

Department of Urology

Cumilla Medical College, Cumilla

Lecture classes schedule of 5th year (Com- 31)

Venue: Dr.Ripon Gallery,CoMC

Time: Sunday & Monday (8.00am-9.00 am),Tuesday (01.30pm -2.30 pm)

In Ramadan: Sunday & Monday (1.00am-12.00 am) & Tuesday (12.00pm -1.00 pm)

Lesson plan for Lecture Contents of MBBS 5th Year students (Session :2021- 2022)

Lesson Plan

Anatomy of the Genitourinary System

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Describe the anatomy of the urinary and male/female reproductive systems.
 - Identify the gross anatomy and relations of the kidneys, ureters, urinary bladder, and urethra.
 - Explain the anatomy of the male and female genital organs.
 - Describe the blood supply, lymphatic drainage, and nerve supply of the genitourinary system.
 - Correlate anatomical knowledge with common genitourinary diseases and clinical procedures.
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Purpose (3 min)

To provide the anatomical foundation necessary for understanding genitourinary diseases, clinical examination, radiological interpretation, and surgical procedures.

Prerequisite (2 min)

- Basic anatomy of the abdomen and pelvis
 - Embryology of the urinary and reproductive systems
 - General histology of urinary and reproductive organs
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Teaching Contents (40 min)

Urinary System

- Kidneys: location, external features, coverings, internal structure, relations
- Ureters: course, constrictions, relations, and blood supply
- Urinary bladder: anatomy, ligaments, blood supply, nerve supply
- Urethra: male and female anatomy, differences, and clinical significance

Male Reproductive System

- Testis and epididymis
- Spermatic cord
- Vas deferens
- Seminal vesicles and ejaculatory ducts
- Prostate gland
- Penis and urethra
- Scrotum and its coverings

Female Reproductive System

- Ovaries
- Uterine (Fallopian) tubes
- Uterus
- Cervix
- Vagina
- External genitalia (Vulva)

Neurovascular and Lymphatic Supply

- Arterial supply
- Venous drainage
- Lymphatic drainage
- Autonomic and somatic innervation

Clinical Correlations

- Renal calculi
- Hydronephrosis
- Benign prostatic hyperplasia (BPH)
- Urinary tract infection (UTI)

- Testicular torsion
 - Inguinal hernia
 - Pelvic organ prolapse
 - Carcinoma of the prostate, kidney, and cervix
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Teaching Methods

- Interactive lecture
 - PowerPoint presentation
 - Anatomical models demonstration
 - Clinical photographs and radiological images (CT/MRI/Ultrasound)
 - Question-and-answer session
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Teaching Materials

- Laptop
 - Projector
 - Whiteboard
 - Kidney and pelvic anatomical models
 - Male and female pelvis models
 - Anatomical charts
 - CT/MRI images
 - Ultrasound images
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Assessment (10 min)

- Oral questions
 - Diagram labeling
 - Image identification (CT/MRI/Ultrasound)
 - Identification of anatomical structures on models
 - Short case discussion with clinical correlation
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Summary (3 min)

Review the anatomy of the urinary and reproductive systems, emphasizing important anatomical relationships, neurovascular supply, and their relevance to common clinical conditions and surgical practice.

References

1. Gray's Anatomy: The Anatomical Basis of Clinical Practice (42nd Edition)
2. Snell's Clinical Anatomy by Regions
3. Moore KL, Dalley AF, Agur AMR. *Clinically Oriented Anatomy*
4. Last's Anatomy: Regional and Applied
5. Cunningham's Manual of Practical Anatomy
6. Campbell-Walsh-Wein Urology
7. Bailey & Love's Short Practice of Surgery

Lesson Plan

Physiology of the Urinary Tract and Micturition

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Describe the physiological functions of the urinary tract.
 - Explain the mechanisms of urine formation, transport, storage, and voiding.
 - Describe the neural control of micturition and continence.
 - Discuss the role of the kidneys, ureters, urinary bladder, and urethra in maintaining urinary function.
 - Correlate urinary tract physiology with common clinical disorders affecting micturition.
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Purpose (3 min)

To provide the physiological foundation necessary for understanding normal urinary function, the mechanism of micturition, and the pathophysiology of common urinary disorders encountered in clinical practice.

