Handbook of Common Urology Cases

For Medical Students & House Officers

BY

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ACKNOWLEDGEMENT

Foremost, I am thankful to God for the good health and wellbeing that were necessary to complete this Book and present a clear picture of what has been done during the book completion. After this I would like to express my sincere gratitude to **THE STETHO medical Publishing forum** to provide me with an opportunity to share my knowledge and add something meaningful to the medical literature.

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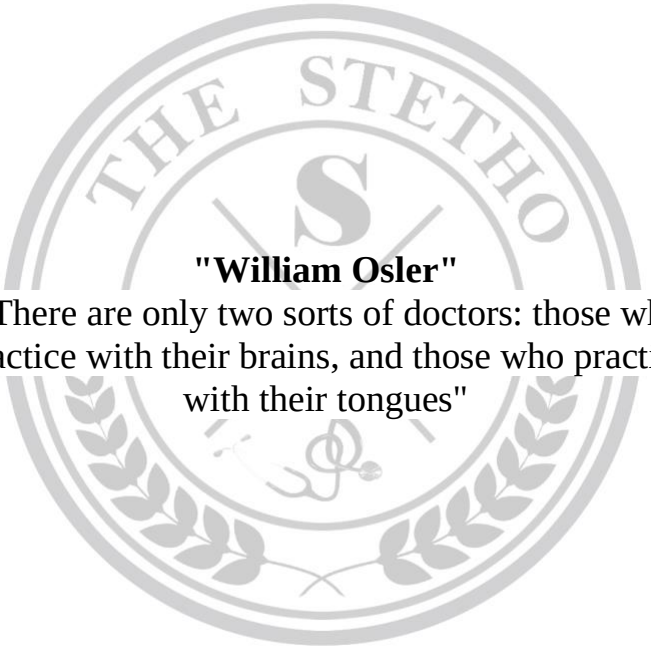

"William Osler"

" There are only two sorts of doctors: those who practice with their brains, and those who practice with their tongues"


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CHAPTERS


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CHAPTER 1

UROLOGICAL EMERGENCIES


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1. Acute Urinary Retention

Description: Inability to urinate despite a full bladder, causing pain and discomfort.

Causes: Benign prostatic hyperplasia (BPH), urethral stricture, severe constipation, or neurological conditions.

Management: Immediate catheterization to relieve pressure and drain urine.

2. Acute Kidney Injury (AKI)

Description: Sudden decrease in kidney function, potentially leading to fluid overload and electrolyte imbalances.

Causes: Dehydration, obstruction (e.g., kidney stones), or acute glomerulonephritis.

Management: Identify and treat the underlying cause, ensure proper hydration, and possibly initiate dialysis if severe.

3. Testicular Torsion

Description: Twisting of the spermatic cord, cutting off blood supply to the testicle.

Symptoms: Sudden severe testicular pain, swelling, and nausea.

Management: Immediate surgical intervention to untwist and secure the testicle; time is critical to preserve testicular viability.

4. Epididymitis

Description: Inflammation of the epididymis, often due to infection.

Symptoms: Scrotal pain, swelling, and possibly fever.

Management: Antibiotics and pain relief; severe cases may require surgical intervention.

5. Ureteral Obstruction

Description: Blockage of the ureter, often caused by kidney stones or tumors.

Symptoms: Severe flank pain, hematuria, and nausea.

Management: Pain management, hydration, and possibly surgical intervention (e.g., stent placement) to relieve the obstruction.

6. Priapism

Description: Persistent and painful erection not associated with sexual desire or stimulation.

Causes: Blood disorders (like sickle cell disease), medications, or trauma.

Management: Immediate medical evaluation; treatment may include aspiration of blood from the penis or medication to constrict blood vessels.

7. Hematuria

Description: Blood in the urine, which can indicate serious underlying conditions.

Causes: Urinary tract infections, kidney stones, tumors, or trauma.

Management: Urgent evaluation to determine the cause; may require imaging studies and possibly cystoscopy.

