

FEMALE STRESS URINARY INCONTINENCE



OSAMA M WARDA MD

Prof. of OBS/GYN

Mansoura University

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Definitions

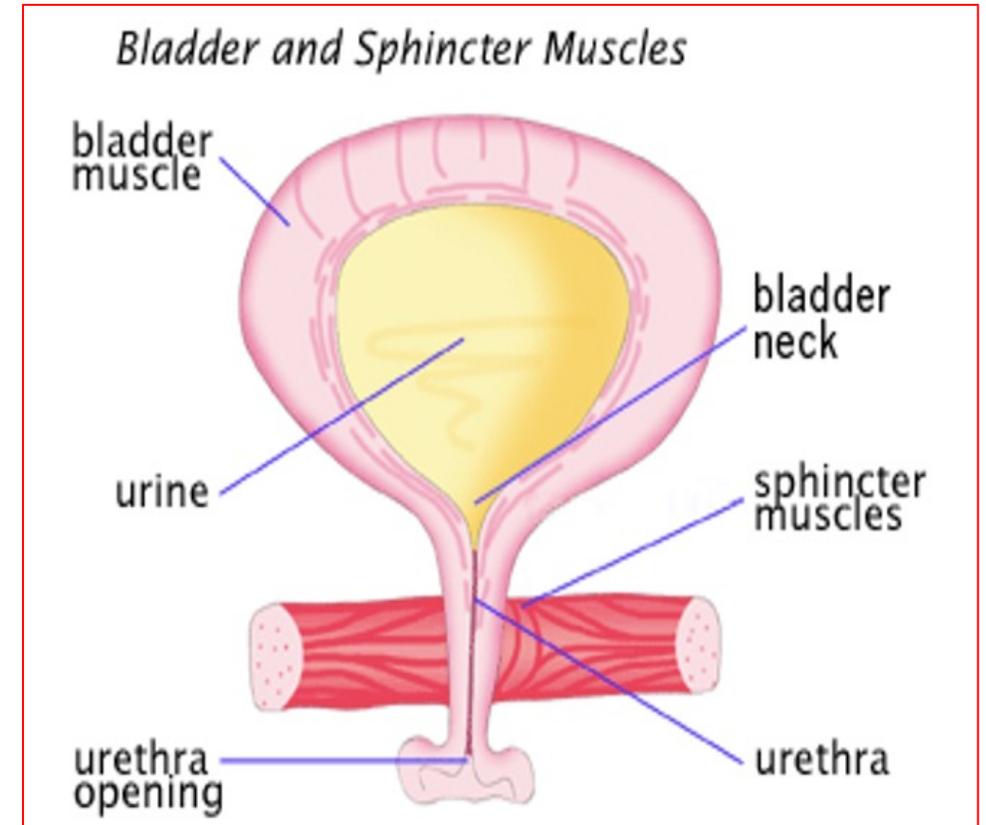
Urinary incontinence: is a condition in which **involuntary loss of urine** is a social or hygienic problem and is objectively demonstrable (ICS 20020) “The complaint of any involuntary leakage of urine”.

Stress incontinence, also known as stress urinary incontinence (**SUI**) or effort incontinence is a form of urinary incontinence. It is due to insufficient strength of the closure of the bladder.



Normal continence Function

- Functional urethra is **intra-abdominal**
- Increased abdominal pressure transmitted **equally** to bladder and urethra.
- With increased stress urethro-vesical junction responds to stress by **closing tight**
- Bladder is a **voluntary** smooth muscle
- Inherent ability to maintain low pressure with filling-increase in volume-compliance.



