

Urinary Incontinence

Topic- based Uworld Questions

Block 1, 2, 7, 8





A 49-year-old woman, gravida 5 para 5, comes to the office due to involuntary, intermittent loss of urine over the past 5 months. The patient is an avid jogger and now must wear absorbent pads while jogging. She has no dysuria, urgency, or hematuria and usually awakens once a night to void. Three years ago, the patient was diagnosed with type 2 diabetes mellitus, which is treated with metformin. She does not use tobacco, alcohol, or illicit drugs. Vital signs are normal. BMI is 31 kg/m². Pelvic examination shows normal external genitalia, a well-rugated vagina, and an anterior vaginal bulge. The patient loses a small amount of urine when asked to cough. Postvoid residual urine volume is 40 mL. Clean-catch urinalysis results are as follows:

Blood	negative
Glucose	negative
Leukocyte esterase	negative
Nitrites	negative
White blood cells	3-5/hpf
Bacteria	none

Serum hemoglobin A1c is 7.7%. Which of the following is the most likely cause of this patient's symptoms?

- A. Bladder outlet obstruction
- B. Detrusor overactivity
- C. Diabetic neuropathy
- D. Estrogen deficiency
- E. Urethral hypermobility
- F. Vesicovaginal fistula

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White blood cells	3-5/hpf
Bacteria	none

Serum hemoglobin A1c is 7.7%. Which of the following is the most likely cause of this patient's symptoms?

- A. Bladder outlet obstruction (7%)
- B. Detrusor overactivity (8%)
- C. Diabetic neuropathy (9%)
- D. Estrogen deficiency (2%)
- E. Urethral hypermobility (67%)
- F. Vesicovaginal fistula (4%)

Omitted

Correct answer



67%

Answered correctly



03 secs

Time Spent



01/20/2020

Last Updated

Urinary incontinence		
Type	Symptoms	Treatment
Stress	<ul style="list-style-type: none"> Leaking with Valsalva maneuver (coughing, sneezing, laughing) 	<ul style="list-style-type: none"> Lifestyle modification Pelvic floor exercises Pessary Pelvic floor surgery
Urgency	<ul style="list-style-type: none"> Sudden, overwhelming, or frequent need to void 	<ul style="list-style-type: none"> Lifestyle modification Bladder training Antimuscarinic drugs
Mixed	<ul style="list-style-type: none"> Features of stress & urgency incontinence 	<ul style="list-style-type: none"> Variable treatment depending on predominant symptoms
Overflow	<ul style="list-style-type: none"> Constant involuntary dribbling & incomplete emptying 	<ul style="list-style-type: none"> Identification and correction of underlying cause Cholinergic agonists Intermittent self-catheterization

This patient has **stress urinary incontinence**, a common cause of incontinence in women. The bladder and urethra are normally maintained in the appropriate anatomic position by the pelvic floor (levator ani) muscles. However, with chronic pressure or injury to the pelvic floor muscles—commonly due to childbirth (ie, multiparity), obesity, or chronic high-impact exercise such as jogging (as in this patient)—women can develop **pelvic floor muscle weakness**.

Substantial weakness of the pelvic floor muscles can result in **urethral hypermobility**, in which the urethra abnormally moves with **increased intraabdominal pressure** (eg, jogging, coughing) and is unable to fully close. In addition, inadequate bladder support can develop (ie, prolapse), as evidenced by the anterior vaginal bulge ([cystocele](#)) in this patient. Due to both the urethra's inability to fully close and increased bladder pressure, patients have intermittent leakage of urine when intraabdominal pressure is increased (ie, Valsalva).

Substantial weakness of the pelvic floor muscles can result in **urethral hypermobility**, in which the urethra abnormally moves with **increased intraabdominal pressure** (eg, jogging, coughing) and is unable to fully close. In addition, inadequate bladder support can develop (ie, prolapse), as evidenced by the anterior vaginal bulge (**cystocele**) in this patient. Due to both the urethra's inability to fully close and increased bladder pressure, patients have intermittent leakage of urine when intraabdominal pressure is increased (ie, Valsalva).

