Urinary Incontinence in Women

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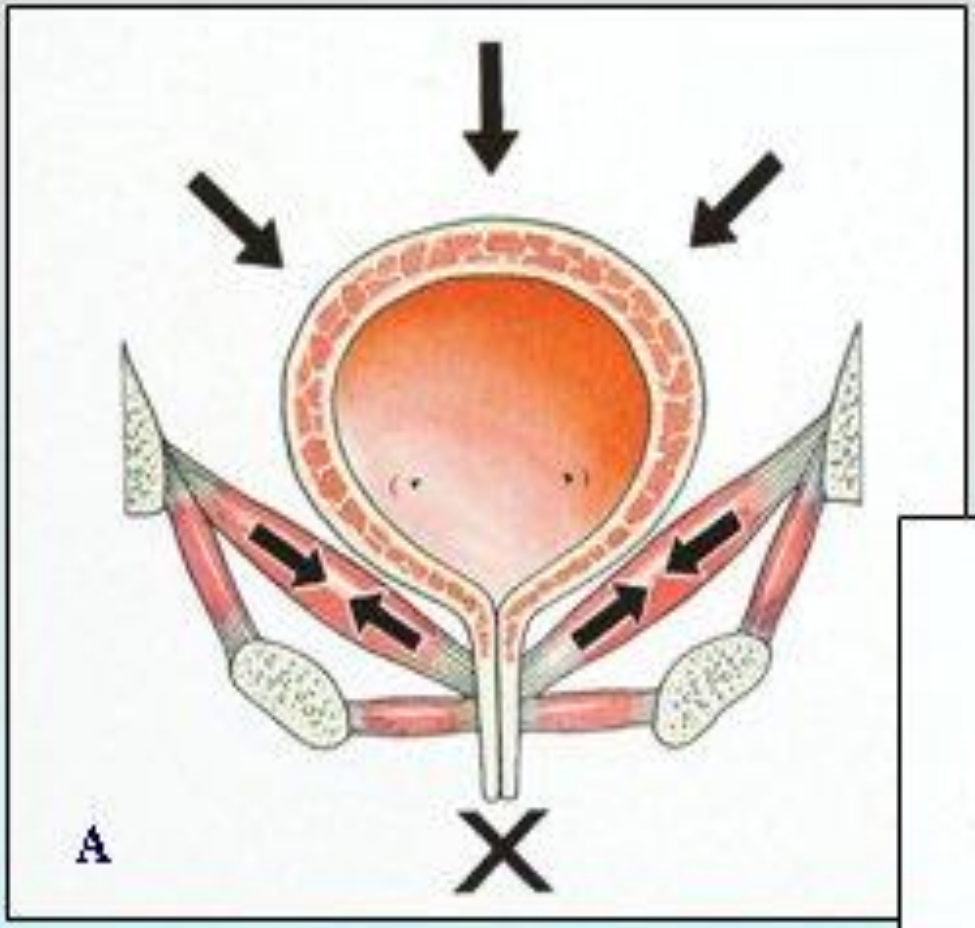
Objectives:

- **Physiological factors .**
- **Definition.**
- **Etiology & risk factors.**
- **Types.**
- **Presentation.**
- **Investigations.**
- **Treatment options.**

Physiology of Micturtion:

- Storage and voiding involves complex interactions between the bladder, urethra, urethral sphincter, and nervous system.
- The urinary bladder, capacity of 400 to 500 ml, serves to store or expel urine by relaxation or contraction of the detrusor muscle.

- **The urinary sphincter, composed of an internal component, a continuation of detrusor smooth muscle that converges to form a thickened bladder neck controlled by the autonomic nervous system.**
- **Somatically controlled external component (striated muscle), must relax to allow for the contracting bladder to expel its load.**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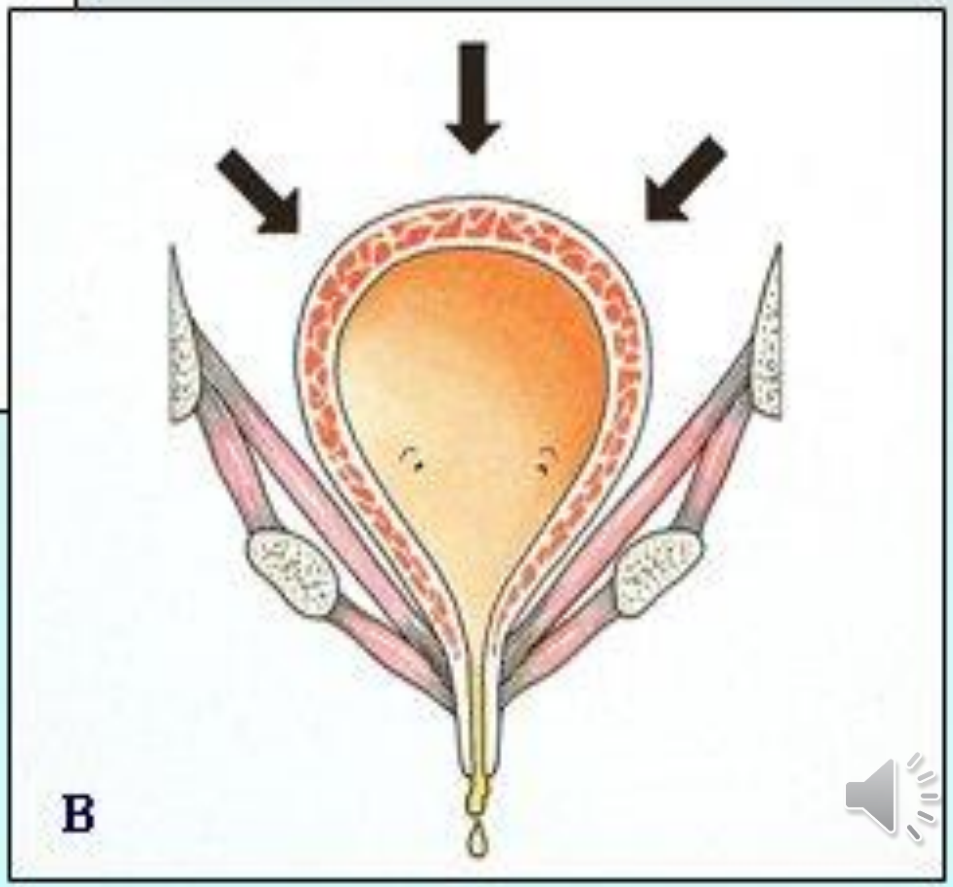
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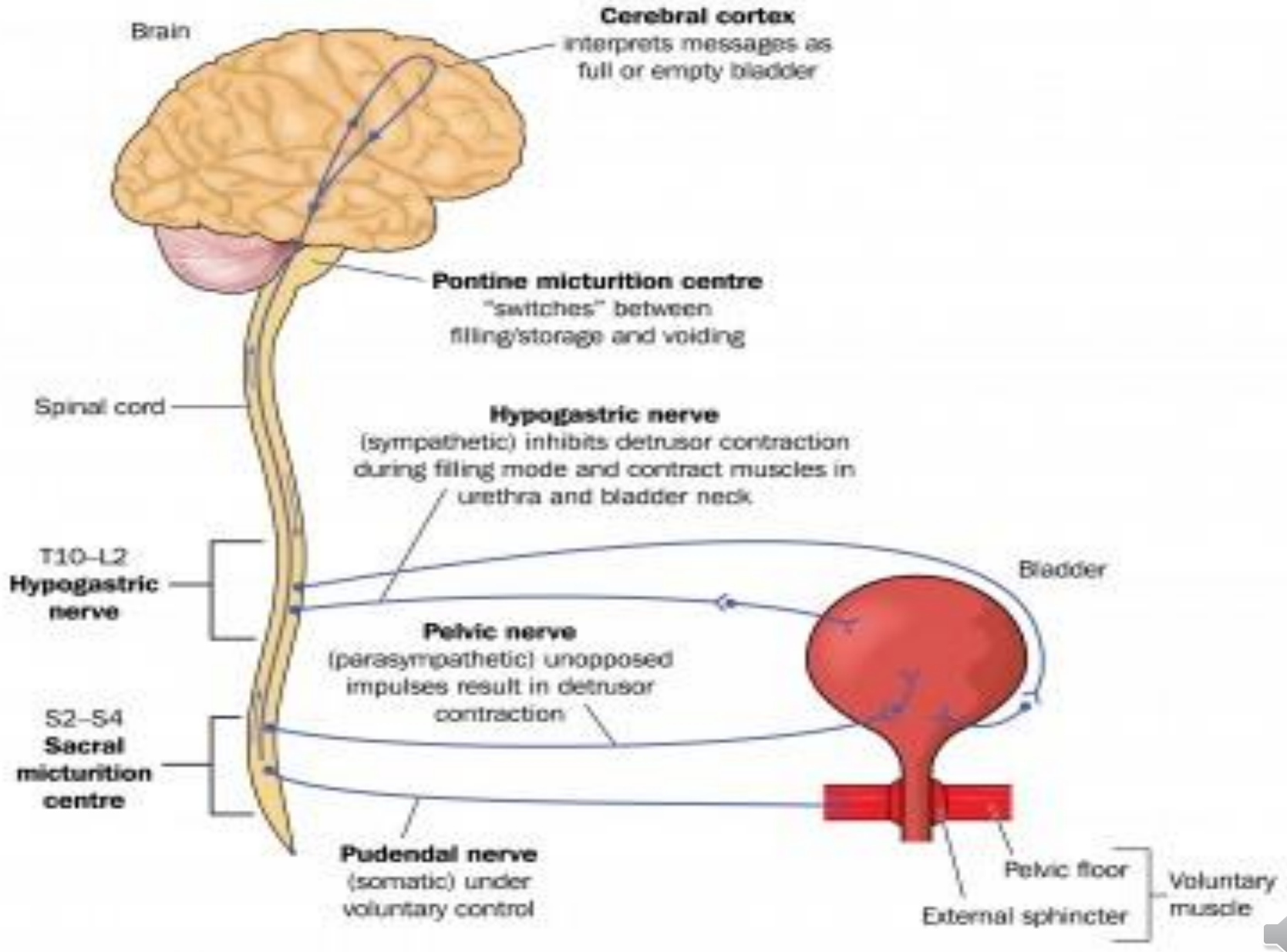