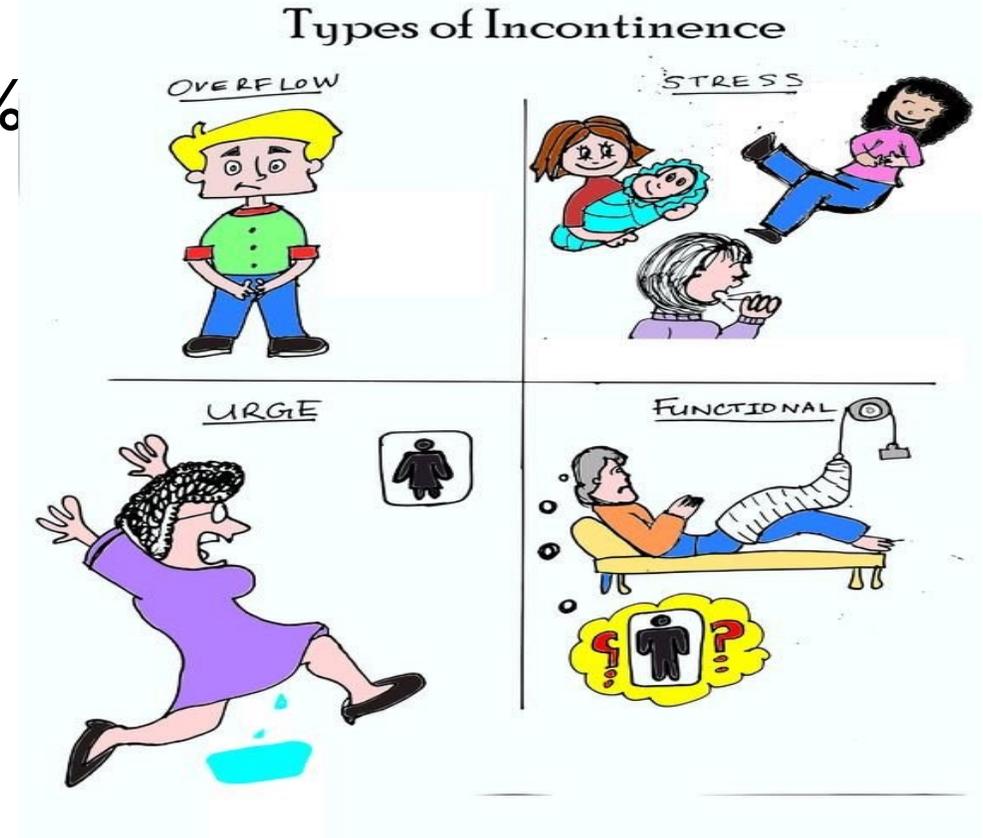
Impact on health

Urinary incontinence is **not** associated with increased **mortality** . However, incontinence can impact **many other aspects of a patient's health**:

- 1- Quality of life** – Urinary incontinence is associated with depression and anxiety, work impairment, and social isolation .
- 2- Sexual dysfunction** – Incontinence during sexual activity (coital incontinence), which may affect up to one-third of all incontinent individuals, and fear of incontinence during sexual activity both contribute to incontinence-related sexual dysfunction .
- 3-Morbidity** – include perineal infections (eg, candida or cellulitis) from moisture and irritation as well as falls and fractures that in turn increase overall morbidity, and health care costs .
- 4-Increased caregiver burden** – 6%-10% of nursing home admissions in the United States are attributable to urinary incontinence.

Causes of urinary incontinence

1. Stress incontinence **50%**
2. Overactive bladder syndrome (urge) 25%
3. Mixed incontinence 25%
4. Overflow incontinence
5. Fistulae
6. Urethral diverticulum
7. Functional
8. Reversible causes



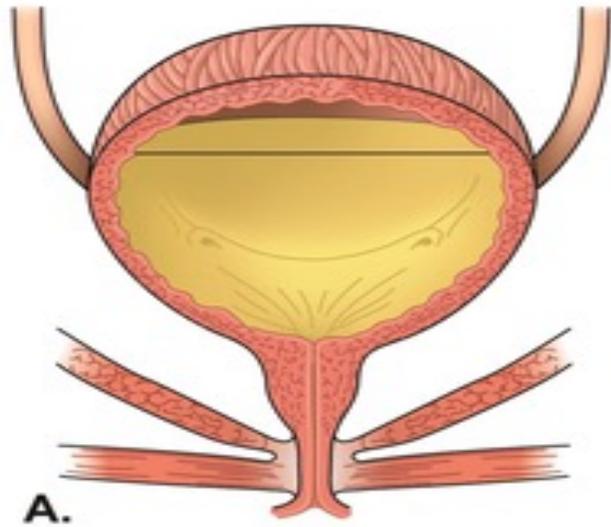


Prevalence

- Over all prevalence of UI ranged from 4.5 – 53% of women.
- **SUI** is most common type of urinary incontinence in women, (50%), followed by urge incontinence (OAB); 25%, and mixed incontinence (25%).
- Overflow incontinence , urinary fistulae , urethral diverticulum , functional and reversible causes(e.g. pregnancy) are uncommon causes of urinary incontinence.