Urinalysis and postvoid residual volume are normal (<150 mL in women, <50 mL in men). First-line treatment includes **pelvic floor muscle exercises** (eg, Kegel exercises) and lifestyle modifications (eg, weight loss). Unresponsive cases may require use of a pessary or midurethral sling surgery.

(Choices A and C) Bladder outlet obstruction or a neurogenic bladder (due to diabetic neuropathy) can cause overflow incontinence due to bladder overdistension from incomplete bladder emptying. In contrast to this patient, those with overflow incontinence have continuous dribbling of urine and markedly elevated postvoid residual volume.

(Choice B) Detrusor overactivity causes inappropriate bladder spasms associated with urgency incontinence; patients have a sudden need to urinate followed by immediate, involuntary loss of urine.

(Choice D) Postmenopausal women may have vulvovaginal atrophy and associated urinary symptoms (eg, frequency, urgency) due to estrogen deficiency. This patient has a well-rugated vagina, suggesting normal estrogen levels.

(Choice F) Vesicovaginal fistula, an abnormal communication between the bladder and vagina, is a complication following prolonged labor, pelvic surgery, or pelvic radiation therapy. These patients have constant (rather than intermittent) leakage of urine because the bladder continuously drains through the vagina.

Educational objective:

Stress urinary incontinence occurs due to weakened pelvic floor muscles that cause urethral hypermobility and reduced bladder support. Patients typically have intermittent loss of urine from increased intraabdominal pressure (eg, jogging).