8. Penile Fracture

Description: Rupture of the tunica albuginea of the penis, often during vigorous sexual activity.

Symptoms: Sudden pain, swelling, and bruising; often accompanied by a "popping" sound.

Management: Surgical repair is typically required to prevent complications.

CHAPTER 2

COMMON UROLOGY PROCEDURES


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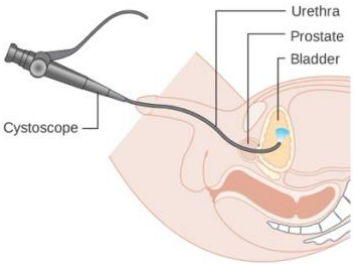
1. Cystoscopy: A procedure using a cystoscope to examine the bladder and urethra. It can help diagnose conditions and perform minor treatments.

Indications: Hematuria, urinary tract infections, bladder tumors, urinary incontinence, urethral strictures.

Contraindications: Severe urinary tract infection, acute prostatitis, urethral injury.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and provide anesthesia (local or general).
3. Insert the cystoscope through the urethra into the bladder.
4. Examine the bladder and urethra; perform any necessary biopsies or interventions.
5. Remove the cystoscope and provide post-procedure care.



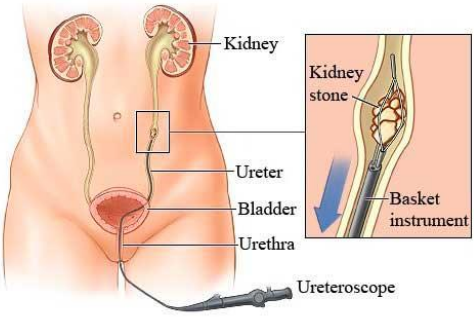
2. **Ureteroscopy:** Similar to cystoscopy but focuses on the ureters, often used to remove kidney stones or tumors.

Indications: Ureteral stones, strictures, tumors.

Contraindications: Severe urinary tract infection, uncorrectable coagulopathy.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and administer anesthesia.
3. Insert the ureteroscope through the urethra and bladder into the ureter.
4. Visualize the ureter; remove stones or perform biopsies as needed.
5. Remove the ureteroscope and place a stent if indicated.



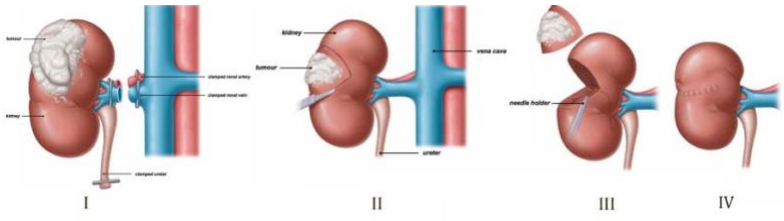
3. Nephrectomy: Surgical removal of a kidney, which can be partial or complete, often performed due to cancer or severe damage.

Indications: Renal cell carcinoma, severe kidney damage, kidney donation.

Contraindications: Uncontrolled systemic disease, severe comorbidities.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and administer general anesthesia.
3. Make an incision (flank or abdominal) to access the kidney.
4. Isolate and ligate renal blood vessels and the ureter.
5. Remove the kidney and close the incision.



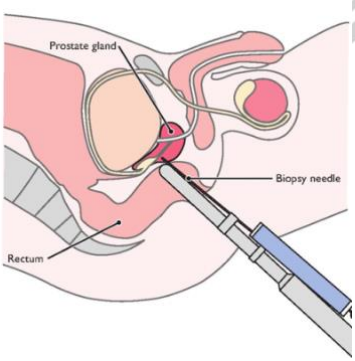
4. Prostate Biopsy: A procedure to take tissue samples from the prostate gland to check for cancer or other abnormalities.

Indications: Elevated PSA levels, abnormal digital rectal exam.

Contraindications: Active urinary tract infection, severe coagulopathy.

Procedural Steps:

1. Obtain informed consent.
2. Administer local anesthesia or sedation.
3. Insert the ultrasound probe transrectally to visualize the prostate.
4. Use a biopsy needle to obtain tissue samples from targeted areas.
5. Send samples for pathological examination.



