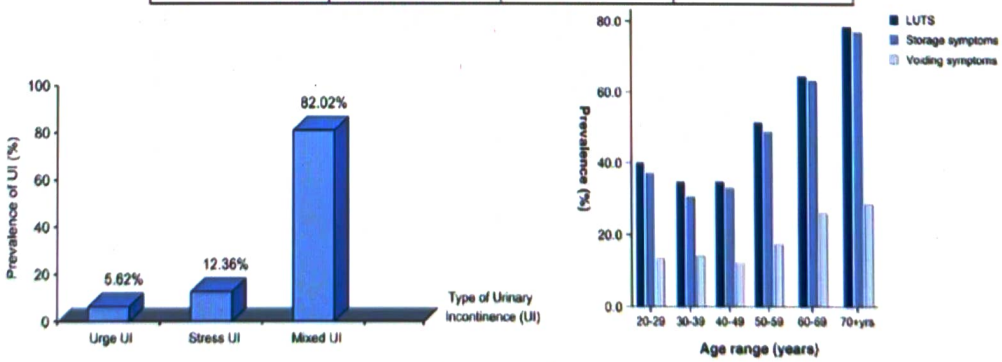
| Storage symptoms | |
|---|---|
| Symptom | Definition |
| Urinary incontinence | Any involuntary leakage |
| Stress incontinence | Involuntary leakage on effort/exertion (Sneezing/coughing) |
| Urge incontinence | Involuntary leakage that is always accompanied, immediately/preceded by urgency |
| Mixed incontinence | Stress + Urge → Involuntary leakage, associated with urgency, triggers + |
| Temporary incontinence | Frequent sudden urination, mostly seen post catheterization, post surgery, UTI |
| Urgency | Sudden compelling desire to pass urine |
| Increased daytime frequency | The complaint of wanting to void too often during the day (>8 times a day) |
| Nocturia | The complaint of wanting/forced to wake up one or more times at night to void (>1 episode) |

----- Active space -----

| Voiding symptoms | |
|---|---|
| Symptom | Definition |
| Slow stream | The perception of reduced urine flow |
| Intermittent stream | Urine flow that stops and starts |
| Hesitancy | Difficulty in initiating micturition, resulting in a delay in the onset of voiding after the individual is ready to pass urine |
| Terminal dribble | A prolonged final part of micturition when the flow has slowed to a trickle/dribble (might be physiological in males) |
| Dribble | The use of muscular effort to either initiate, maintain or improve the urinary stream |

| Post-micturition symptoms | |
|---|---|
| Symptom | Definition |
| Feeling of incomplete emptying | Self-explanatory |
| Post micturition dribble | Involuntary loss of urine immediately after finishing passing urine, usually after rising from the toilet |

| The Four Types of Urinary Incontinence | | | |
|---|---|---|---|
| **Stress Incontinence** | **Urge Incontinence** | **Mixed Incontinence** | **Temporary Incontinence** |
| If you leak urine during activities like coughing, laughing, sneezing or exercising, you have stress incontinence. | If you leak urine after a strong, sudden urge to urinate, you have urge incontinence. | Mixed incontinence is a mix of stress and urge incontinence. You may leak urine with a laugh or sneeze at one time. | You may have an illness like a urinary tract infection that causes frequent and sudden urination. |




Prevalence of types of incontinence

Over-active bladder (OAB) :

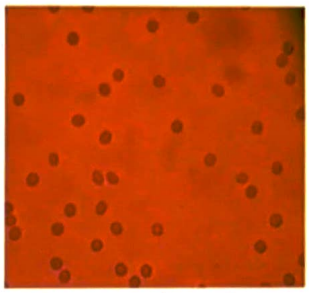
- It is a symptom-based diagnosis.
- It is increased urgency with (Wet OAB) or without (Dry OAB) urge incontinence.
- Usually presents with increased frequency and nocturia.
- But always rule out urinary pathology/UTI before establishing diagnosis.
- Incidence : 1/3rd of all women of any form of urinary leakage.

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## Minor symptoms :

### Hematuria :

- Can be :
  - Microscopic haematuria (Incidental diagnosis).
  - Gross haematuria : Visible frank haematuria.
- Recurrent or persistent UTI with haematuria → Suspect malignant mass or upper urinary tract infection → Need cystoscopic evaluat---
- Grading :



Microscopic hematuria



Gross hematuria

| Hematuria Grade | I | II | III | IV | V |
|---|---|---|---|---|---|
| Different words used to describe urine color | Clear<br>Clear pink<br>Light<br>Peach<br>Pink lemonade<br>Pigmentless | Clear<br>Clear pink<br>Light red<br>Pale red<br>Pink lemonade<br>Peach<br>Rosé<br>Watermelon | Bloody<br>Cherry<br>Grapefruit<br>Kool-Aid<br>Pink lemonade<br>Strawberry<br>Pink<br>Watermelon | Berry<br>Bloody<br>Cherry<br>Fruit punch<br>Kool-Aid<br>Raspberry<br>Red<br>Strawberry<br>Watermelon<br>Wine | Bloody<br>Cherry<br>Red<br>Frank blood<br>Ketchup<br>Magenta<br>Mauve<br>Sanguineous<br>Strawberry<br>Tomato<br>Wine |



### Nocturia :

- Nocturnal polyuria : Voiding >20% overall output of day at night (33%).
- Rule out :
  - Excessive bed-time fluid intake.
  - Diuretics.
  - CCF (Due to redistribution of blood to kidney).
  - Fluid redistribution.