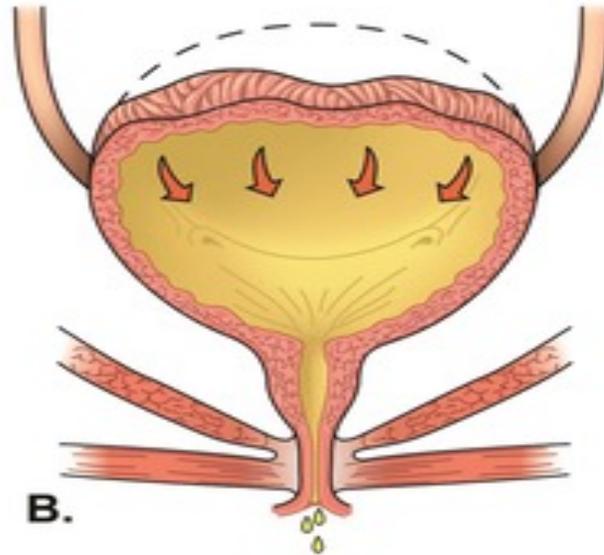
Types of female urinary incontinence

Normal



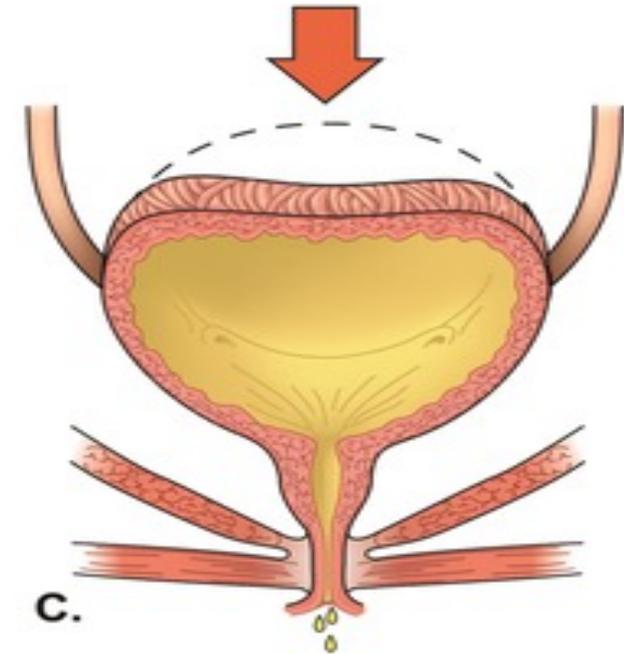
The bladder stays relaxed and the urethra stays contracted and closed until the patient is ready to void.

Urgency Incontinence



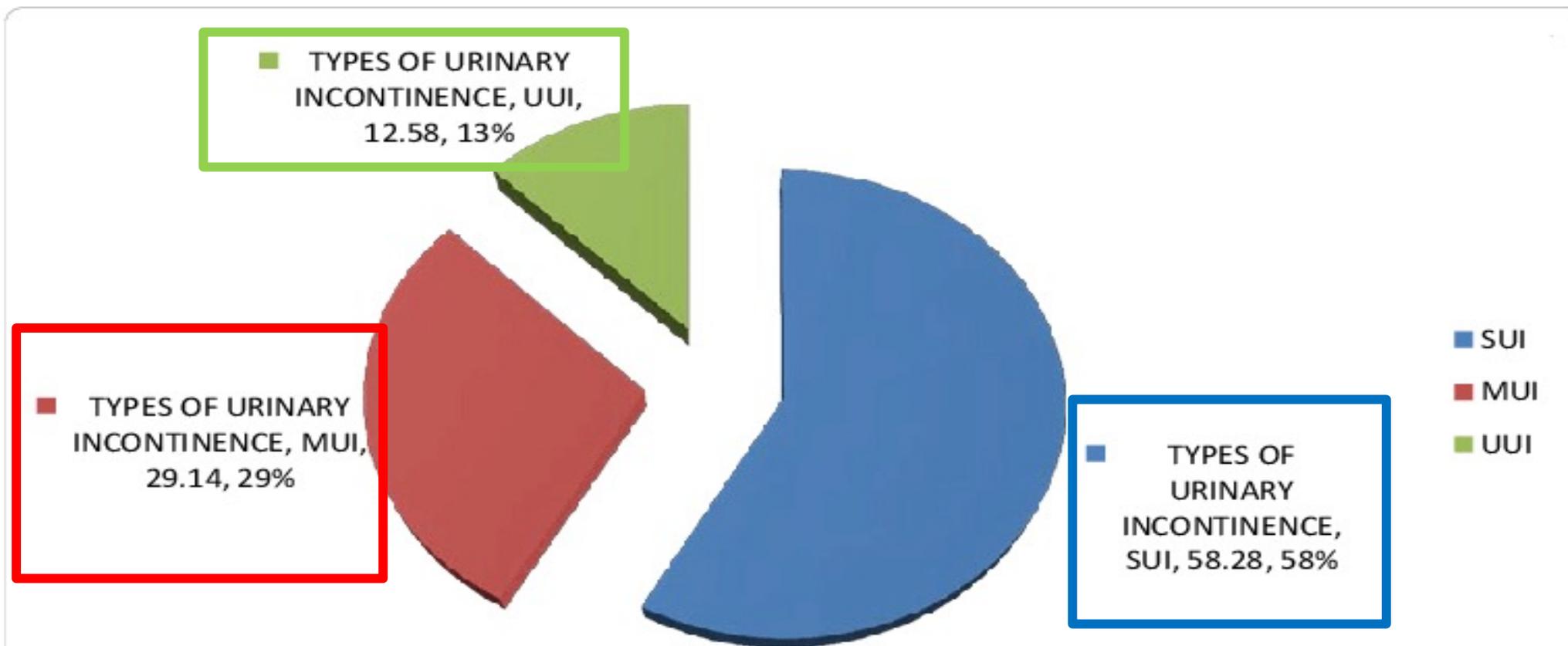
Bladder muscle contracts before the patient is ready to void.