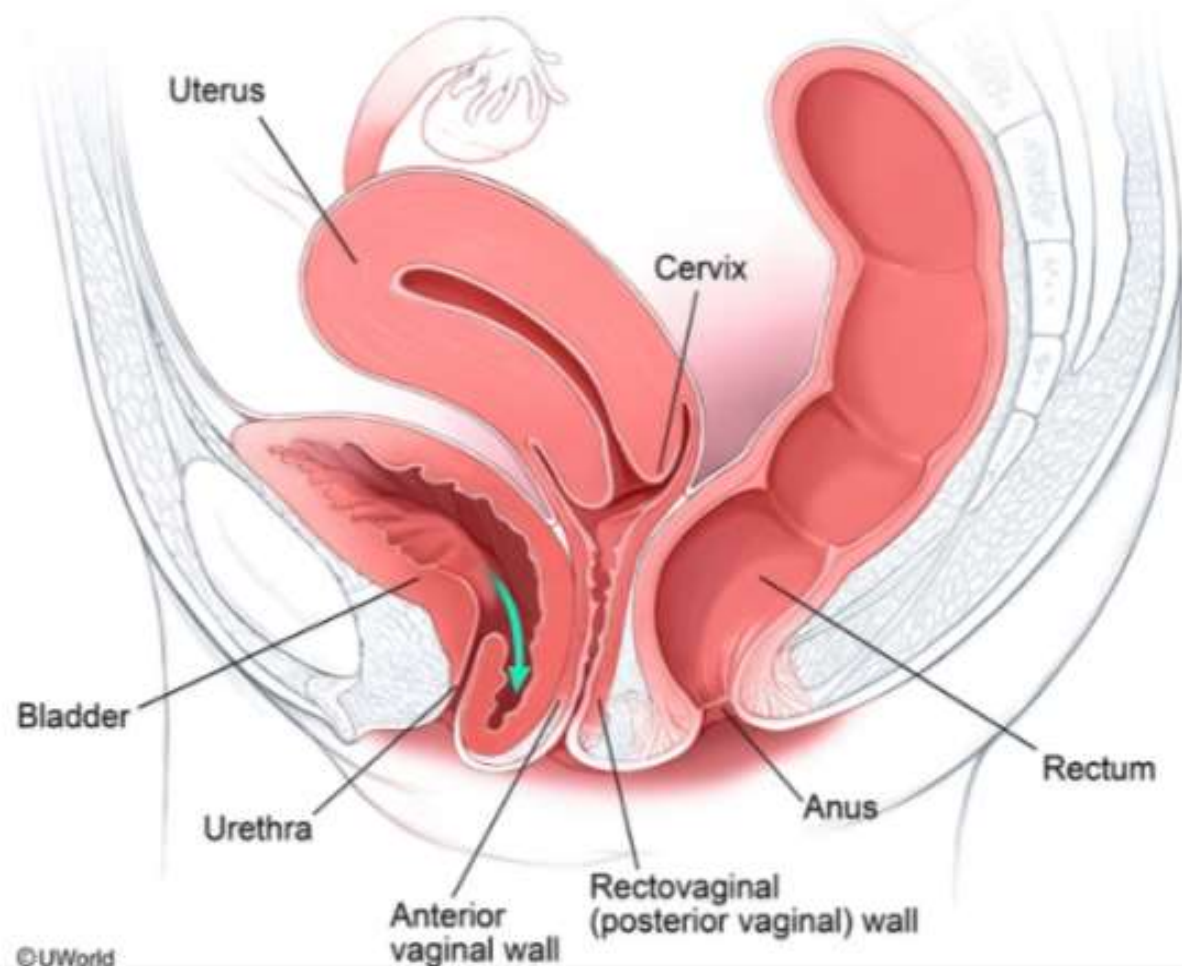
References

- [Urinary incontinence in women: a review.](#)
- [Female voiding dysfunction and urinary incontinence.](#)

Substantial weakness of the pelvic floor muscles can result in **urethral hypermobility**, in which the urethra abnormally moves with **increased**

Exhibit Display

Cystocele, prolapse of anterior vaginal wall



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Tutorial



Lab Values



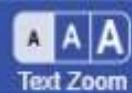
Notes



Calculator



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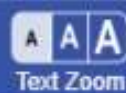


Text Zoom

A 54-year-old postmenopausal woman comes to the office due to involuntary loss of urine. The patient is unable to hold her urine during the day but has no loss of urine while sleeping. She is sexually active but has been avoiding intercourse for the past few months because she sometimes has leakage of urine during intercourse. The patient also loses urine when laughing and coughing. She has no chronic medical conditions and takes no daily medications. Her only surgery was a cesarean delivery at age 30 for a pregnancy complicated by pyelonephritis and preterm labor at 34 weeks gestation. Vital signs are normal, and BMI is 38 kg/m². Pelvic examination shows dribbling of urine when the patient coughs. A postvoid residual is 30 mL. Urinalysis shows no abnormalities. Which of the following is the most appropriate treatment for this patient's incontinence?

- A. Alpha blocker
- B. Antimuscarinic agent
- C. Cholinergic agonist
- D. Intermittent self-catheterization
- E. Midurethral sling
- F. Postcoital antibiotics

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- A. Alpha blocker (2%)
- B. Antimuscarinic agent (23%)
- C. Cholinergic agonist (5%)
- D. Intermittent self-catheterization (0%)
- E. Midurethral sling (65%)
- F. Postcoital antibiotics (1%)