5. Transurethral Resection of the Prostate: A procedure to remove parts of the prostate gland to relieve symptoms of benign prostatic hyperplasia (BPH).

Indications: Benign prostatic hyperplasia causing significant urinary obstruction.

Contraindications: Uncontrolled urinary tract infection, significant comorbidities.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and administer spinal or general anesthesia.
3. Insert the resectoscope through the urethra.
4. Resect prostate tissue using electrical current.
5. Place a catheter post-procedure for drainage.

6. Incontinence Surgery: Various surgical options to treat urinary incontinence, including sling procedures and artificial urinary sphincters.

Indications: Stress urinary incontinence not responding to conservative treatments.

Contraindications: Active urinary tract infection, significant comorbidities.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and administer anesthesia.
3. Depending on the procedure (e.g., mid-urethral sling), make small incisions.
4. Place the sling or artificial sphincter as indicated.
5. Close the incisions and provide post-operative care.

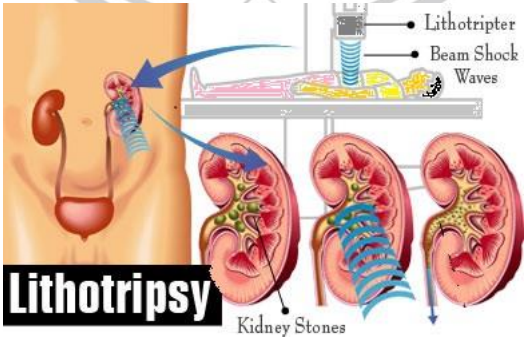
7. Shock Wave Lithotripsy (SWL): A non-invasive procedure that uses shock waves to break up kidney stones into smaller pieces that can be passed more easily.

Indications: Kidney stones that are too large to pass.

Contraindications: Pregnancy, urinary tract infection, bleeding disorders.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient on a lithotripter.
3. Administer sedation or anesthesia.
4. Use shock waves to fragment the kidney stones.
5. Monitor the patient post-procedure for stone passage.



8. Penile Prosthesis Surgery: Involves implanting a device to treat erectile dysfunction when other treatments have failed.

Indications: Erectile dysfunction not responding to other treatments.

Contraindications: Active infection, severe penile deformity.

Procedural Steps:

1. Obtain informed consent.
2. Position the patient and administer general anesthesia.
3. Make an incision to access the penis and implant the prosthesis.
4. Inflate the device to ensure proper function.
5. Close the incisions and provide post-operative care.

CHAPTER 3

UROLOGICAL MALIGNANCIES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1. Prostate Cancer

Description: The most common cancer among men, originating in the prostate gland.

Risk Factors: Age, family history, race (higher incidence in African American men), and certain genetic mutations.

Symptoms: Often asymptomatic initially; may include difficulty urinating, blood in urine, or pelvic pain.

2. Bladder Cancer

Description: A common malignancy that typically starts in the urothelium (bladder lining).

Risk Factors: Smoking, exposure to industrial chemicals, chronic urinary tract infections, and previous radiation therapy.

Symptoms: Hematuria (blood in urine), frequent urination, and painful urination.

3. Kidney Cancer (Renal Cell Carcinoma)

Description: The most common type of kidney cancer, arising from the renal cortex.

Risk Factors: Smoking, obesity, hypertension, and certain genetic syndromes (like von Hippel-Lindau disease).

Symptoms: Hematuria, flank pain, a palpable mass, and unexplained weight loss.

4. Testicular Cancer

Description: A relatively rare cancer, but the most common cancer in young men aged 15-34.

Risk Factors: Cryptorchidism (undescended testicle), family history, and certain genetic conditions.

Symptoms: Painless lump in the testicle, swelling, and changes in the size or firmness of the testicle.

5. Urethral Cancer

Description: A rare malignancy that can affect both men and women, originating in the urethra.

Risk Factors: Previous bladder cancer, HPV infection, and chronic irritation.