Stress Incontinence



Urethra is too weak to stay closed during increased intra-abdominal pressure.

Types of female urinary incontinence



SUI=stress urinary incontinence; UUI=urge urinary incontinence; MUI=mixed urinary incontinence

Stress Urinary Incontinence (SUI)

.Stress urinary incontinence(SUI) is defined by the international continence society (ICS) as:“*the complaint of involuntary leakage of urine on effort or exertion, or on sneezing or coughing*” .

- **Genuine stress urinary incontinence (GSUI):** Urinary loss which occurs with sudden elevation of the intra abdominal pressure without detrusor contraction is called stress urinary incontinence



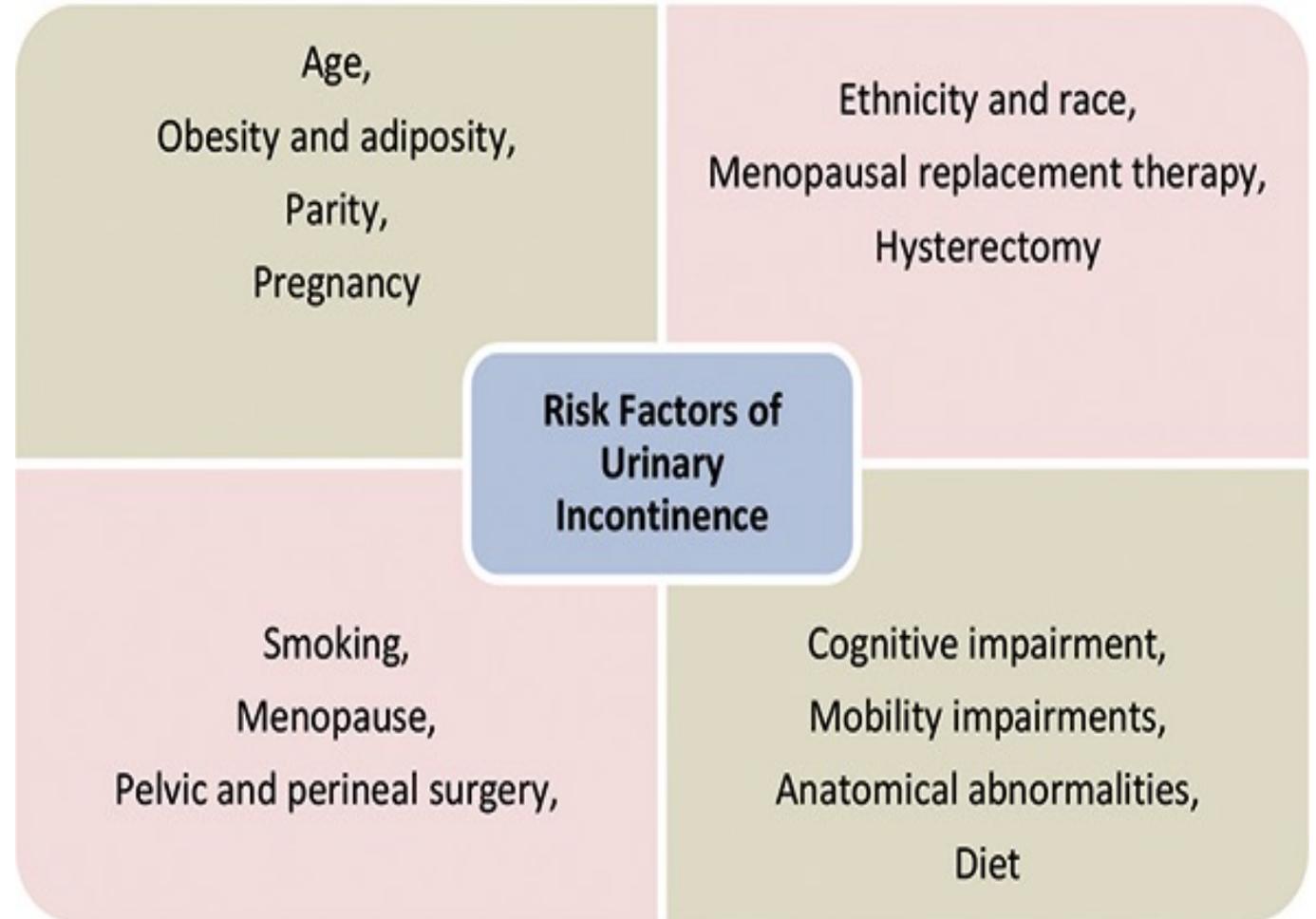
SUI-Symptoms

1. Involuntary leakage of urine on effort or exertion, or on sneezing or coughing
2. Usually small amounts
3. Pressure in the bladder exceeds the urethral pressure
4. No bladder contraction