Brain
Cerebral cortex
interprets messages as full or empty bladder
Pontine micturition centre
"switches" between filling/storage and voiding
Spinal cord
Hypogastric nerve
(sympathetic) inhibits detrusor contraction during filling mode and contract muscles in urethra and bladder neck
T10–L2
Hypogastric nerve
Bladder
Pelvic nerve
(parasympathetic) unopposed impulses result in detrusor contraction
S2–S4
Sacral micturition centre
Pudendal nerve
(somatic) under voluntary control
Pelvic floor
External sphincter
Voluntary muscle

- **Urinary incontinence (UI) :**

  any involuntary leakage of urine may occur as a result of abnormalities of function of the lower urinary tract or as a result of other illnesses.

- **It's common condition affect women of all ages, with a wide range of severity.**
- **It influences the physical, psychological and social wellbeing of affected individuals.**

- **In UK between 3 and 6 million may have urinary incontinence.**

Types of Urinary incontinence (UI) including:

- **Stress UI**
- **Urgency UI**
- **Mixed UI**
- **Overactive bladder (OAB):**
  - **OAB wet: occur with urge UI.**
  - **OAB dry: occur without urge UI.**

- **Stress UI:**

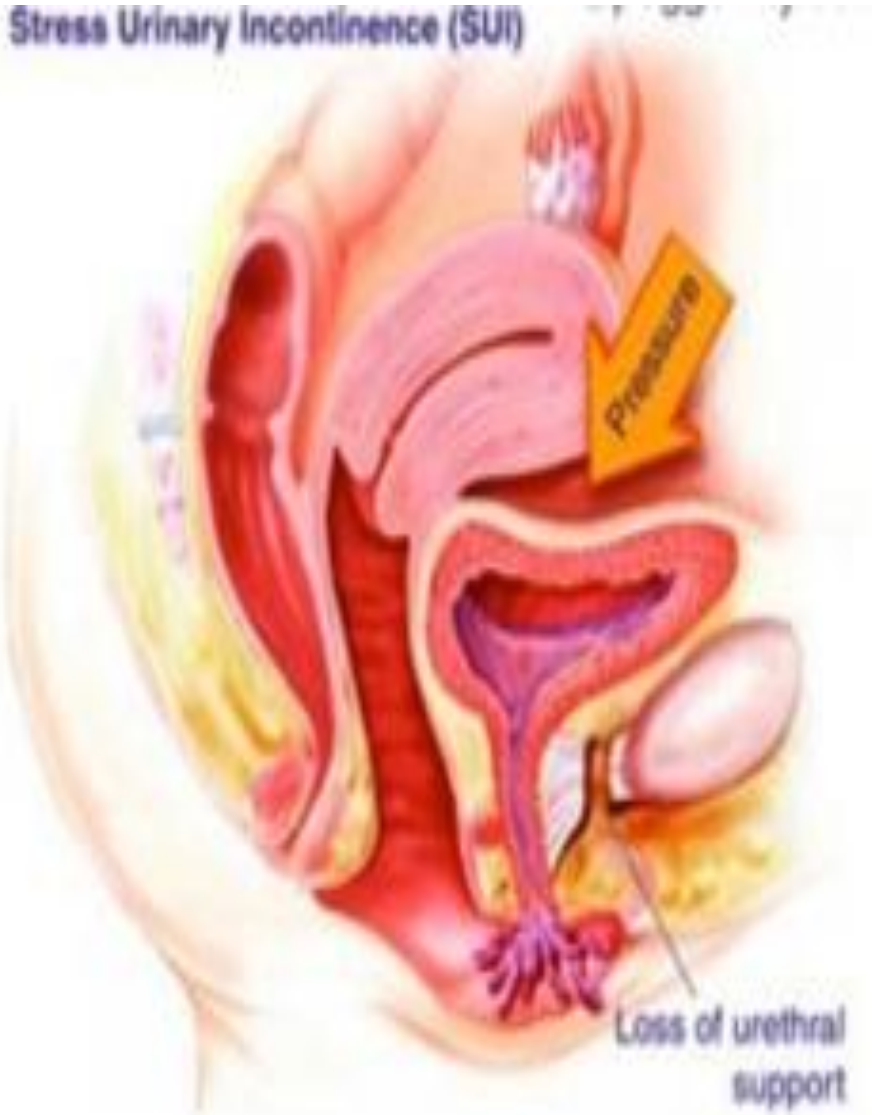
It’s involuntary urine leakage on effort or exertion or on sneezing or coughing.

increase in intra abdominal pressure → the bladder pressure exceeds urethral pressure → Involuntary leakage of urine.