Symptoms: Blood in urine, urinary obstruction, and painful urination.

6. Penile Cancer

Description: A rare type of cancer that occurs on the penis, often related to HPV infection.

Risk Factors: Lack of circumcision, smoking, and chronic inflammation.

Symptoms: Growth or sore on the penis, changes in skin color, and foul-smelling discharge.

7. Bladder Sarcoma

Description: A rare form of bladder cancer that arises from the muscle or connective tissue.

Risk Factors: Previous radiation therapy to the bladder or pelvis, and certain genetic conditions.

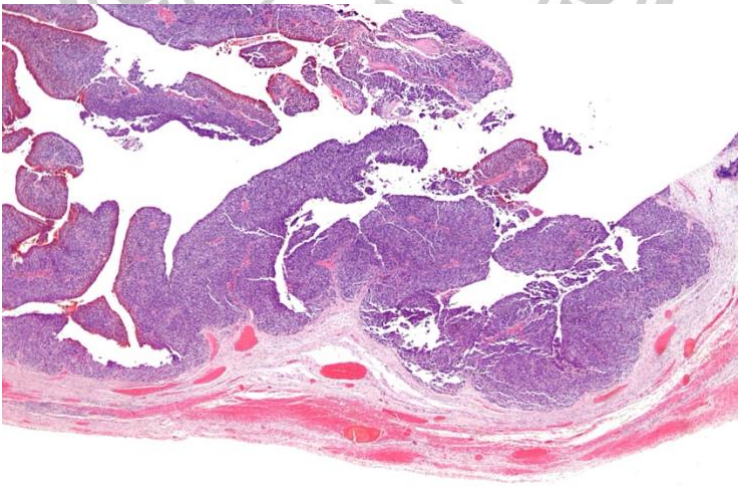
Symptoms: Similar to bladder cancer, including hematuria and pelvic pain.

8. Transitional Cell Carcinoma (TCC)

Description: The most common type of bladder cancer, also found in the renal pelvis and ureters.

Risk Factors: Similar to bladder cancer, including smoking and chemical exposure.

Symptoms: Blood in urine and frequent urination.



9. Neuroendocrine Tumors

Description: These can arise in various parts of the urinary system and may behave aggressively.

Risk Factors: Genetic syndromes and certain chronic conditions.

Symptoms: Varies depending on location and spread, often including urinary symptoms and abdominal pain.

Screening and Diagnosis

Screening methods vary by cancer type and may include PSA tests for prostate cancer, urine cytology for bladder cancer, imaging studies, and biopsies.

Conclusion

Early detection and treatment are crucial for improving outcomes in urological malignancies. If there are concerns or symptoms suggestive of these cancers, it's important to consult a healthcare professional for evaluation and management.

CHAPTER 4

UROLOGY INFECTIONS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1. Urinary Tract Infection (UTI)

Description: An infection that can occur in the bladder (cystitis), urethra (urethritis), or kidneys (pyelonephritis).

Causes: Typically caused by bacteria, most commonly *Escherichia coli*.

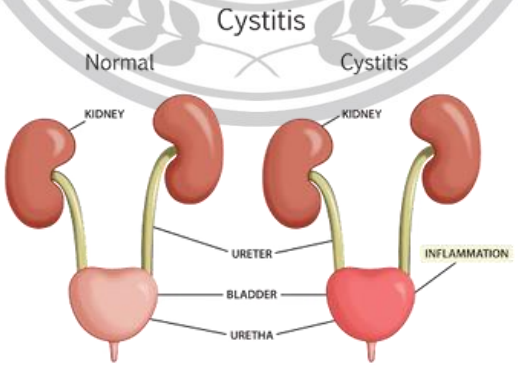
Symptoms: Frequent urination, urgency, burning sensation during urination, cloudy or strong-smelling urine, lower abdominal pain, and sometimes fever.

2. Cystitis (Bladder Infection)

Description: Inflammation of the bladder, often due to infection.