### Polyuria :

- Voiding >40ml/kg of urine in 24 hour.
- Can be due to over drinking.
- Other caused : Diabetes (Type 1 > Type 2), hypercalcaemia.
  - Important to check for serum electrolytes (Na, K, Ca, Mg).

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**Urinary conundrum :**

- Most of the patients presents with :
  - Dysuria.
  - Bladder pain.
  - Over-active bladder.
- 90% of cases are due to UTI.
  - Signifies need for urine routine microscopy and culture & sensitivity.
- If these are inconclusive/Hematuria+, and negative USG → Check for interstitial cystitis.

Note :

SUI are mostly due to :

1. Urethral neck hypermobility : Seen in conditions where estrogen decreased, increased wear and tear, increase in age and other risk factors.
2. Intrinsic sphincter dymotility.

**Risk factors :**

- Risk for LUTS increases with :
  - Age.
  - Parity.
  - Vaginal delivery.
  - Obesity.
  - Hysterectomy (Due to surgical stress/post surgical complication).
  - Loss of estrogen (Endopelvic fascia has increase E2 receptors).
- Risk for LUTS decreased with :
  - Weight loss.
  - Use of intravaginal oestrogen.

Note :

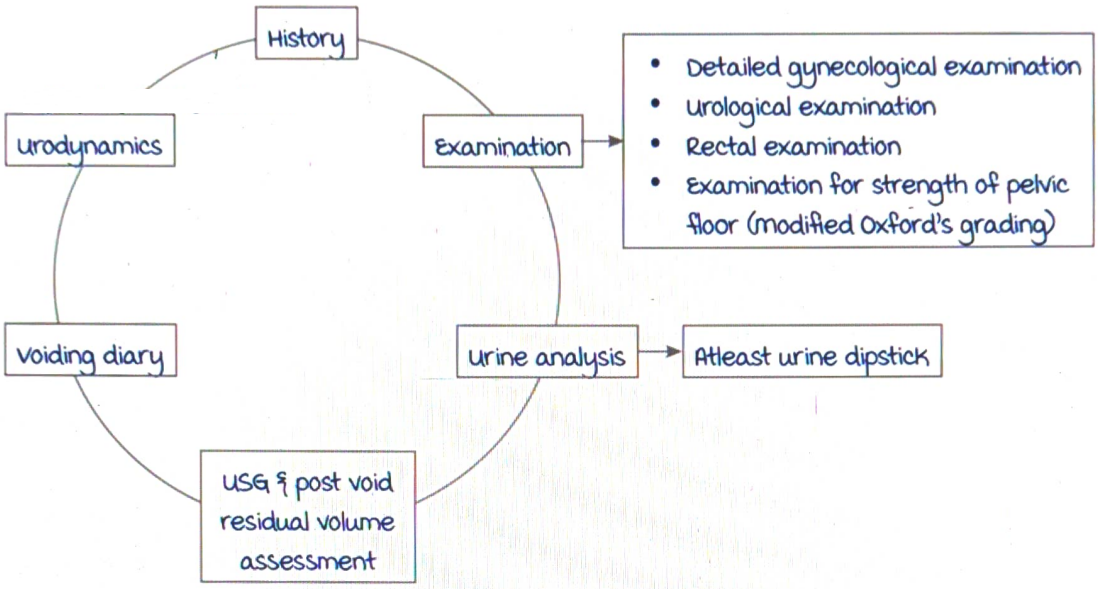
- Continuous severe urinary infection → Check for fistula, especially if there is history of :
  - Recent pelvic surgery/Childbirth/Vaginal birth.
  - Radiotherapy.
- Overflow incontinence :
  - Painless urinary retention, dribbling (Presenting symptom)
  - Due to decreased bladder sensation.
  - Storage issue, can leads abdominal distension or resemble as mass (DD for abdomino-pelvic mass).