Urgency UI:

It’s involuntary urine leakage accompanied or immediately preceded by urgency (a sudden desire to urinate that is difficult to delay).

NORMAL STRESS



STRESS INCONTINENCE

- **Mixed UI:**

It is involuntary urine leakage associated with both urgency and exertion, effort, sneezing or coughing.

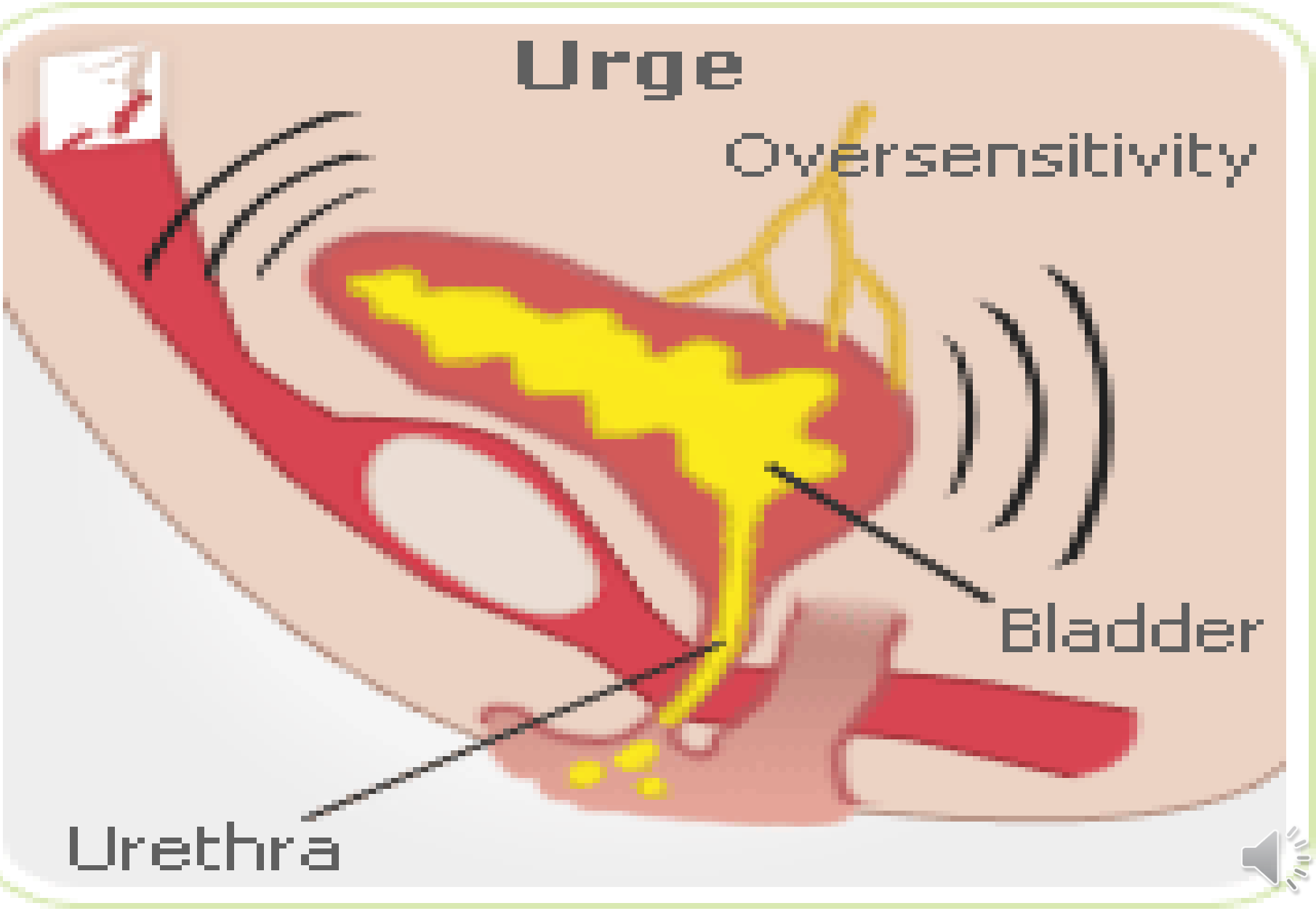
Overactive bladder (OAB)

- **It’s defined as urgency that occurs with or without urgency UI and usually with frequency and nocturia.**
- **'OAB wet:**

OAB that occurs with urge UI .

OAB dry:

OAB that occurs without urge UI .


Urge
Oversensitivity
Bladder
Urethra

- **Risk Factors:**
- **Post-Vaginal delivery:**
  - **30% of women become incontinent after first vaginal delivery**
  - **Episiotomy is not protective**
  - **Caesarean delivery may be partially protective**

  Post menopause:

  Post Operative:

- **Other risk factors: Obesity, Functional and Cognitive impairment, Family history, Constipation, Smoking, Genito-urinary prolapse**

DIAGNOSIS:

History:

- **Severity and quantity of urine lost and frequency of incontinence episodes**
- **Duration of the complaint .**
- **Triggering factors or events (cough, sneeze, lifting, bending, feeling of urgency)**
- **Associated frequency, urgency, dysuria &UTI.**

- **Any associated faecal incontinence or pelvic organ prolapse**
- **Obstetrical history: difficult deliveries, grand multiparty, forceps , and large babies.**
- **History of hysterectomy , or pelvic floor surgery.**

- Lifestyle issues as smoking or caffeine abuse.
- Any medications.

Medical problems :Chronic cough

- Chronic obstructive pulmonary disease (COPD)
- Congestive heart failure
- Diabetes mellitus
- Connective tissue disorders
- Postmenopausal hypo-estrogenism.
- Urinary tract stones

- **Physical Examination:**
- **Height, weight, Bp, PR. Obesity is a contributor to SUI influence therapy.**
- **RS, CVS Exam.**
- **Abd. Exam.**
- **the flank and costo-vertebral angles tenderness, or the presence of surgical scars.**
- **Pelvic exam. Type of UI.**
- **Assessment of pelvic floor muscles and prolapse.**
- **Neurologic examination.**

- **Investigations:**
- **Urine testing:**
  - **MSU,C&S.**

Symptoms of UTI with leucocytes &nitrate.