Risk Factors: Female anatomy, sexual activity, certain contraceptives, and urinary tract abnormalities.

Symptoms: Similar to general UTI symptoms, often including pelvic pressure and lower abdominal discomfort.



3. Pyelonephritis (Kidney Infection)

Description: A serious infection of the kidneys that can result from untreated UTIs.

Symptoms: Flank pain, fever, chills, nausea, vomiting, and signs of lower UTI.

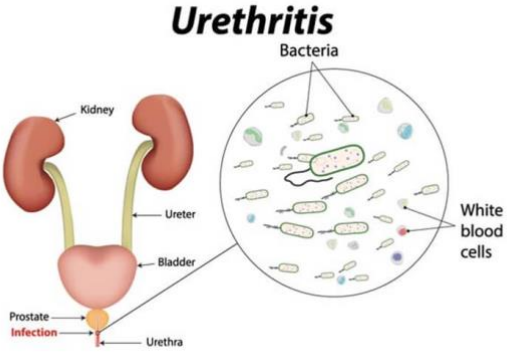
Management: Often requires antibiotics and may need hospitalization if severe.

4. Urethritis

Description: Inflammation of the urethra, often due to infections.

Causes: Can be caused by bacterial infections (e.g., *Chlamydia*, *Gonorrhea*) or non-infectious causes (e.g., irritation).

Symptoms: Painful urination, discharge from the urethra, and itching.



5. **Prostatitis**

Description: Inflammation of the prostate gland, which can be acute or chronic.

Causes: Bacterial infections, often in men under 50, and can also be non-bacterial.

Symptoms: Painful urination, pelvic pain, painful ejaculation, and sometimes flu-like symptoms.

6. Fungal Urinary Tract Infection

Description: Infections caused by fungi, commonly *Candida* species, often seen in immunocompromised patients or those with prolonged antibiotic use.

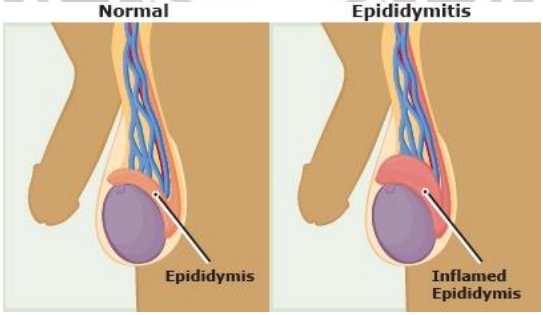
Symptoms: Similar to bacterial UTIs but may include additional systemic symptoms if severe.

7. Acute Epididymitis

Description: Inflammation of the epididymis, often due to infection.

Causes: Commonly caused by sexually transmitted infections (e.g., *Chlamydia*, *Gonorrhea*) in younger men, or urinary tract bacteria in older men.

Symptoms: Swelling and pain in the scrotum, redness, and fever.

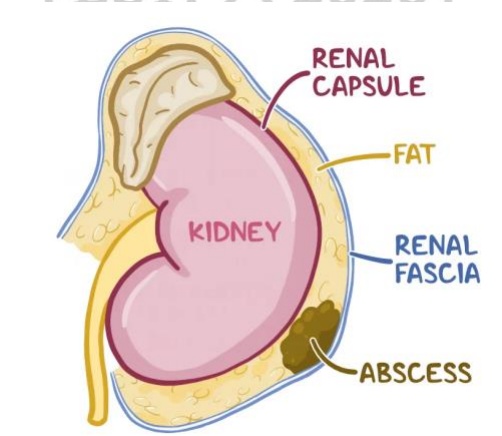


8. Renal Abscess

Description: A localized collection of pus in the kidney, often a complication of pyelonephritis.

Symptoms: Fever, flank pain, malaise, and symptoms of UTI.

Management: May require antibiotics and sometimes drainage.



Prevention

Hydration: Drink plenty of fluids to help flush out bacteria.

Hygiene: Proper personal hygiene and urinating after intercourse can reduce the risk.

Avoid Irritants: Limit caffeine, alcohol, and irritating feminine products.