Prerequisite (2 min)

- Basic anatomy of the urinary tract
 - General physiology of smooth muscle and autonomic nervous system
 - Basic renal physiology (glomerular filtration, tubular reabsorption, and secretion)
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Teaching Contents (40 min)

Overview of Urinary Tract Physiology

- Functions of the urinary tract
- Maintenance of urinary continence and normal voiding

Urine Formation

- Glomerular filtration
- Tubular reabsorption
- Tubular secretion
- Urine concentration and dilution

Urine Transport

- Ureteric peristalsis
- Mechanism of urine flow from kidney to bladder
- Ureterovesical junction and prevention of vesicoureteral reflux

Physiology of the Urinary Bladder

- Structure and function of the detrusor muscle
- Bladder compliance and accommodation
- Storage phase of the bladder

Physiology of Micturition

- Filling phase
- Voiding phase
- Micturition reflex
- Voluntary and involuntary control of urination

Neural Control of Micturition

- Sympathetic innervation
- Parasympathetic innervation
- Somatic innervation
- Role of the pontine micturition center and cerebral cortex

Mechanism of Urinary Continence

- Internal urethral sphincter
- External urethral sphincter
- Pelvic floor muscles
- Guarding reflex

Clinical Correlations

- Urinary incontinence
 - Neurogenic bladder
 - Urinary retention
 - Overactive bladder
 - Benign prostatic hyperplasia (BPH)
 - Spinal cord lesions affecting micturition
 - Vesicoureteral reflux
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Teaching Methods

- Interactive lecture
 - PowerPoint presentation
 - Flowcharts and physiological diagrams
 - Clinical case discussion
 - Question-and-answer session
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Teaching Materials

- Laptop
 - Projector
 - Whiteboard
 - Anatomical models of the urinary tract
 - Physiology charts
 - Diagrams of neural pathways
 - Clinical images and urodynamic study graphs
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Assessment (10 min)

- Oral questions
 - Diagram labeling of the micturition reflex pathway
 - Flowchart completion of urine formation and micturition
 - Image interpretation (urodynamic tracing)
 - Short clinical case discussion
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Summary (3 min)

Review the physiological mechanisms of urine formation, transport, storage, and micturition, emphasizing neural regulation, maintenance of continence, and their relevance to common urinary tract disorders.

References

- Guyton & Hall. *Textbook of Medical Physiology*
- Ganong's *Review of Medical Physiology*
- Boron & Boulpaep. *Medical Physiology*
- Berne & Levy. *Physiology*
- Campbell-Walsh-Wein. *Urology*
- *Williams Textbook of Endocrinology* (relevant sections on fluid and electrolyte regulation)

Lesson Plan

Urological Symptoms and Investigations

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Describe the common presenting symptoms of urological diseases.
 - Explain the clinical significance of lower and upper urinary tract symptoms.
 - Identify the appropriate laboratory and imaging investigations used in urological practice.
 - Interpret common investigation findings in patients with urological disorders.
 - Correlate urological symptoms and investigations with common clinical conditions.
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Purpose (3 min)

To provide students with the knowledge and skills required to recognize common urological symptoms, select appropriate investigations, and interpret findings for accurate diagnosis and management of urological diseases.

Prerequisite (2 min)

- Basic anatomy and physiology of the urinary tract
 - Fundamentals of clinical history taking and physical examination
 - Basic pathology and microbiology of urinary tract diseases
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Teaching Contents (40 min)

Common Urological Symptoms

- Lower urinary tract symptoms (LUTS)

- Frequency
- Urgency
- Nocturia
- Dysuria
- Hesitancy
- Poor urinary stream
- Straining
- Terminal dribbling
- Urinary retention
- Urinary incontinence

Upper Urinary Tract Symptoms

- Flank pain (renal colic)
- Loin pain
- Hematuria (microscopic and gross)
- Fever with urinary symptoms
- Passage of urinary stones

Systemic Symptoms

- Weight loss
- Fever
- Malaise
- Bone pain (advanced malignancy)

Clinical Evaluation

- Focused history taking
- Physical examination
- Abdominal examination
- Examination of external genitalia
- Digital rectal examination (DRE)
- Pelvic examination (where appropriate)

Laboratory Investigations

- Urinalysis
- Urine microscopy, culture, and sensitivity (M/C/S)
- Urine cytology
- Complete blood count (CBC)
- Serum creatinine and blood urea nitrogen (BUN)

- Electrolytes
- Estimated glomerular filtration rate (eGFR)
- Prostate-specific antigen (PSA)

Imaging Investigations

- Ultrasonography (KUB and prostate)
- Plain X-ray KUB
- Intravenous urography (IVU)
- CT KUB
- CT urography
- MRI
- Micturating cystourethrogram (MCUG)

Endoscopic and Functional Investigations

- Cystoscopy
- Ureteroscopy
- Urodynamic studies
- Uroflowmetry
- Post-void residual urine measurement
- Renal nuclear scan (selected cases)

Clinical Correlations

- Urinary tract infection (UTI)
- Urolithiasis
- Benign prostatic hyperplasia (BPH)
- Bladder outlet obstruction
- Hematuria due to malignancy
- Bladder carcinoma
- Renal cell carcinoma
- Neurogenic bladder

Teaching Methods

- Interactive lecture
- PowerPoint presentation
- Clinical case-based discussion
- Demonstration of investigation reports and imaging

- Question-and-answer session
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Teaching Materials

- Laptop
 - Projector
 - Whiteboard
 - Clinical photographs
 - Urinalysis reports
 - Imaging studies (Ultrasound, X-ray, CT, MRI)
 - Cystoscopy images and videos
 - Flowcharts of diagnostic approaches
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Assessment (10 min)

- Oral questions
 - Interpretation of urinalysis and laboratory reports
 - Identification of imaging findings (Ultrasound, CT KUB, X-ray)
 - Clinical case discussion
 - Short-answer questions on investigation selection
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Summary (3 min)

Review the common urological symptoms and the appropriate diagnostic investigations, emphasizing a systematic clinical approach, interpretation of findings, and their importance in diagnosing common urological disorders.