Symptoms of UTI with no leucocytes&nitrate.

No symptoms of UTI with leucocytes &nitrate

U/S for Assessment of residual urine:

- **residual urine normally less than 50 mls.:**

- **Indications:**

  -symptoms of voiding problems.

  -recurrent UTI.

  - Palpable bladder after voiding.

- **Bladder diaries:**

assessed at least for 3 days.

- **Pad test.**

Not recommended in routine assessment.

Urodynamic study:

Not recommended before start conservative treatment.

- **Urodynamic testing, as indicated:**
- **Cystometry. Subtracted cystometry**

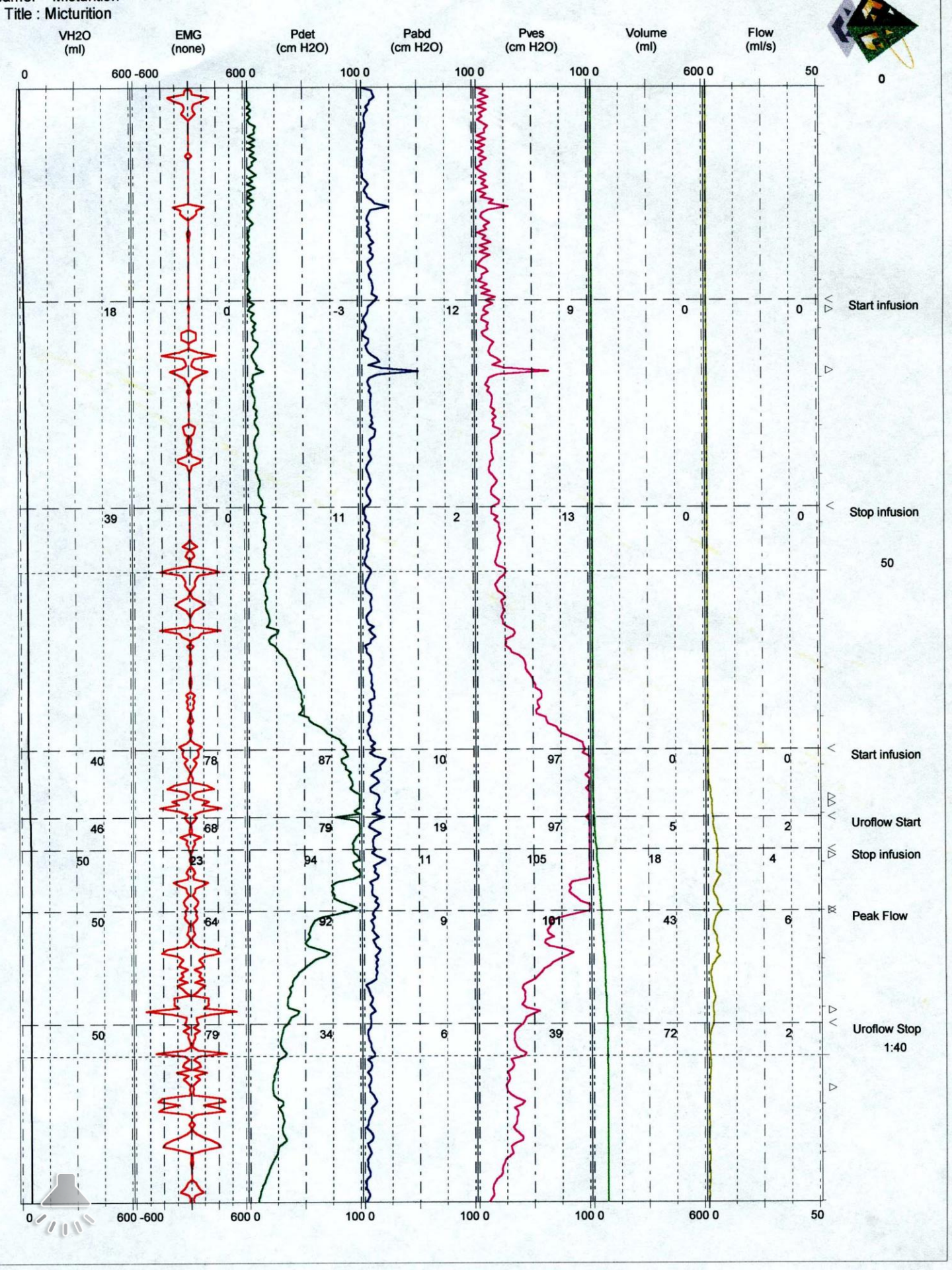
Urodynamic studies :

They are means of evaluating the pressure-flow relationship between the bladder and the urethra for defining the functional status of the lower urinary tract.

- **It aids in the diagnosis of urinary incontinence based on patho-physiology.**

- **It assess both the filling-storage phase and the voiding phase of bladder and urethral function**

Title : Micturition



Conservative management:

- **1- Life style intervention:**
- **A trial of caffeine reduction.**
- **Modification of fluid intake.**
- **Weight loss if BMI more than 30.**

Stress incontinence Therapy :

2- Physical therapy:

Pelvic floor physiotherapy.

- **Pelvic Floor Muscle Training (PFMT):(more than 3 ms)**
- **It should be offered to all women as first-line management and is effective for both stress and urge UI . If brief verbal instruction on PFM contractions is adequate in 78% of women .**
- **Vaginal cones ,electrical stimulation.**

Anti-incontinence devices.

- **Absorbent Products**

are pads or garments designed to absorb urine to protect the skin and clothing. By reducing wetness and odour, they help to keep patients comfortable and allow them to function in usual activities.

3- Drug therapy:

Imipramine (Tofranil):