## Assessment of patients with LUTS

00:49:31

----- Active space -----

### Overview :




### History :

| Domain | Specific symptoms to ask | What are you trying to identify? |
|---|---|---|
| Storage symptoms | Frequency, urgency, nocturia | OAB, UTI, polyuria |
| Urinary incontinence | Leakage : When/How/Quantity? | Type of UI |
| Voiding symptoms | Hesitancy, slow stream, intermittent stream, straining | Bladder outlet obstruction/ detrusor underactivity |
| Post micturition | Incomplete emptying, post-micturition dribble | Retention (mass or compression effect) or voiding dysfunction (Neurological) |
| Sensation | Reduced/absent bladder sensation | Neurological dysfunction |
| Pain | Dysuria, suprapubic/bladder pain | UTI/bladder pain syndrome |
| Other | Hematuria, recurrent UTI | Red flags especially for malignancies |

Clinical clues :

- Stress urinary incontinence (SUI) :
  - Occurs with coughing, sneezing, laughing, running, lifting, or exercise.
  - Ask whether urine leakage occurs during intercourse or exercise.
  - Ask whether the leakage is in small spurts or a large volume.
- Urgency urinary incontinence (UUI) :
  - There is a sudden, compelling desire to void.
  - The patient is unable to reach the toilet in time.
  - Symptoms may be triggered by running water, the key-in-door phenomenon, or cold weather.

----- Active space -----

- Mixed urinary incontinence :
  - Features of both stress urinary incontinence and urgency urinary incontinence are present.
  - Ask which symptom is more bothersome to the patient.
- Continuous urinary leakage : Continuous leakage suggests a fistula, ectopic ureter, severe sphincter dysfunction, or other causes of continuous incontinence.
- Nocturnal enuresis : Nocturnal enuresis should be specifically distinguished from nocturia.
- Pelvic organ prolapse (POP) :
  - Severe anterior or apical prolapse can cause urethral kinking and bladder outlet obstruction.
  - It can result in increased post-void residual (PVR) volume.
  - It can cause voiding dysfunction.
  - Ask whether the patient needs to reduce or splint the prolapsed mass before voiding.
  - Severe pelvic organ prolapse may mask stress urinary incontinence (This signifies need for post-void residual (PVR) volume assessment).

Bowel history :

- Urogynaecology includes the bladder, vagina and pelvic floor, and bowel.
- History to ask :
  - Constipation.
  - Straining during defecation.
  - Digitation or splinting during defecation.
  - Incomplete evacuation.
  - Faecal urgency.
  - Faecal incontinence.
  - Flatus incontinence.

Other history :

- Obstetric history :
  - History of prolonged labour.
  - History of multiparity.
  - History of vaginal delivery.
  - History of operative vaginal delivery.
  - History of excessive fundal pressure.
  - History of prolonged trial of labour.
- Gynaecological history :
  - History of hypoestrogenism.
  - History of hysterectomy or other gynaecological surgeries.
  - Menopausal history : Assess for genitourinary syndrome of menopause (Can cause recurrent urinary tract infections & urinary incontinence).

----- Active space -----

- Sexual history :
  - Ask whether the patient is currently sexually active : Consider total vaginal length and vaginal closure procedures based on sexual activity.
  - Ask about the effect of symptoms before and after intercourse.

Medical history :

- History of diabetes.
- Endocrine disorders.
- Metabolic disorders.
- Dyselectrolytaemia.
- Neurological conditions.

- Previous treatment history : Ask about previous medical or surgical treatment received for the condition.
- Drug history :

| Drug | Possible LUTS effect |
|---|---|
| Diuretics | Frequency/urgency/nocturia |
| Sedatives | Functional incontinence |
| Anticholinergics (Atropine)/anti-psycotics with anticholinergic effect (TCA) | Retention |
| Opioids | Retention |
| α-agonists (Phenylephrine/ephedrine) | ↑ Outlet resistance |
| α-blockers | ↓ Outlet resistance |
| $SGLT_2$ inhibitors (Dapagliflozin) | Polyuria/frequency (↑ Chance of UTI) |
| Drugs causing edema | may worsen nocturnal diuresis |

**Pad test :**

- Pad test is an objective method to quantify urine leakage.
- It is not recommended by NICE.
- It is not performed routinely.

**Post-void residual (PVR) :**

- Indications :
  - Women with voiding symptoms.
  - Women with recurrent urinary tract infections (UTIs).
  - Prior to major pelvic surgeries, such as vaginal hysterectomy (VH) or Ward-Mayo procedure (VH with pelvic floor repair).
- Interpretation :
  - Normal PVR is less than 25–30 mL.
  - PVR greater than 100 mL is considered abnormal.