SUI – Etiology (risk factors)

1. Pregnancy/Childbirth
2. Age
3. Obesity (BMI >40, 66%)
4. Chronic cough
5. Prolapse
6. Constipation
7. Smoking
8. Genetics



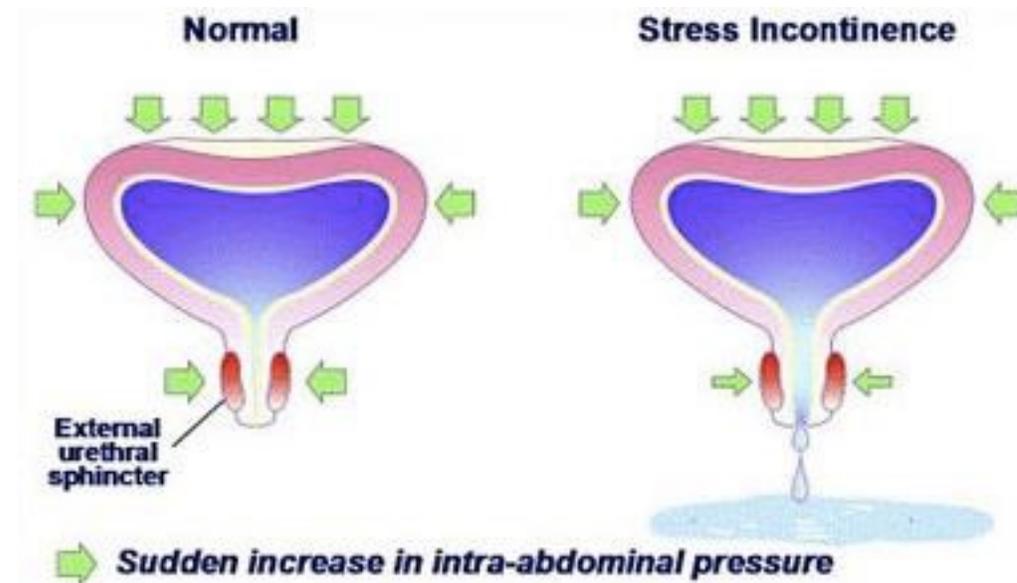
SUI – types (etiologic)

SUI -TYPE	DESCRIPTION OF DEFECT
Type 1 :	Incontinence due loss of posterior urethro-vesical angle alone
Type 2 :	Incontinence due loss of posterior urethro-vesical angle <i>plus</i> urethral hypermobility
Type 3 :	Incontinence due to ISD (intrinsic sphincteric deficiency)

Pathophysiology of SUI

Sphincteric Dysfunction Theory(1992)

SUI: the condition of ISD “intrinsic sphincteric deficiency”:
In this condition, the urethral sphincter **is unable to generate enough resistance to** retain urine in the bladder especially during stress.



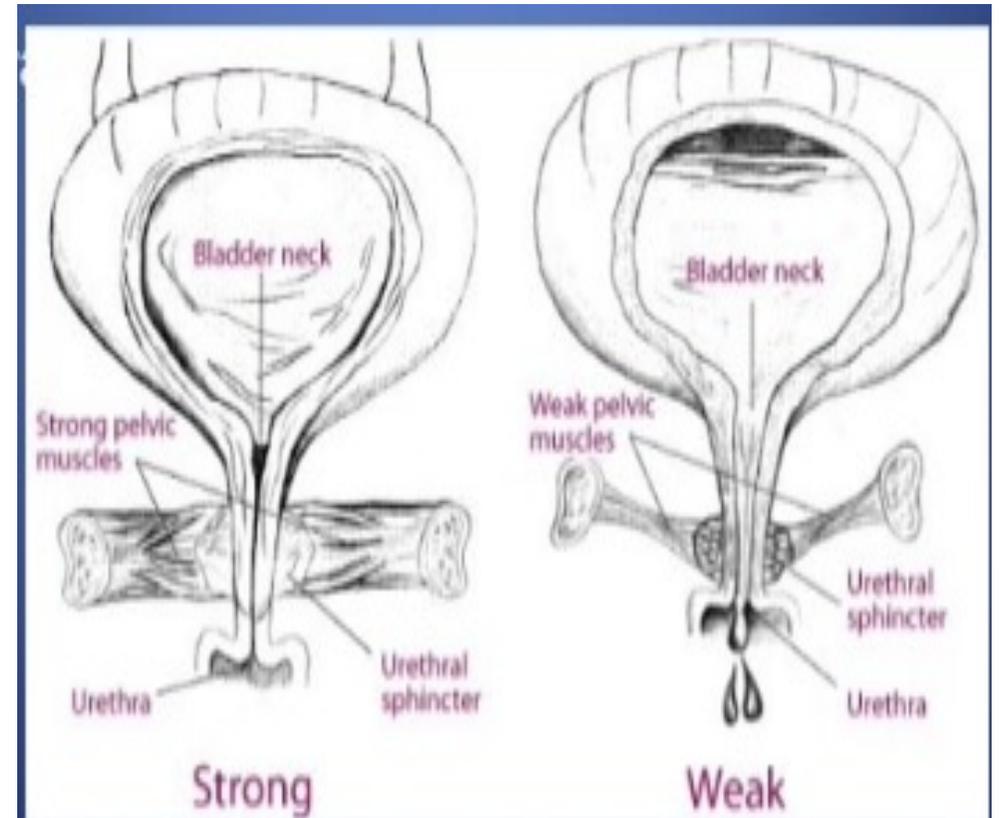
ISD – Etiology (Risk factors)