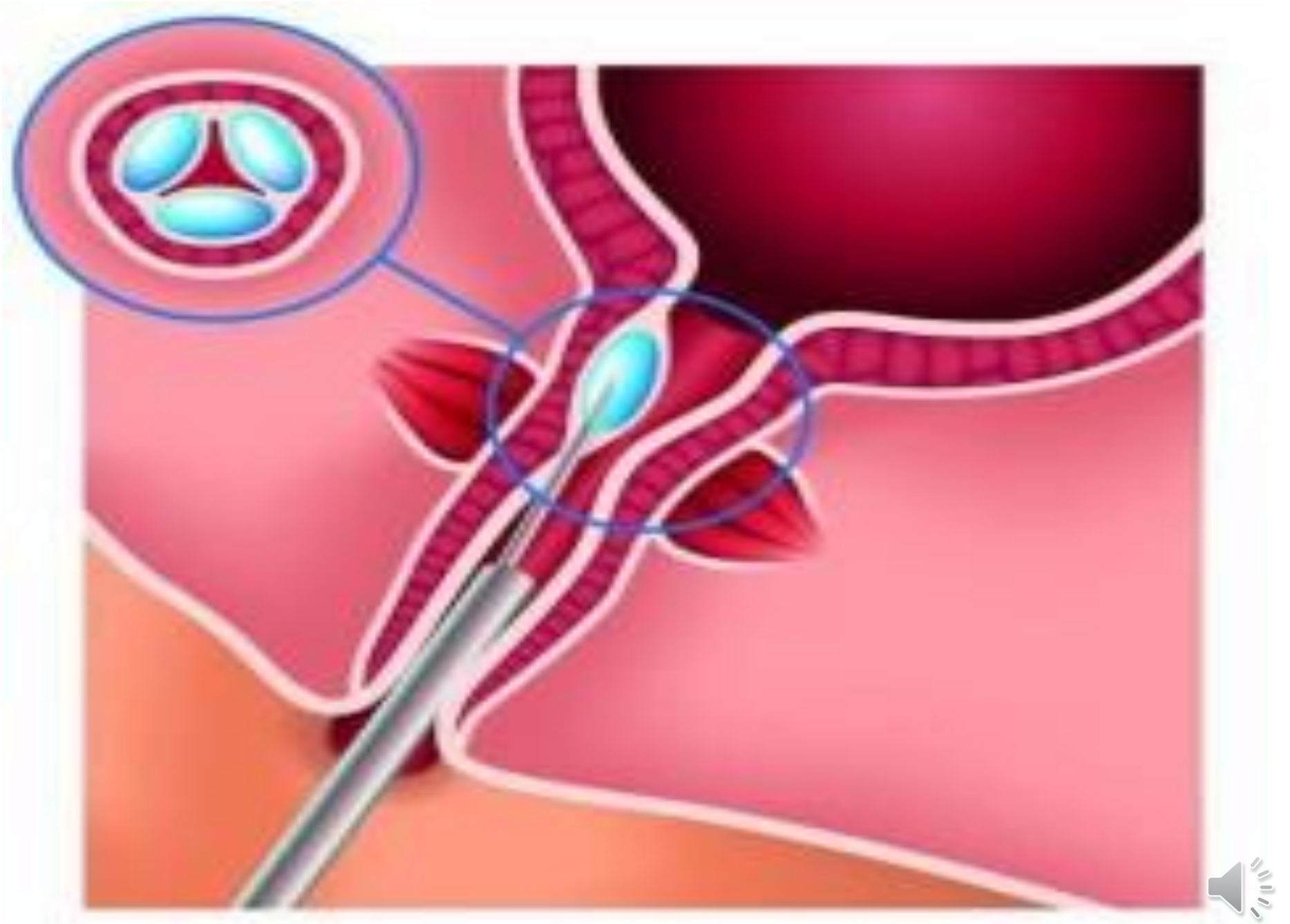
It facilitates urine storage by decreasing bladder contractility and increasing outlet resistance. It has an alpha-adrenergic effect on the bladder neck, an antispasmodic effect on the detrusor muscle, and a local anesthetic effect on the bladder mucosa

- **Duloxetine:**
- **It's serotonin/nor-adrenaline reuptake inhibitor It is approved for the treatment of stress incontinence in Europe, enhance urethral activity. Dose 20-40 mg.**

Urethral bulking agent:

It is a substance that can be injected into the walls of the urethra. This increases the size of the urethral walls and allows the urethra to stay closed with more force like collagen, or autologous substances .More recently, investigations stem cell injections.

It can be transurethral and per-urethral injection.



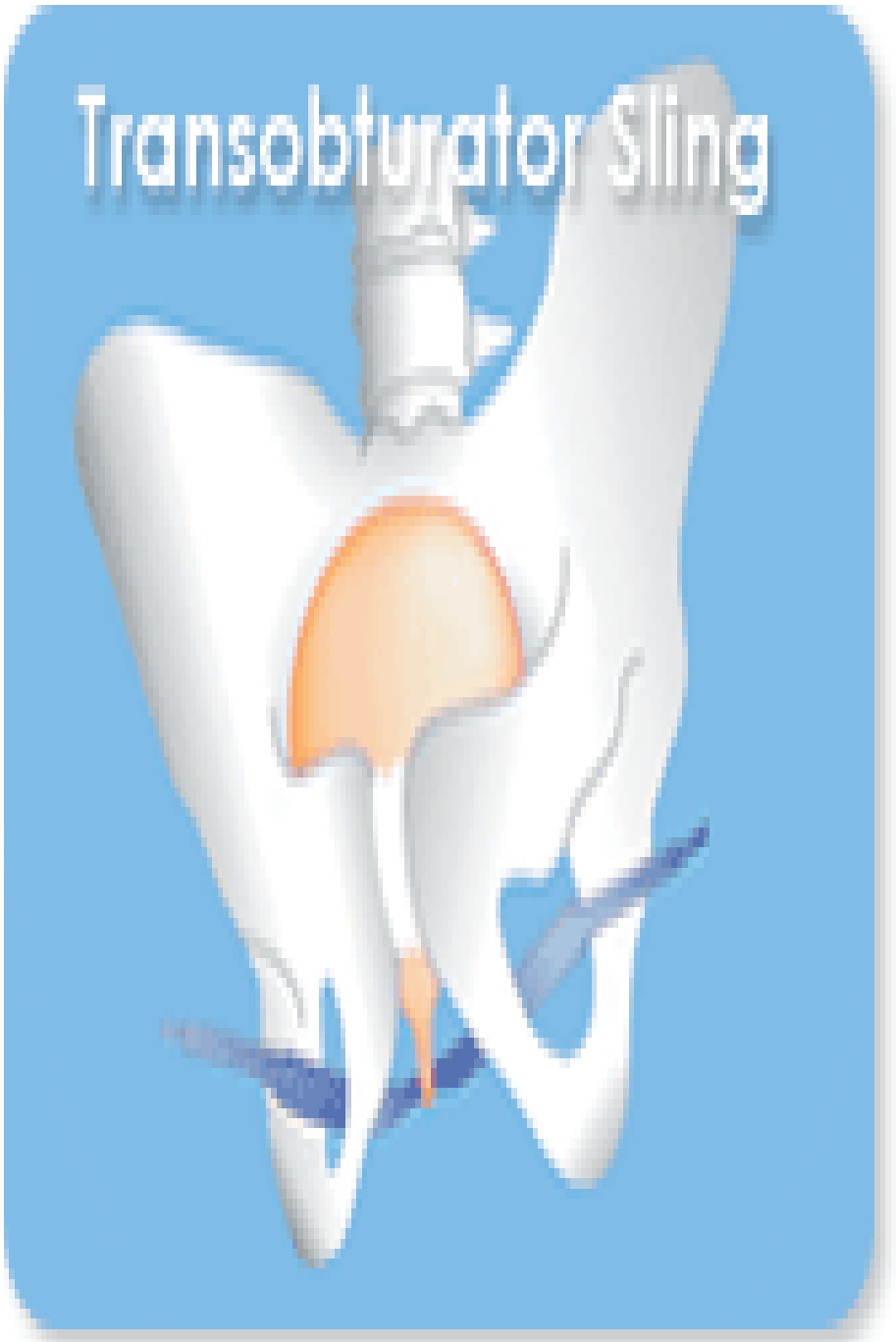
Surgery for stress incontinence:

minimally invasive surgery may be the most effective form of managing urinary incontinence