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## Voiding diary :

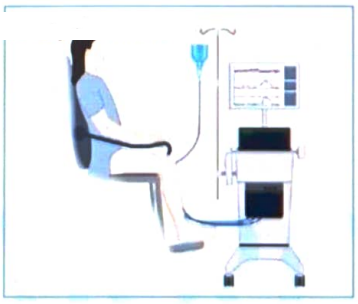
- A voiding diary is also called a frequency-volume chart.
- It is a simple and effective tool for assessing storage symptoms.
- Indications : All women with urinary incontinence.
- Duration :
  - Maintain the diary for 3 days.
  - It should include 1 working day and 2 free days, or 2 working days and 1 free day.
- Objectives :
  - Record the frequency of voids-urine leakage episodes.
  - Assess treatment outcomes after intervention.
  - Improve patient awareness and help identify avoidable habits.

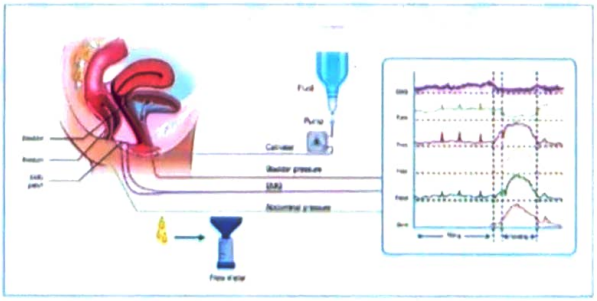
## Urodynamic testing :

Overview :

- Flow meters are used to assess pressure of flow of urine.
- Pressures studied :
  - Abdominal pressure is measured using an endoanal or rectal catheter.
  - Bladder pressure is measured using a catheter placed inside the bladder.
  - Urethral pressure profilometry is performed using a catheter placed in the urethra.
- Bladder filling methods :
  - Bladder filling can be performed by retrograde filling.
  - Bladder filling can also be performed by physiological filling.

Urodynamic Testing





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Objectives :

- Urodynamic studies objectively diagnose the pathology causing lower urinary tract symptoms (LUTS).
- They help guide surgical management.
- They help predict problems that may occur following interventions.

Indications :

- Urge-predominant urinary incontinence or mixed urinary incontinence (mui).
- Unclear urinary incontinence
- Voiding dysfunction.
- Apical compartment prolapse (possibility of de novo stress urinary incontinence).
- Previous history of surgery for stress urinary incontinence (SUI).

Note :

Urodynamic studies done in stress urinary incontinence (SUI) only if :

- Stress urinary incontinence is associated with pelvic organ prolapse.
- Failed previous surgery for stress urinary incontinence.

Components of urodynamic studies :

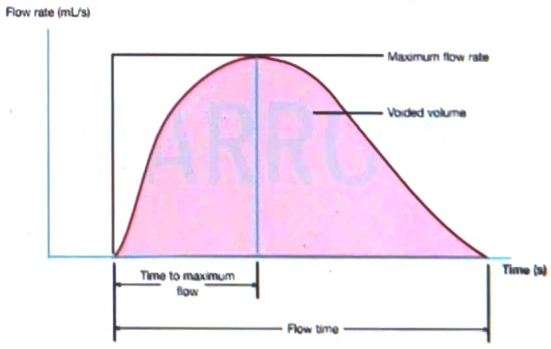
- Uroflowmetry : Urine flow and the ability to void or micturate are assessed.
- Cystometry : Bladder pressure is assessed during bladder filling and voiding.
- Complex investigations : Video urodynamics, urethral pressure-flowmetry, and ambulatory urodynamics.

Uroflowmetry :

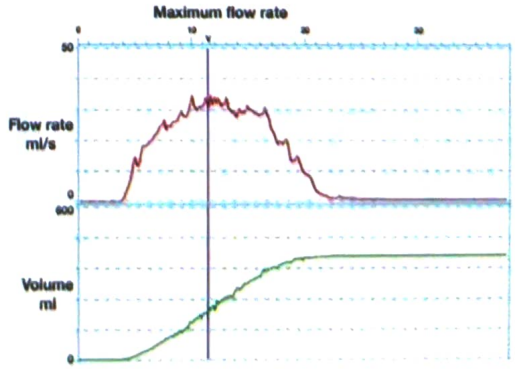
Features :

- The patient is asked to void, and sensors provide a graphical representation of the urinary flow rate.
- The volume should be >200 mL for the test to be considered valid.
  - If the volume is < 200 mL, retrograde bladder filling may be required.
- A normal uroflowmetry curve is bell-shaped.
- The maximum flow rate is approximately 15 mL/s.