Regular Medical Check-ups: Especially for those with recurrent infections or risk factors.

Conclusion

Urological infections can range from mild to severe and may require medical intervention, especially if complications arise. Prompt diagnosis and appropriate treatment are essential for effective management. If symptoms suggestive of a urological infection occur, it's important to consult a healthcare provider.

CHAPTER 5

PAEDIATRIC UROLOGY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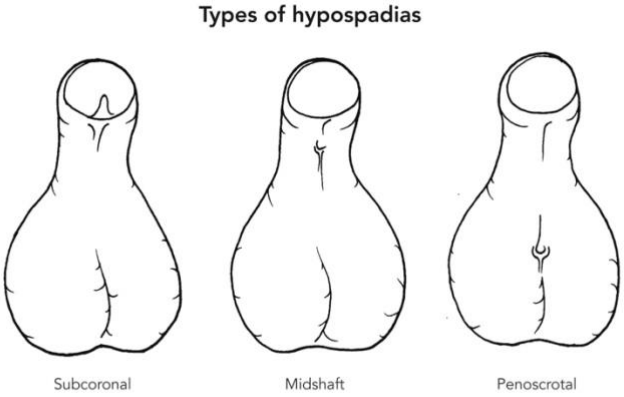
1. Hypospadias

Description: A congenital condition where the urethra does not open at the tip of the penis but on the underside.

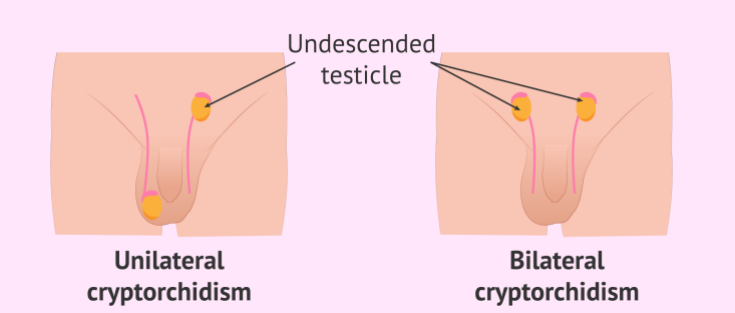
Management: Surgical correction is typically performed before the child is 18 months old to ensure normal function and appearance.



2. Cryptorchidism (Undescended Testicle)

Description: A condition where one or both testicles fail to descend into the scrotum.

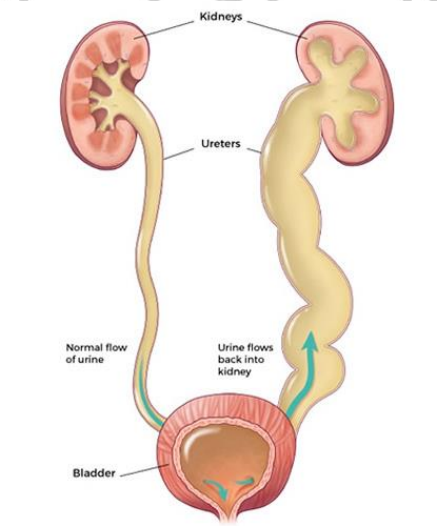
Management: Hormonal therapy may be attempted, but surgical correction (orchidopexy) is often necessary by age 1 to prevent complications like infertility or cancer.



3. Vesicoureteral Reflux (VUR)

Description: A condition where urine flows backward from the bladder to the kidneys, increasing the risk of infections.

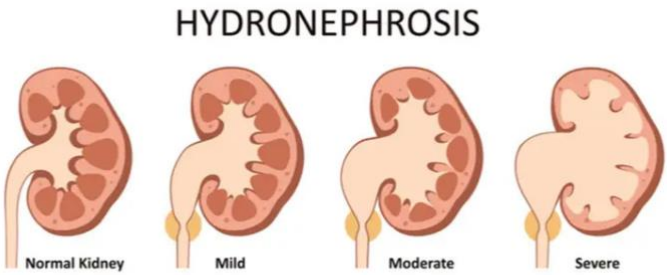
Management: Mild cases may be monitored, while severe cases may require surgical intervention to correct the reflux.