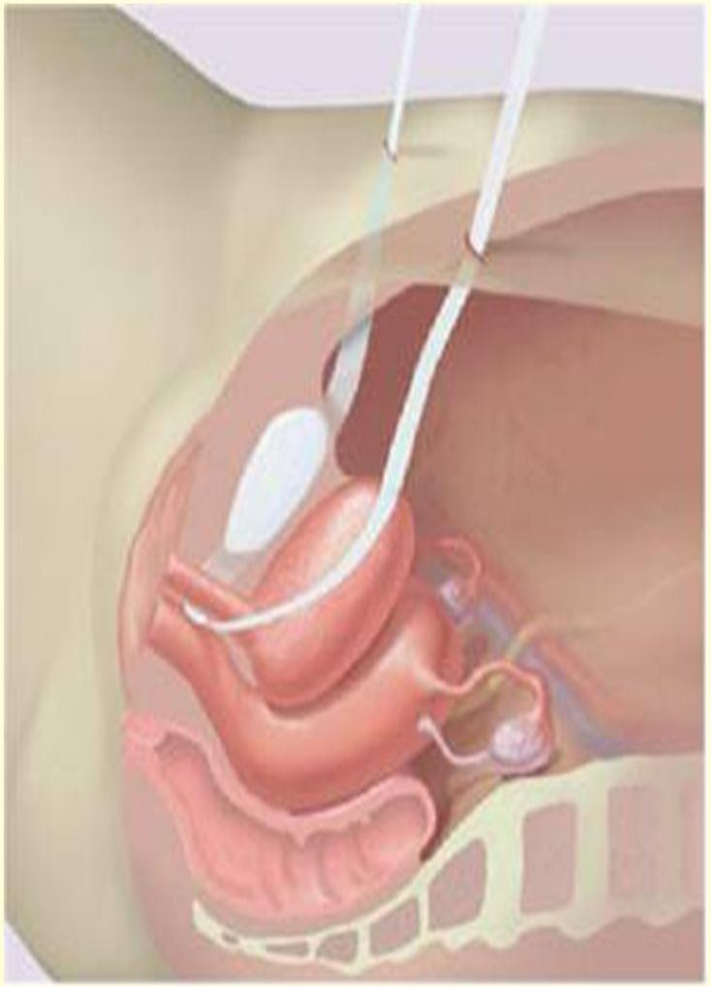
- **Tape procedures**

  A piece of plastic tape is inserted through an incision inside the vagina and threaded behind the urethra. The middle part of the tape supports the urethra, and the two ends are threaded through two incisions in either the:

- tops of the inner thigh – this is called a **transobturator tape procedure (TOT)**
- abdomen – this is called a **retropubic tape procedure or tension-free vaginal tape procedure (TVT)**



TVT



Surgery:

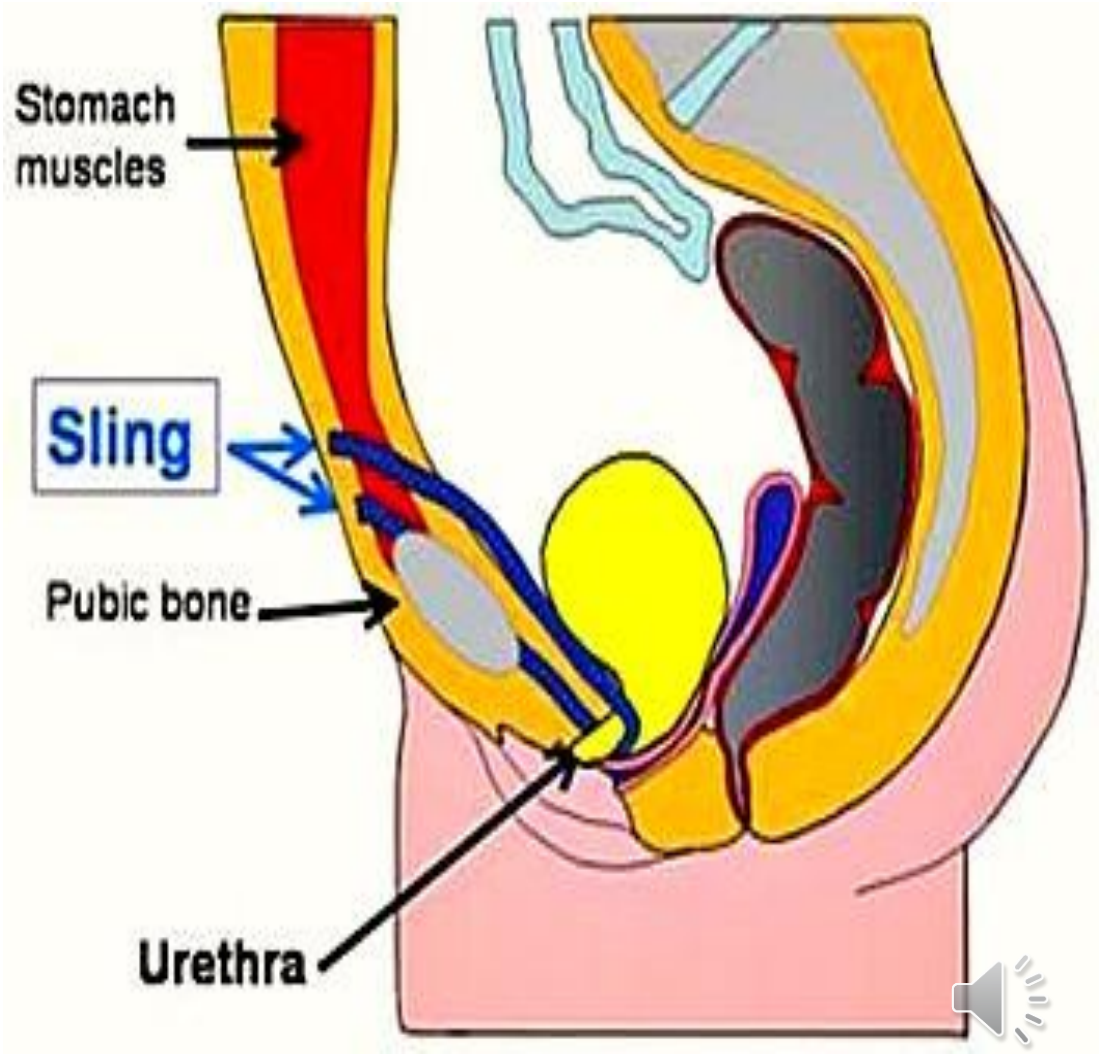
- **Colpo-suspension:**
- **Sling procedures:**

Abdominal.

Laparoscopic.

Abdominal-vaginal.

Vaginal.



Urge incontinence Treatment:

Changes in diet habits.

behavioural modification(Bladder Re-training).

pelvic-floor exercises.

medications :

Anti-cholinergic Drugs

- **Oxybutynin :**

  It reduces incontinence episodes by 83-90%. The total continence rate reported to be 41-50%.