Omitted

Correct answer

E



65%

Answered correctly



01 sec

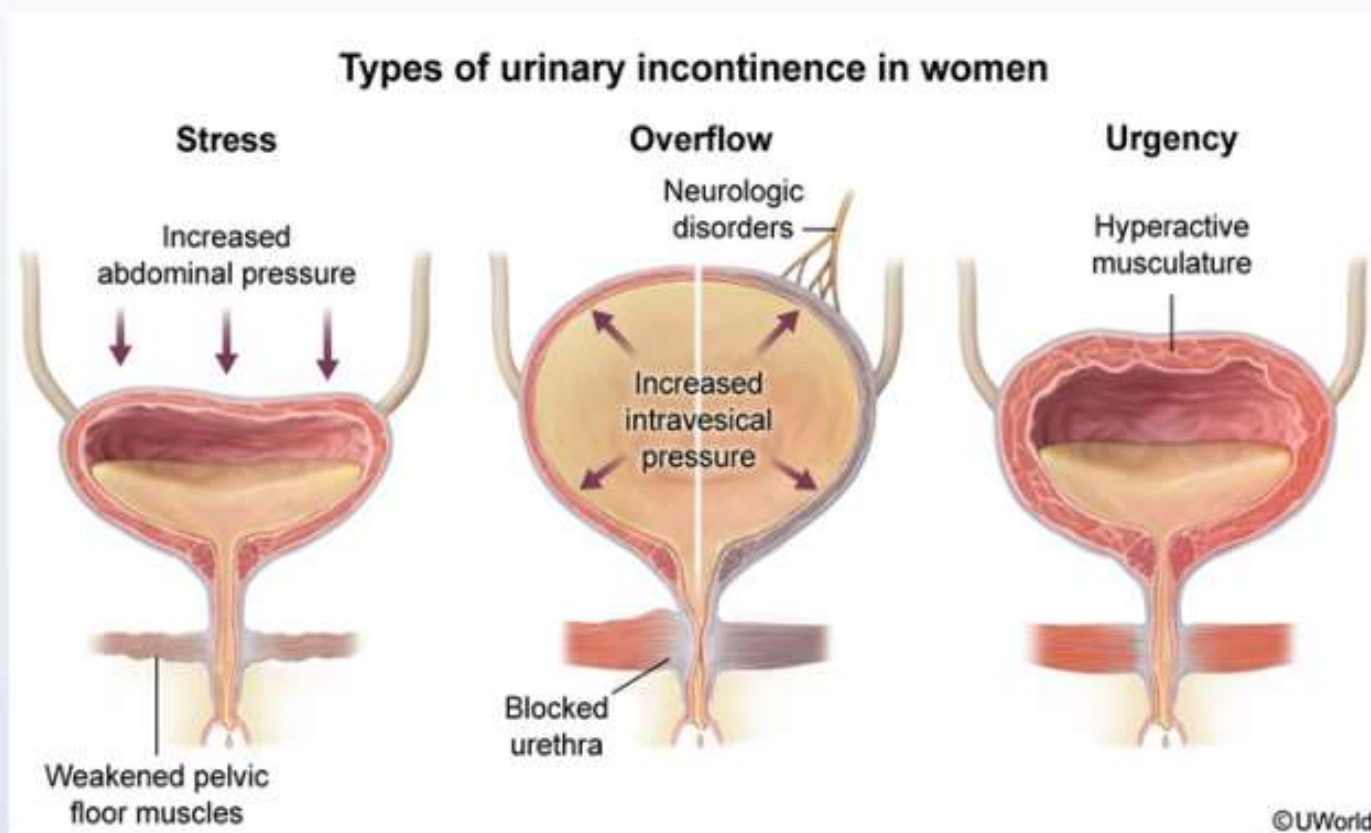
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01/20/2020

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Explanation



This patient has **stress urinary incontinence (SUI)**, an intermittent leakage of urine associated with increased intrabdominal pressure (eg, intercourse, coughing, laughing). **Postmenopausal women** are at increased risk for SUI due to:

- **Weakened pelvic floor musculature** (ie, levator ani) from chronic intraabdominal and pelvic strain; common etiologies include increasing parity (even in those who deliver by cesarean) and obesity
- **Urogenital mucosa atrophy** from decreased estrogen levels

The pelvic floor musculature and urogenital mucosa normally work together to support the bladder and urethra; postmenopausal women have



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Tutorial



Lab Values



Notes



Calculator



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Text Zoom

The pelvic floor musculature and urogenital mucosa normally work together to support the bladder and urethra; postmenopausal women have decreased function in both, resulting in an unsupported bladder and **hypermobile urethra**. In women with SUI, this results in the inability of the urethra to fully compress against the anterior vaginal wall during increased intraabdominal pressure and causes subsequent leakage of urine.

Conservative management for SUI includes **pelvic floor (Kegel) muscle exercises**, which strengthen and stabilize the pelvic musculature.

Those who do not improve with conservative management or who desire surgical management can undergo a **midurethral sling** procedure. The midurethral sling prevents urethral hypermobility and allows urethral compression, thereby treating SUI.