Risk Factors for Intrinsic Sphincteric Deficiency

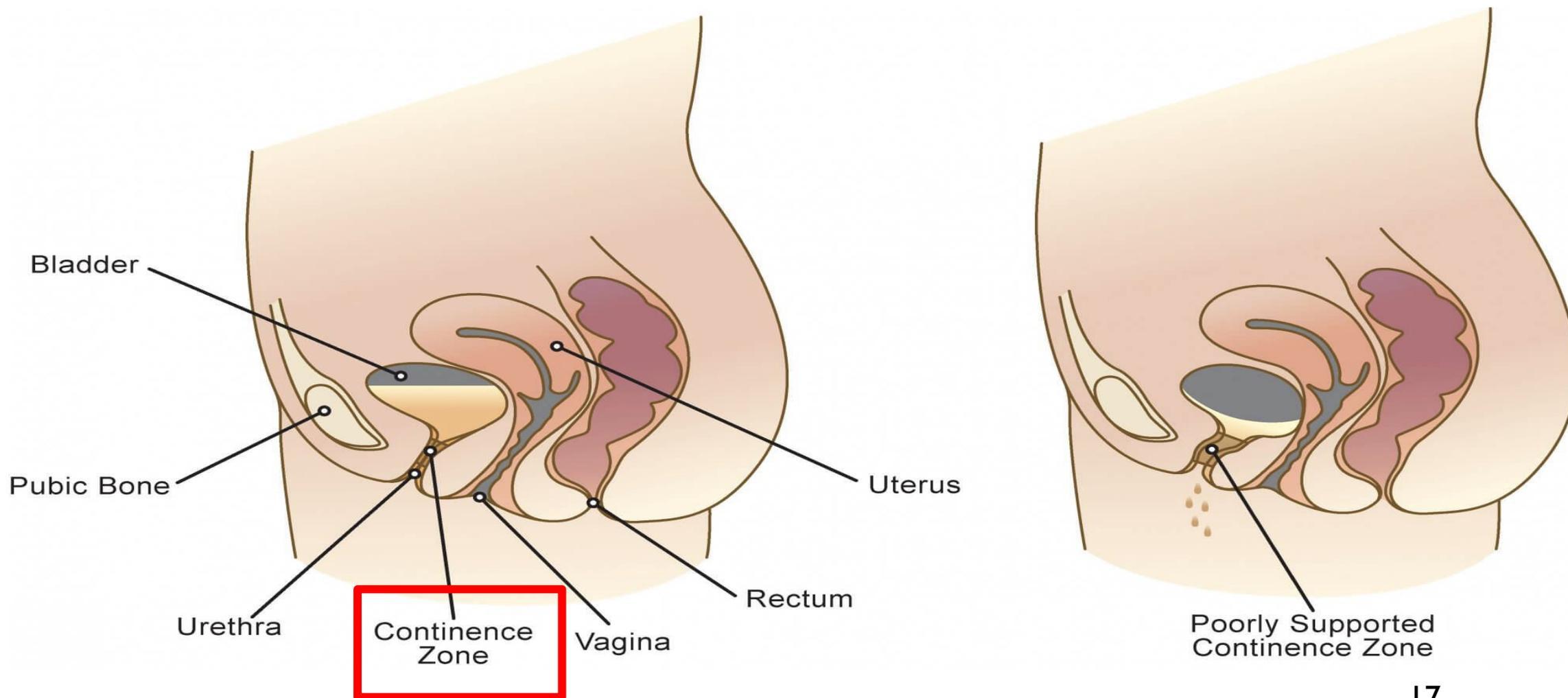
Classification of Sphincter Weakness	Mechanism of Sphincter Weakness
Congenital	CNS dysfunctions/lesions Smooth muscle disorders Striated muscle disorders
Acquired	Childbirth Surgical therapy Radiation therapy CNS lesions Peripheral neuropathies Chronic catheter drainage
Other	Hypoestrogenism Aging

Pathophysiology of SUI Hammock theory (1996)

- **De Lancey** (1996), proposed a consolidated theory: “He hypothesized that the pubocervical fascia provides a hammock like support for the vesical neck and thereby creates a backboard for the compression of proximal urethra during increased intra abdominal pressure.
- Loss of this support would compromise equal transmission of intra abdominal pressure.