- **Tolterodine (Detrol):**

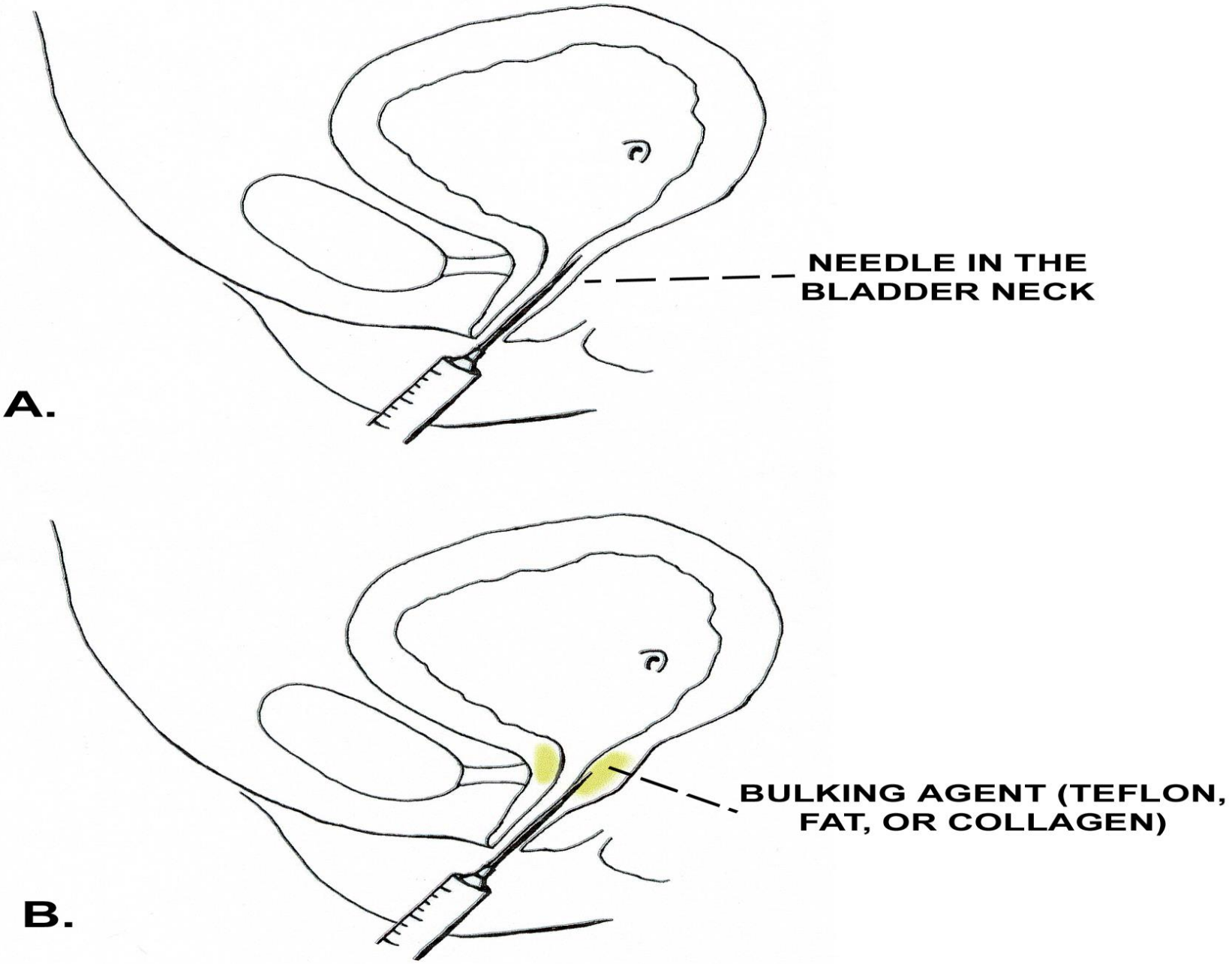
  It is a potent anti-muscarinic agent for treating detrusor over activity. The dosage range is 1-2 mg twice daily.

New forms of surgical intervention:

- **Botulinum toxin**
- **It s use in patients with neurologic conditions who have overactive bladder. Intra-detrusor injections via cystoscopy**

- **Mixed incontinence :**

  Anti-cholinergic drugs and surgery.


NEEDLE IN THE
BLADDER NECK
A.
BULKING AGENT (TEFLON,
FAT, OR COLLAGEN)
B.

Urinary Fistula:(True Incontinence)

Vesico -vaginal F.

Uretero -vaginal fistulas

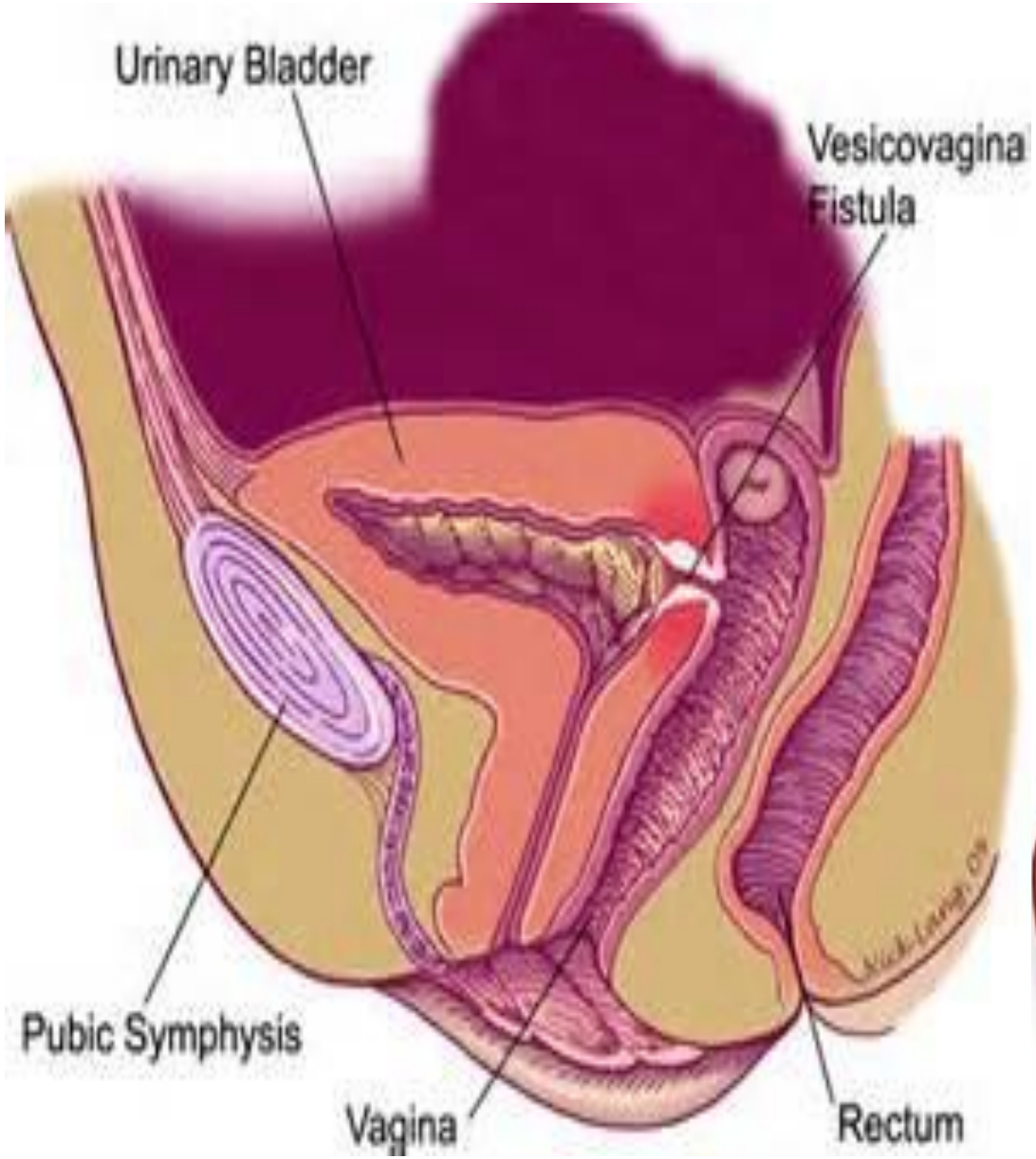
are the most feared complications of female pelvic surgery. More than 50% of such fistulas occur after hystrectomy for benign diseases as uterine fibroids, menstrual abnormalities, and uterine prolapse.