(Choice A) Alpha blockers (eg, tamsulosin) are used in the treatment of overflow incontinence due to urethral blockage from benign prostatic hyperplasia in men. Alpha blockers increase urinary flow by relaxing the smooth muscle in the bladder neck and prostate.

(Choice B) Oxybutynin (an antimuscarinic agent) promotes bladder relaxation in the treatment of urgency incontinence, which is characterized by the sudden urge to void followed by the immediate loss of urine.

(Choices C and D) Cholinergic agonists (eg, bethanechol) and intermittent self-catheterization are used to treat overflow incontinence from chronic urinary retention or detrusor underactivity. Patients with overflow incontinence typically have constant urine dribbling (including at night) and an elevated postvoid residual volume. Cholinergic agonists improve overflow incontinence by stimulating muscarinic receptors, thereby increasing bladder contractility and promoting bladder emptying.

(Choice F) Postcoital antibiotics may be used in patients with recurrent urinary tract infections (UTIs) (≥ 2 within 6 months). Postmenopausal women are at increased risk for recurrent UTI due to vulvovaginal atrophy; however, this diagnosis is unlikely in this patient because the urinalysis is normal.

Educational objective:

Stress urinary incontinence typically presents with leakage of urine with increased intraabdominal pressure (eg, intercourse). It is common in postmenopausal women due to a weakened pelvic floor musculature and urogenital mucosa atrophy. Treatment includes pelvic floor muscle exercises or surgical midurethral sling placement.

References

- [Urinary incontinence in women: a review.](#)



A 19-year-old woman comes to the office due to continuous vaginal discharge. The patient has had a clear, slightly malodorous vaginal discharge for the past few weeks but no pelvic pain, dysuria, or vulvovaginal pruritus. She is 6 weeks postpartum from a vaginal delivery of a stillborn male infant after 3 days of labor and 4 hours of pushing. The patient had no prenatal care and delivered at home. Temperature is 36.7 C (98 F), blood pressure is 120/60 mm Hg, and pulse is 70/min. Pelvic examination shows a well-healed, third degree perineal laceration. On speculum examination, there is a small, red area of granulation tissue on the anterior vaginal wall. The cervix has no lesions and there is a pool of clear fluid in the vagina with a pH of 6. Which of the following would most likely establish the diagnosis in this patient?

- A. Bladder dye test
- B. Cervical nucleic acid amplification test
- C. Urinalysis and urine culture
- D. Viral culture of the lesion
- E. Wet mount microscopy

Submit

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- A. Bladder dye test (57%)
- B. Cervical nucleic acid amplification test (5%)
- C. Urinalysis and urine culture (4%)
- D. Viral culture of the lesion (2%)
- E. Wet mount microscopy (30%)