Continuous urine flow recording with ICS




Normal Uroflowmetry

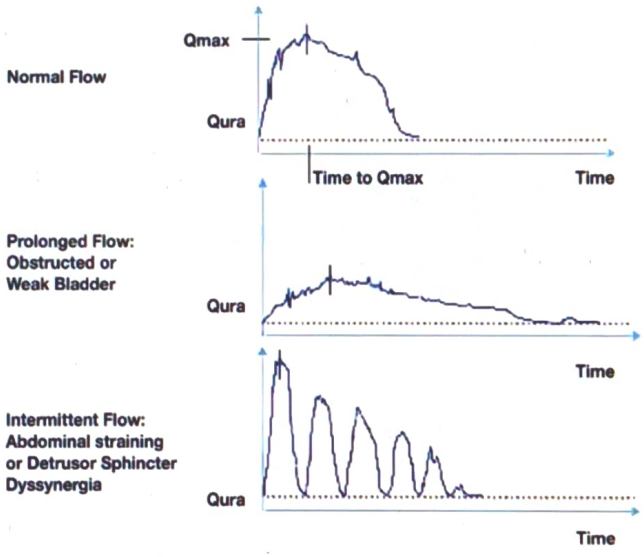


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Uroflow patterns :

1. Normal flow demonstrates a bell-shaped curve.
2. Prolonged flow may occur due to :
   - High-pressure flow suggests bladder outlet obstruction, which may occur due to cystocele or urethral kinking.
   - Low-pressure flow suggests a hypocontractile bladder.
3. Intermittent flow may occur due to :
   - Abnormal straining.
   - Detrusor-sphincter dyssynergia.

## Uroflow Patterns



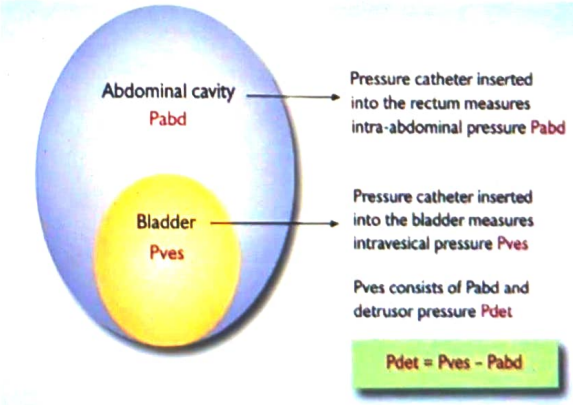

Cystometry :

Overview of filling cystometry :

- The bladder is filled while bladder pressure is assessed.
- Abdominal pressure is measured simultaneously with bladder pressure.
- Factors influencing bladder pressure :
  - External pressure due to abdominal pressure.
  - Pressure exerted by the detrusor muscle during bladder filling.

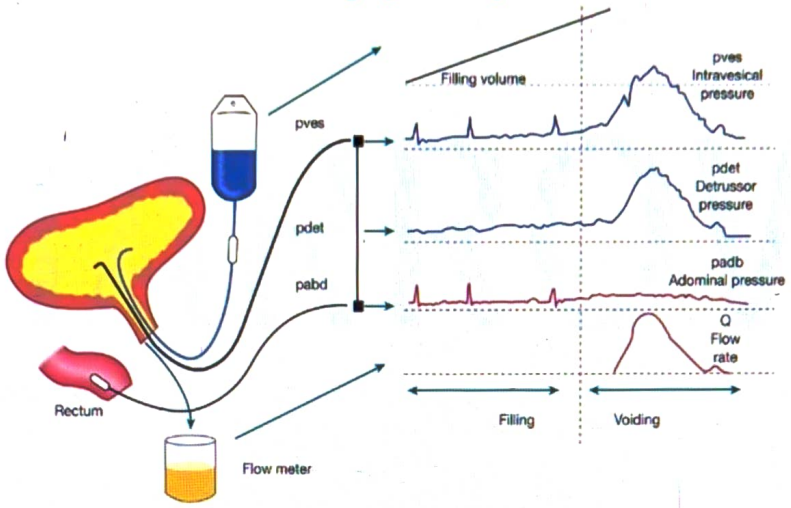
$$P_{detrusor} = P_{vesicular} - P_{abdominal}$$

  - A low detrusor pressure during voiding is suggestive of a hypocontractile bladder.



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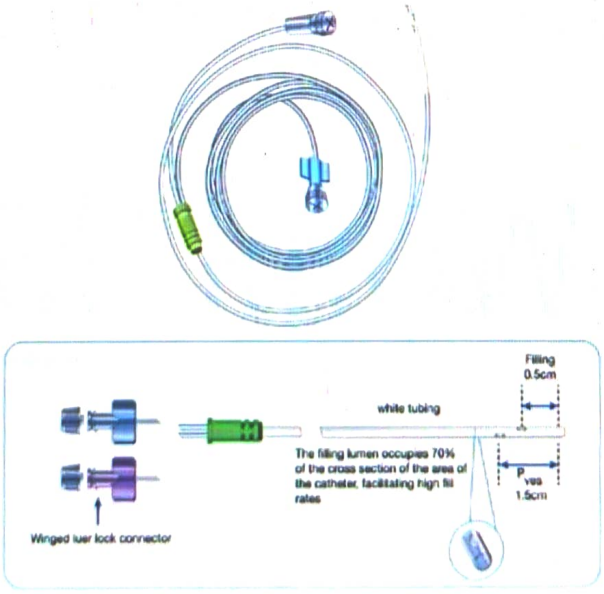
Filling Cystometry