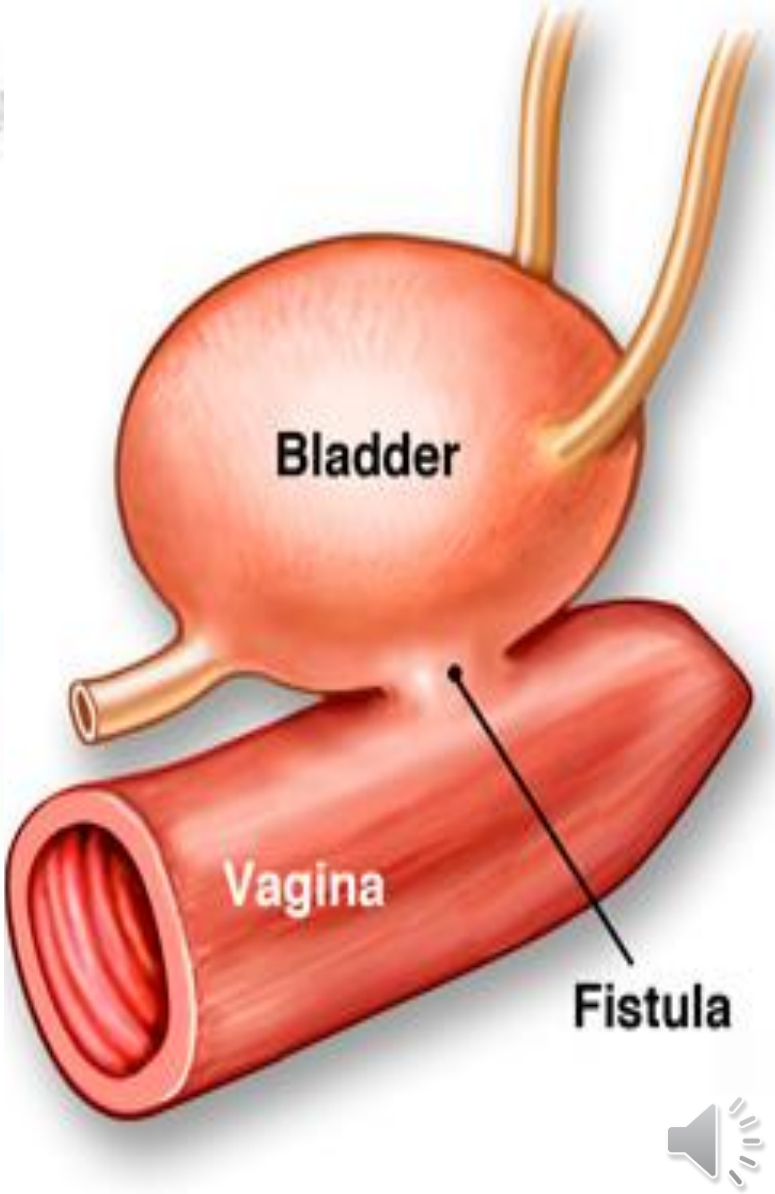
The incidence of vesico-vaginal fistula is unknown.

The incidence of vesico-vaginal F. resulting from hysterectomy is estimated to be less than 1%.

- **In USA, more than 50% of vesicovaginal and ureterovaginal F. occur after hysterectomy for benign diseases.**
- **Pelvic radiation is the primary cause of delayed fistula. Radiation is used to treat cervical or endometrial carcinoma .**

- **In developing countries, obstetrical complications are the most common cause .**
- **In cases of longstanding and obstructed labour leading to pressure necrosis on the anterior vaginal wall. It may be large and have extensive local tissue damage and necrosis.**


Urinary Bladder
Vesicovagina Fistula
Pubic Symphysis
Vagina
Rectum


Bladder
Vagina
Fistula

Diagnosis:

History.

Ph. examination : PV , any fluid collection noted.

Investigations:

Discharge can be tested for urea, creatinine, or potassium concentration to determine VVF.

- **Indigo carmine dye can be given intravenously and if the dye appears in the vagina, a fistula is confirmed.**
- **Three swab test:**

  By filling of the bladder with methylene blue and use cotton in three sites in the vagina and see which will stain.

- **Colour Doppler ultrasonography with contrast media of the urinary bladder may be considered .**
- **Cysto-urethroscopy may be performed.**
- **If ureteric involvement is suspected then IVP performed.**
- **The differential diagnosis for the discharge of urine vesico-vaginal F. ,or Vaginitis.**
- **Urine should be sent for culture and sensitivity, and infection should be treated.**

Treatment:

- **Vesico-vaginal and Uretero-vaginal fistulas recognized within 3-7 days after the causative operation may be repaired immediately via a trans-abdominal or trans-vaginal approach.**

- **Fistulas identified after 7-10 days postoperatively should be monitored periodically until all signs of inflammation and indurations have resolved.**

- **The traditional approach has been to wait at least 3-4 months before fistula closure.**

- **Some they close the fistula with or without using peritoneal flap without waiting 3-4 months.**

- **Patients with a history of multiple failed repairs, patients with associated enteric fistula or patients with a history of pelvic radiation should not undergo fistula repair for at least 6-8 months.**

For a small fistula, an initial trial of urethral catheter drainage may be attempted for 4-6 weeks. Optimal success achieved in patients who had longer and narrower fistulas.

. Persistent incontinence after an adequate period of watchful waiting requires open exploration and formal fistula repair.

- **The trans-vaginal approach is the safest and most comfortable for the patient.**
- **A history of previous failed repairs does not preclude trans-vaginal reconstruction.**
- **Fistulas occurring after hysterectomy are usually amenable to trans-vaginal reconstruction.**
- **Trans-vaginal repairs do not require excision of the fistula tract.**