4. Hydronephrosis

Description: Swelling of a kidney due to a build-up of urine caused by an obstruction or reflux.

Management: Treatment depends on the cause; options may include catheterization, medication, or surgery.



5. Urinary Tract Infections (UTIs)

Description: Infections that can affect the bladder (cystitis) or kidneys (pyelonephritis) in children.

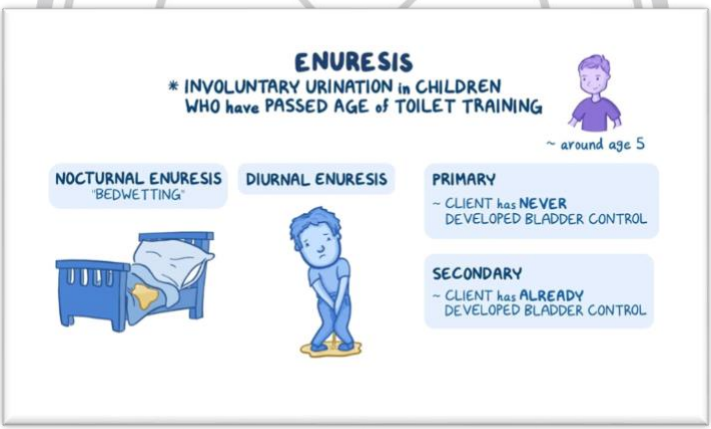
Symptoms: Fever, irritability, vomiting, and changes in urination patterns.

Management: Antibiotics are used for treatment; recurrent infections may require further evaluation.

6. Enuresis (Bedwetting)

Description: Involuntary urination during sleep in children over the age of 5.

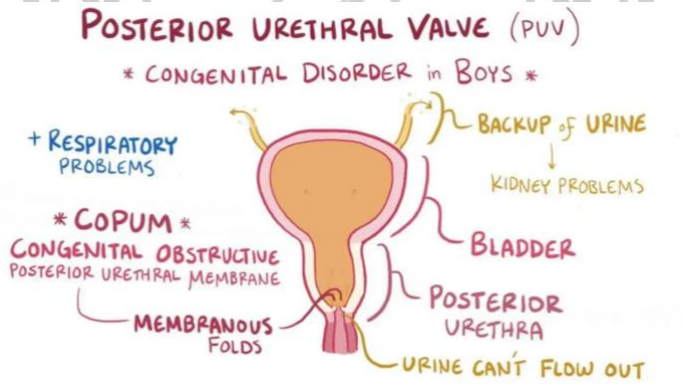
Management: Behavioral interventions, bladder training, and sometimes medication are used to manage the condition.



7. Posterior Urethral Valves (PUV)

Description: A congenital condition in males where extra flaps of tissue obstruct the urethra, leading to urinary retention and potential kidney damage.

Management: Surgical intervention is often necessary to remove the valves.



8. Ureteropelvic Junction Obstruction (UPJ)

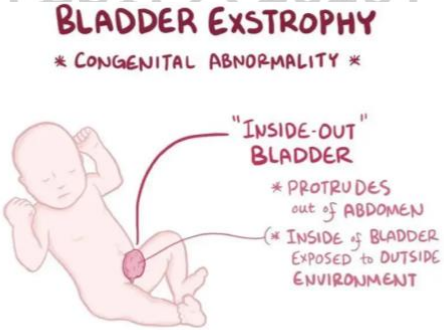
Description: A blockage at the junction where the ureter meets the kidney, which can lead to hydronephrosis.

Management: Surgical repair may be required to remove the obstruction.

9. Bladder Exstrophy

Description: A congenital anomaly where the bladder is formed outside the body.

Management: Requires surgical intervention shortly after birth to reconstruct the bladder and urinary tract.