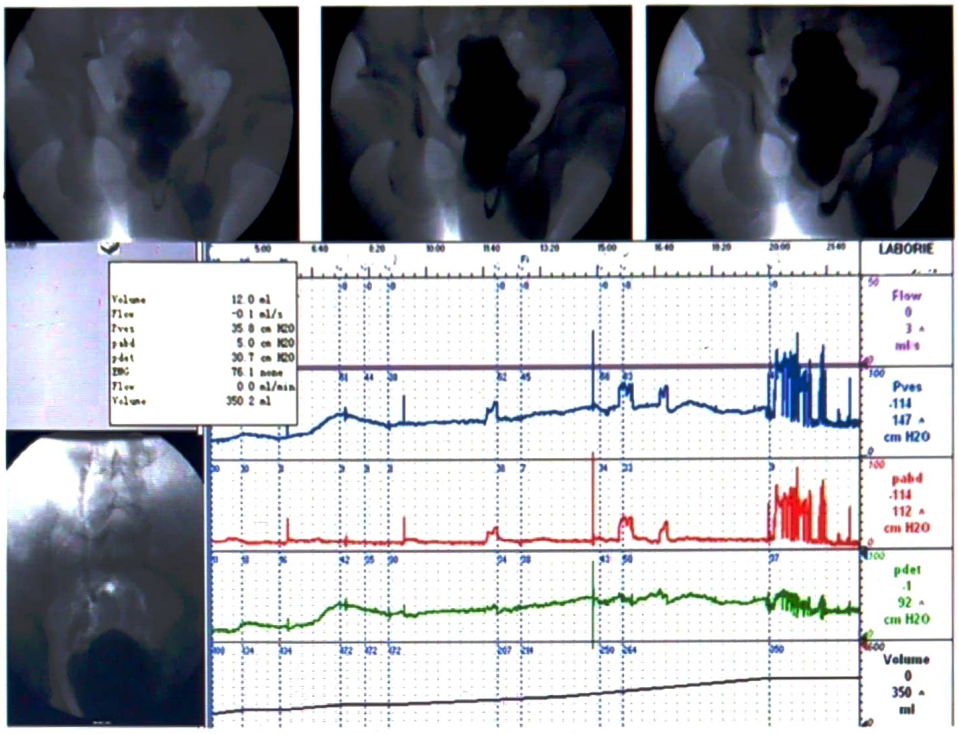

Video urodynamics with concomitant urodynamic imaging :

- Involves concomitant cystometry and urodynamic imaging.
- Cystoscopy may be performed concomitantly when indicated.
- Pressure measurements are obtained using double-lumen cystometry catheters.
  - The catheter contains a filling lumen and a pressure-measuring lumen.
  - The filling lumen should occupy at least 70% of the cross-sectional area of the catheter to facilitate high filling rates.
  - The catheter is connected using a winged Luer-lock connector.

Double Lumen Cystometry Catheter



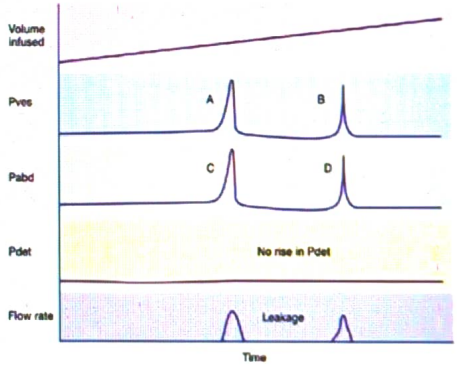
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Video urodynamics with concomitant urodynamic imaging

Filling cystometry in urodynamic stress incontinence :

- As bladder volume increases, the detrusor should remain compliant, with only an increase in vesical pressure.
- Abdominal pressure increases with stress events such as sneezing or exertion.
- In patients with stress urinary incontinence, an increase in abdominal pressure is transmitted to the bladder, resulting in an increase in vesical pressure accompanied by urine leakage.

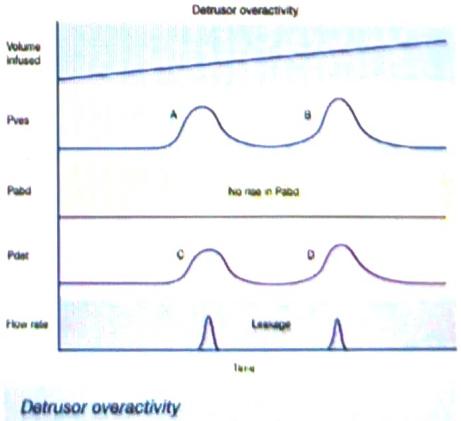



*Urodynamic stress incontinence*

- Clinically diagnosed stress urinary incontinence confirmed on urodynamic testing is termed urodynamic stress incontinence.