Omitted

Correct answer

A



57%

Answered correctly



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Time Spent



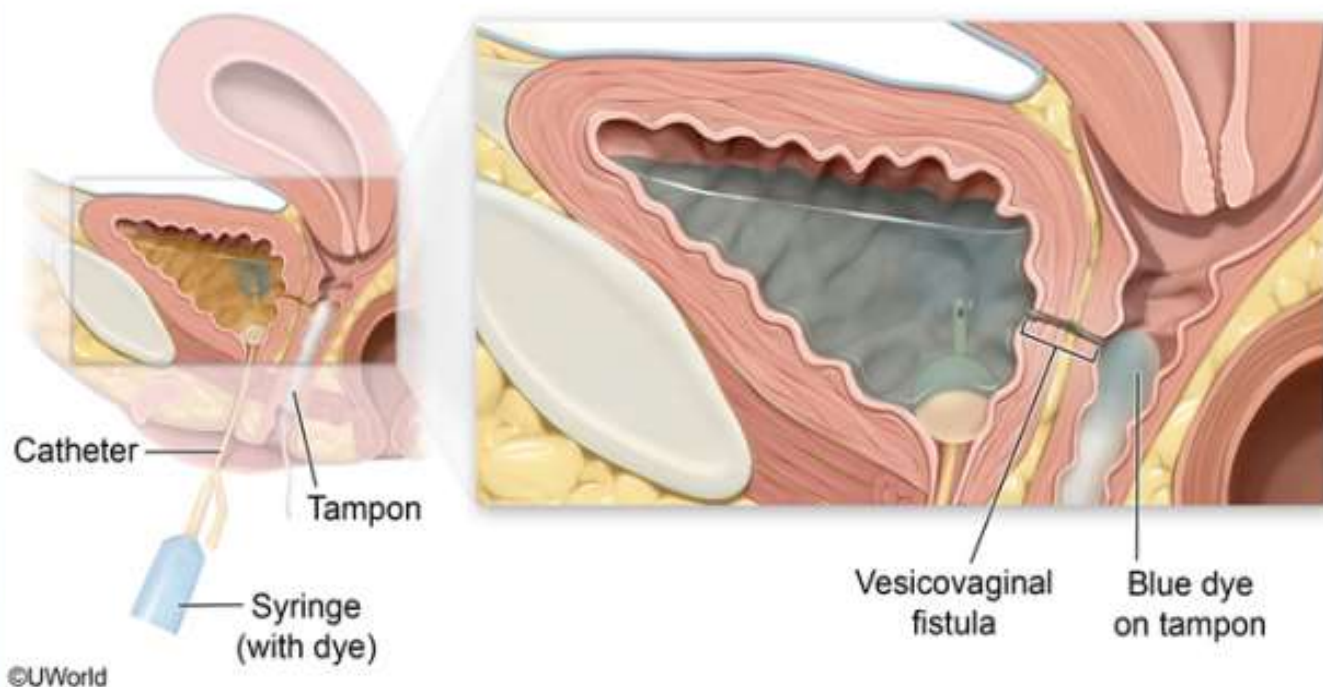
02/24/2020

Last Updated

Explanation

Bladder dye test

Bladder dye test



This patient has a **vesicovaginal fistula (VVF)**, a complication of **obstructed labor** that is common in resource-limited areas (eg, sub-Saharan Africa) due to young maternal age (ie, small pelvis) and limited or no prenatal care, which results in delayed diagnosis and labor intervention. Obstructed labor is the most common cause of VVF worldwide with an estimated >100,000 new cases yearly.

In these patients, VVF develops because excessive fetal head compression during obstructed labor causes injury and necrosis to the maternal vagina, rectum, and bladder. Tissue necrosis leads to erosion and fistula development between proximal structures (eg, vesicovaginal, rectovaginal), typically occurring within the first weeks postpartum. Because of the aberrant connection between the vagina and bladder, patients with VVF have a **continuous vaginal discharge** with an abnormally elevated pH (ie, >4.5) due to urine, which may be malodorous due to

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Bladder dye testing is performed to confirm the diagnosis, particularly in patients who have small fistulas that are not visualized on pelvic examination. During a bladder dye test, the bladder is filled with dyed fluid and patients are monitored for vaginal leakage of dye via speculum examination or tampon placement. Treatment of VVF is with surgical repair.

(Choice B) Cervical nucleic acid amplification testing for chlamydia and gonorrhea is indicated in acute cervicitis, which typically presents with cervical friability and a mucopurulent cervical discharge, not seen in this patient.

(Choice C) Urinalysis and urine culture are used to diagnose urinary tract infection, which is common in postpartum patients. This patient has no dysuria or suprapubic pain; therefore, these tests are not indicated.

(Choice D) Viral culture is used to diagnose herpes simplex virus. Patients typically have multiple ulcers or vesicles, not a solitary raised, red area of granulation tissue.

(Choice E) Bacterial vaginosis can be diagnosed by using wet mount microscopy; it causes a thin, malodorous (fishy) discharge with an elevated pH (eg, >4.5). Bacterial vaginosis does not cause vaginal pooling or granulation tissue, making this diagnosis unlikely.

Educational objective:

Obstructed labor in resource-limited areas is the most common cause of vesicovaginal fistula worldwide. Vesicovaginal fistula presents with a continuous, watery vaginal discharge and an area of raised, red granulation tissue on the anterior vaginal wall. Diagnosis is with pelvic examination and bladder dye test.