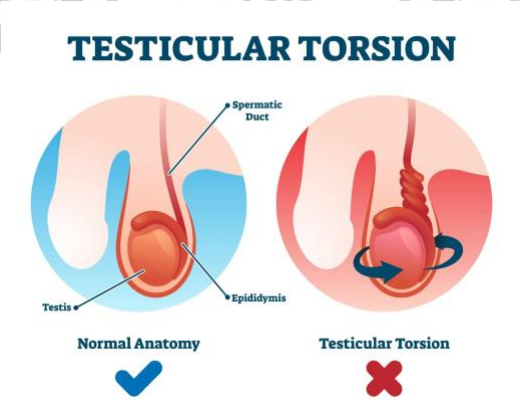


10. Testicular Torsion

Description: A medical emergency where the spermatic cord twists, cutting off blood supply to the testicle.

Symptoms: Sudden severe scrotal pain, swelling, and nausea.

Management: Requires immediate surgical intervention to untwist and secure the testicle.



Conclusion

Pediatric urology addresses a variety of congenital and acquired conditions affecting the urinary and reproductive systems in children. Early diagnosis and intervention are crucial for optimal outcomes. If there are concerns regarding a child's urinary or reproductive health, consultation with a pediatric urologist is recommended.

CHAPTER 6

UROLOGY ALGORITHMS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1. Management of Acute Urinary Retention

Algorithm Steps:

- **Initial Assessment**: Symptoms, vital signs, and bladder distention.
- **Immediate Intervention**: Catheterization (urethral or suprapubic).
- **Post-Catheterization Evaluation**:
  - **If Urine Output is Normal**: Assess for underlying causes (e.g., BPH, medication side effects).
  - **If Urine Output is Minimal or No Urine**: Consider further evaluation (e.g., ultrasound of the kidneys).
- **Follow-Up**: Refer to urology for further management if necessary.

2. Evaluation of Hematuria

Algorithm Steps:

- **Initial History and Physical Examination**: Assess for risk factors, duration, and associated symptoms.
- **Urinalysis**: Check for blood, signs of infection, and crystals.
- **Imaging Studies**:
    - **If Gross Hematuria**: Consider CT urogram or ultrasound.
    - **If Microscopic Hematuria**: Follow-up with cytology and consider cystoscopy.
- **Referral to Urology**: If suspicious findings or persistent hematuria.

3. Management of Ureteral Stones

Algorithm Steps:

- **Initial Presentation**: Assess pain, vital signs, and urinalysis.
- **Imaging**: Non-contrast CT scan or ultrasound to confirm stone location and size.
- **Stone Size**:
  - **< 5 mm**: Conservative management with hydration and pain control.
  - **5 mm - 1 cm**: Medical expulsive therapy; consider ureteroscopy if obstructive.
  - **> 1 cm**: Likely surgical intervention (e.g., shock wave lithotripsy, ureteroscopy, or percutaneous nephrolithotomy).
- **Follow-Up**: Monitor stone passage or complications.

4. Prostate Cancer Screening and Management

Algorithm Steps:

- **Initial Screening**: PSA levels based on age and risk factors.
- **If Elevated PSA**:
  - **Repeat PSA or Free PSA Testing**.
  - **Consider Prostate Biopsy**: If persistent elevation or concerning findings on DRE.
- **If Diagnosed with Prostate Cancer**:
  - **Risk Stratification**: Low, intermediate, or high risk.
  - **Treatment Options**:
    - **Active Surveillance**: For low-risk.
    - **Surgery or Radiation**: For intermediate and high-risk.
    - **Hormonal Therapy**: If indicated for advanced disease.

5. Management of Pediatric UTI

Algorithm Steps:

- **Initial Symptoms**: Fever, irritability, vomiting, and changes in urination.
- **Urinalysis and Culture**: Confirm UTI.
- **Treatment**:
    - **If Uncomplicated UTI**: Start appropriate antibiotics based on sensitivity.
    - **If Complicated UTI or Pyelonephritis**: Consider hospitalization and IV antibiotics.
- **Follow-Up**: Renal ultrasound or VCUG if recurrent infections or concerning findings.


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