Filling cystometry in detrusor overactivity :

- As vesical pressure increases with increasing bladder volume, detrusor pressure also increases.
- This may be accompanied by simultaneous urine leakage.
- Increase in detrusor pressure occurs without a rise in abdominal pressure or the presence of a stress event.




*Detrusor overactivity*

----- Active space -----

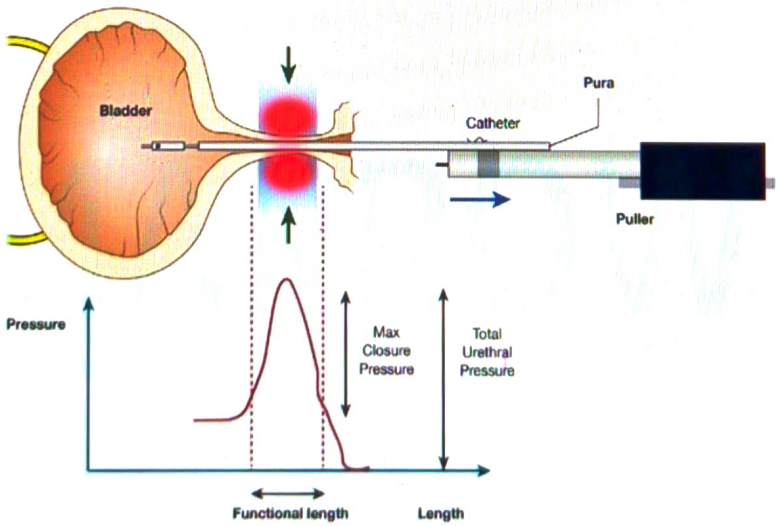
Voiding cystometry :

- The patient is asked to void at the end of cystometry.
- The urinary flow rate & flow pattern are correlated with detrusor pressure.
- It helps identify voiding dysfunction.

Urethral pressure profilometry :

- It helps differentiate intrinsic sphincter deficiency from urethral hypermobility.
- A catheter is placed in the urethra to measure urethral pressure.
- It may be performed in patients with stress urinary incontinence to determine the underlying cause.
- Maximum urethral closure pressure (MUCP) less than 25 cm $H_2O$ suggests intrinsic sphincter deficiency due to a weak urethral sphincter.
  - Intrinsic sphincter deficiency may be managed pharmacologically with drugs acting on nicotinic receptors.
- MUCP greater than 25 cm $H_2O$ with persistent urinary leakage suggests urethral hypermobility or a hypermobile bladder neck.
  - Urethral hypermobility may require surgical correction.

Urethral Pressure Profilometry




jhajahnvi21@gmail.com

Ambulatory urodynamics :

- Ambulatory urodynamics records bladder function during physiological bladder filling.
- Portable recording devices are used.
- It is indicated when the diagnosis remains unclear despite conventional urodynamic studies.

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## Summary :

| Symptoms | Urodynamic diagnoses | Urodynamic definition |
|---|---|---|
| OAB<br>• Urgency<br>• Frequency<br>• Nocturia<br>• Urge<br>• Leakage | Detrusor overactivity | • Involuntary detrusor contraction in filling phase leading to leak.<br>• It can be :<br>- Spontaneous<br>- Provoked |
| SUI<br>• Leak<br>• Stress + cough/sneeze | Urodynamic Stress Incontinence | Involuntary leakage of urine during increased abdominal pressure in the absence of detrusor overactivity |

## Other investigations :

Imaging :

- Intravenous urography (IVU) : used for evaluation of urinary fistula.
- Computed tomography (CT) urography: used for evaluation of urinary fistula.
- Ultrasonography (USG) :
  - Indicated in upper urinary tract infection.
  - Indicated in persistent visible or non-visible haematuria.
  - Indicated in suspected neurogenic bladder.
- Magnetic resonance imaging (MRI): used for evaluation of urethral diverticulum.

Cystoscopy :

Indicated in :

- Haematuria.
- Recurrent urinary tract infections (UTIs).
- Previous history of mesh surgery.
- Interstitial cystitis.
- Over-active bladder (OAB) refractory to treatment.
- Suspected urethral stricture.

Feedback

# ASSESSMENT & MANAGEMENT OF LUTS : II

----- Active space -----

## Overactive bladder

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### Definition :

- Symptom-based diagnosis : Urgency + frequency + nocturia.
- In the absence of UTI or any other lower urinary tract pathology.
- A diagnosis of exclusion.
- Contributing factors : Excessive fluid intake, caffeine, alcohol, medications, diuretic abuse.
- Work-up :
  - Urine RMCS in all patients → If abnormal, consider cystoscopy.
  - Urodynamics not mandatory before starting treatment
- Types : Wet OAB and dry OAB.