Hammock theory of SUI



Diagnosis of SUI

The primary goals of evaluation of women presenting with symptoms of SUI :

1. Provide a clinical diagnosis of SUI versus OAB symptoms
2. Determine **factors** that may contribute to symptoms or that may require further evaluation.
3. Assess whether **coexisting pelvic floor disorders**, such as pelvic organ prolapse or anal incontinence, are present.
4. Establish **baseline SUI severity** to aid in assessing treatment effects.
5. Determine the impact of the patient's symptoms on **her quality of life**.
6. Determine which **treatment options** are acceptable to each patient.
7. Determine what her own therapeutic goals are?
8. Provide her with appropriate education regarding these goals.

Diagnosis of SUI

Basic evaluation

1. Careful history
2. Physical examination
3. Voiding diary
4. Simple tests



Diagnosis of SUI

Basic evaluation : Careful history

1. Frequency and amount of leakage
2. .Precipitating factors
3. Impact of the leakage on daily life and pad use
4. Pelvic floor symptoms, such as a sensation of bulge or pressure in the vagina, urinary urgency or frequency, nocturia, hematuria, recurrent urinary tract infections, voiding problems, anal incontinence, and defecating dysfunction

Diagnosis of SUI

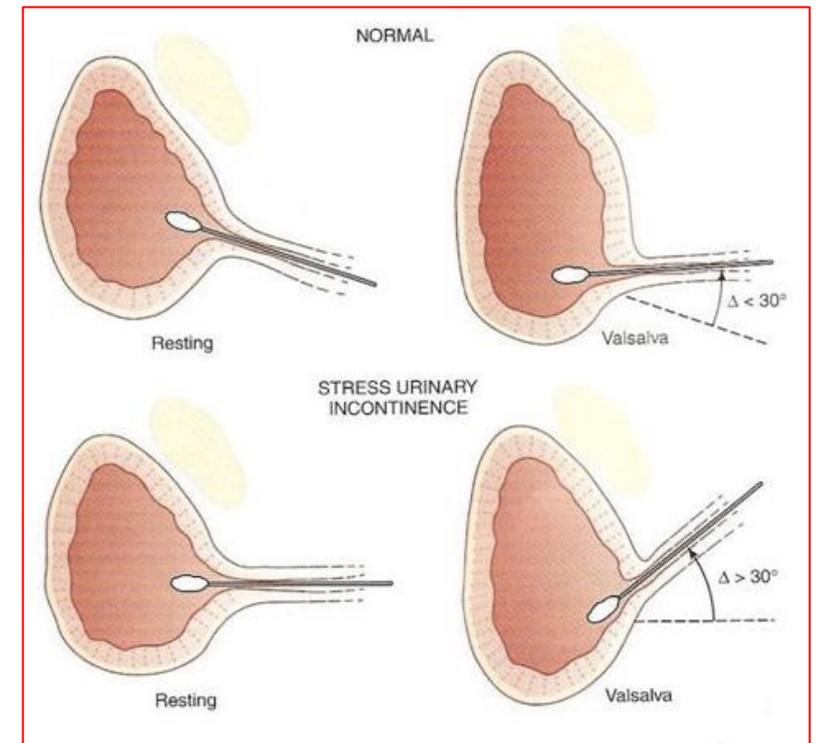
Basic evaluation : Physical examination

1. Pelvic examination to rule out pelvic or abdominal masses, pelvic organ prolapse, and vaginal atrophy.
2. A positive **cough stress test**, in which leakage is visualized at the moment of the cough, is helpful to confirm the diagnosis
3. On vaginal or rectal examination, check the **pelvic floor muscles quality** (symmetry and bulk) and whether or not, and to what degree, a woman can volitionally contract her muscles.

Diagnosis of SUI

Basic evaluation: Physical exam

4. Cotton swab test (test of urethral mobility); see figure →
5. To **rule out** urinary retention and overflow incontinence, we assess the postvoid residual volume by either direct catheterization or by ultrasonography (*Most experts agree that a postvoid residual volume less than 50 mL is normal and more than 200 mL is abnormal*).
6. Finally, a urinalysis is done to UTIs as a transient cause of stress urinary incontinence.



Management of SUI

- Women have both non-surgical and surgical options to treat SUI.
- Not every woman with SUI will need surgery. Some factors should be considered before deciding whether to undergo surgery include:
 - (a).the severity of SUI symptoms and their effect on daily activities;
 - (b) desire for future pregnancy as vaginal delivery can cause recurrence of SUI symptoms, which could require future surgery.