### First line — Lifestyle measures :

- Reduce overall fluid intake.
- Avoid tea, coffee, alcohol.
- Review medications, offer alternatives.
- Weight loss, target BMI < 30.
- Containment products (Pads, toilet/urinal aids, disposable urinal kits).
  - Pure adjuncts to prevent social embarrassment.
  - Need more frequent review (Pads risk UTI).

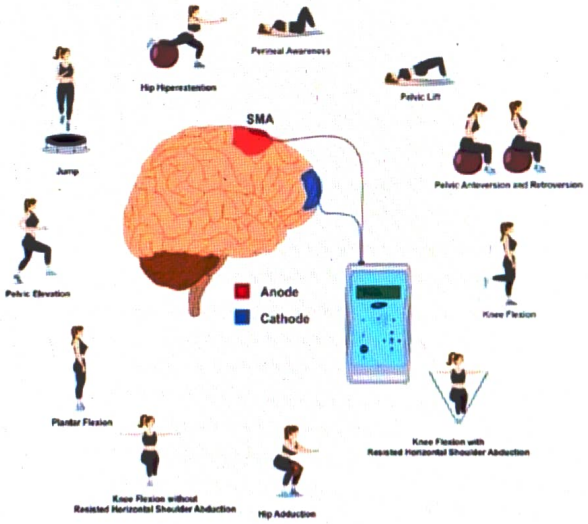
### Bladder training :

- First line as an add-on to lifestyle measures (NICE/RCOG).
  - Minimum 6 weeks; if successful → Continue to 12 weeks.
  - If symptoms grossly reduced at 12 weeks → Continue the same.
  - Review : 6-monthly if >75 years, 12-monthly if < 75 years.
- Golden rule : The 1½ hour rule.
  - Void voluntarily every 1.5 hours (Urgency is usually from excess filling).
  - Once comfortable, ↑ holding by 0.5–2 hours, up to a max of 3 hours.
  - Review the balance chart in the voiding diary.
  - Restrict fluids to 1.5 L/24 hours.
  - Successful patients often become peer teachers in community support groups.

----- Active space -----

## Pelvic floor training in OAB :

- OAB is detrusor overactivity until proven otherwise — pelvic floor training alone will not help. PFMT is first line for SUI (Stress urinary incontinence), not for OAB.
  - Useful only when there is a coexisting pelvic floor component → Do urodynamics first.
  - Works via the suburethral muscular area (Brodmann area 6) to enable urge suppression.
- Ancillary exercises : Perineal awareness, pelvic lift/tilt, anteversion-retroversion with ball, Knee flexion with shoulder abduction, hip adduction, pelvic elevation, jumping and hip hyperextension.



PFMT

## Biofeedback :

- Works wonders with associated urge incontinence.

The natural biofeedback chain :

On urgency, stop moving — do not rush to the toilet
↓
Perform strong voluntary pelvic floor contractions
↓
Hypercontraction of external urethral sphincter via pudendal nerve (Onuf's nucleus, S2–S4)
↓
Reflex inhibition of parasympathetic bladder supply
↓
Detrusor contraction suppressed
↓
Urgency falls; storage continues; time bought to reach a lavatory

----- Active space -----

- Devices : Remote/button-controlled electrode pads that stimulate the musculature directly to produce the same reflex.

**Medical Management :**

- Started at the 6-week review if non-compliant, or compliant but unrelieved.

Receptor basis :

- M3 (Parasympathetic) : Detrusor contraction.
- β-3 (Sympathetic) : Detrusor relaxation.

| Antimuscarinics | β-3 agonists |
|---|---|
| Oxybutynin (Also transdermal patch) | Mirabegron |
| Tolterodine, fesoterodine | Vibegron |
| Solifenacin, trospium | |

Side effects :

- Antimuscarinics : Dry mouth, blurred vision, constipation, daytime somnolence, dementia, rarely hypertension.
- β-3 agonists : Hypertension, dry mouth.

Special considerations :

- Avoid oxybutynin in older women : Quaternary + tertiary amine, worsens cognitive impairment → Progressive dementia.
- Avoid oxybutynin in normal pressure hydrocephalus : These patients already present with incontinence + dementia and are prone to Alzheimer's.
- Tolterodine is preferred for starting (Has lower dementia risk).
- Nocturia/night-time urgency : Add desmopressin.
  - Absolutely contraindicated in cystic fibrosis.

**Refractory OAB :**

- Definition : No relief despite 4 weeks of escalating medical management or added ancillary treatment.
- Note : True OAB requires urodynamically proven detrusor overactivity.
- Second-line ladder :
  - Botox.
  - Neurostimulation (If Botox fails).
  - Augmentation cystoplasty.
  - Urinary diversion (Last resort).