Management of SUI

A. Non-surgical treatment:

1. Lifestyle interventions
2. Pelvic floor muscle training
3. Medications
4. Devices

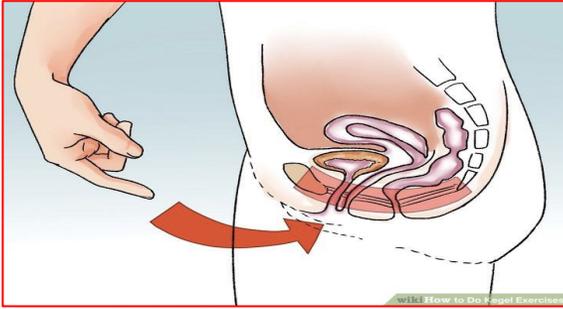
B. Surgical treatment of SUI

1. Use of injectable bulking agents,
2. Laparoscopic suspensions
3. Midurethral slings
4. Pubovaginal slings
5. Open retropubic suspensions

Non-surgical treatment of SUI: Life style interventions

1. Weight reduction
2. Postural changes (such as crossing legs) often prevent stress urinary incontinence.
3. Fluid intake and voiding habits (decreasing the fluid intake is helpful in for patient with high fluid consumption & voiding prior to strenuous activity beneficial in mild SUI)





Non-surgical treatment of SUI: Pelvic floor muscle training

- Supervised pelvic floor muscle training (Kegel exercises) is an effective treatment for stress urinary incontinence.
- Should be offered as first-line conservative management to women.
- Several factors are important in maximizing the chance that pelvic muscle training will alleviate SUI:

1-The woman must do the exercises correctly, regularly, and for an adequate duration.

2-Many physical therapists recommend training sessions 3–4 times per week, with 3 repetitions of 8–10 sustained contractions each time.

Non-surgical treatment of SUI: Medications

1- Estrogen :

-Estrogen has trophic effects on urethral epithelium subepithelial vascular plexus and connective tissues . Studies showed improvement of symptoms, but not urodynamic measurements.

2-Alpha-adrenoreceptor agonist:

-*Ephedrine*, *Norephedrine* and *Midorine* have shown only modest effect in small trials.

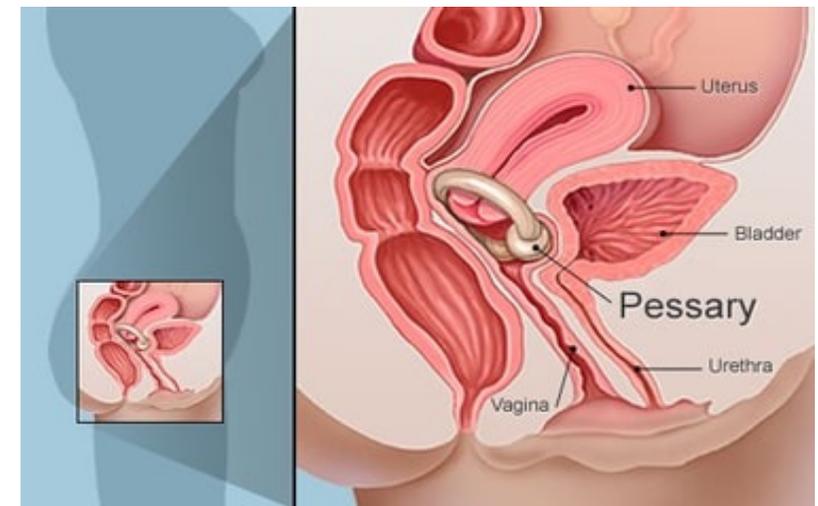
3-Serotonin and norepinephrine reuptake inhibitors :

-*Duloxetine chloride* is effective for the treatment of SUI.

Non-surgical treatment of SUI: Devices

Ring pessary

- The pessary compresses the urethra against the symphysis pubis and elevates the bladder neck.
- For some women this may reduce stress leakage



Minimally invasive surgical options

For women in whom Kegel exercises are **ineffective** and who desire definitive surgery, 5 procedures are endorsed by the American Urological Association:

1. Use of injectable bulking agents,
2. Laparoscopic suspensions (laparoscopic “Burch” colposuspension)
3. Midurethral slings
4. Pubovaginal slings
5. Open retropubic suspensions

CONCLUSION

- Stress urinary incontinence is common in women and may impact their activity levels and quality of life.
- Conservative management should precede surgery.
- Minimally invasive treatment measures can readily be initiated by primary care providers, with referral to a specialist when conservative management is not effective
- Many gaps remain in our knowledge of this disorder. Further research is also needed to study prevention of leakage, factors that impact treatment success, and longevity of various therapies.
- New therapies should be studied in randomized clinical trials before general clinical use.



○ THANK YOU FOR
ATTENTION