References

- Campbell-Walsh-Wein Urology
- Smith & Tanagho's General Urology
- EAU Guidelines on Urology
- AUA (American Urological Association) Guidelines
- Bailey & Love's Short Practice of Surgery

Lesson Plan

Haematuria and Its Management

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Define haematuria and classify it into microscopic and gross haematuria.
 - Describe the common causes and pathophysiology of haematuria.
 - Explain the clinical approach to the evaluation of a patient presenting with haematuria.
 - Discuss the laboratory and imaging investigations used in the diagnosis of haematuria.
 - Outline the principles of management of haematuria and correlate with common urological diseases.
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Purpose (3 min)

To provide students with a systematic approach to the diagnosis and management of haematuria, enabling early identification of serious urological conditions and appropriate clinical decision-making.

Prerequisite (2 min)

- Basic anatomy and physiology of the urinary tract
 - Knowledge of common urological symptoms and investigations
 - Basic pathology of urinary tract diseases
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Teaching Contents (40 min)

Definition and Classification

- Definition of haematuria
- Microscopic haematuria
- Gross (macroscopic) haematuria
- Initial, terminal, and total haematuria

Etiology

- Urinary tract infection
- Urolithiasis
- Trauma
- Benign prostatic hyperplasia (BPH)
- Glomerular diseases
- Renal and bladder malignancies
- Prostate cancer
- Congenital and vascular causes
- Drug-induced haematuria (e.g., anticoagulants)

Clinical Evaluation

- History taking
 - Onset and duration
 - Painful vs painless haematuria
 - Associated urinary symptoms
 - History of trauma, smoking, medications, and systemic diseases
- Physical examination
 - General examination
 - Abdominal examination
 - External genital examination
 - Digital rectal examination (DRE)
 - Blood pressure assessment

Investigations

- Urinalysis
- Urine microscopy, culture, and sensitivity
- Urine cytology
- Complete blood count (CBC)
- Renal function tests (serum creatinine, urea, electrolytes)

- Coagulation profile
- Ultrasonography (KUB)
- CT KUB / CT urography
- MRI (selected cases)
- Intravenous urography (IVU)
- Cystoscopy
- Renal biopsy (when indicated)

Management

- Initial assessment and stabilization
- Management of significant bleeding and clot retention
- Catheterization and bladder irrigation
- Treatment of the underlying cause
 - Antibiotics for urinary tract infection
 - Medical or surgical management of stones
 - Management of BPH
 - Treatment of glomerular disease
 - Surgical and oncological management of urinary tract malignancies
- Indications for urgent urological referral

Clinical Correlations

- Painless haematuria as a warning sign of urinary tract malignancy
- Painful haematuria associated with urinary stones and infection
- Clot retention
- Hemorrhagic cystitis
- Renal trauma
- Bladder carcinoma
- Renal cell carcinoma

Teaching Methods

- Interactive lecture
 - PowerPoint presentation
 - Clinical case-based discussion
 - Demonstration of imaging and cystoscopy findings
 - Question-and-answer session
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Teaching Materials

- Laptop
 - Projector
 - Whiteboard
 - Anatomical charts of the urinary tract
 - Clinical photographs
 - Ultrasound, CT, and MRI images
 - Urinalysis reports
 - Cystoscopy images and videos
 - Diagnostic algorithm flowcharts
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Assessment (10 min)

- Oral questions
 - Interpretation of urinalysis and laboratory reports
 - Image identification (Ultrasound, CT urography, cystoscopy)
 - Clinical case discussion on the evaluation and management of haematuria
 - Short-answer questions on differential diagnosis and treatment
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Summary (3 min)

Review the classification, causes, clinical evaluation, investigations, and management of haematuria, emphasizing the importance of identifying serious underlying conditions such as urinary tract malignancies and ensuring timely referral and treatment.

References

- Campbell-Walsh-Wein Urology
- Smith & Tanagho's General Urology
- EAU Guidelines on Urological Infections and Haematuria
- AUA (American Urological Association) Guidelines
- Bailey & Love's Short Practice of Surgery

Lesson Plan

Urinary Retention and Its Management

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Define urinary retention and classify it into acute and chronic urinary retention.
 - Describe the etiology and pathophysiology of urinary retention.
 - Explain the clinical features and diagnostic approach to patients presenting with urinary retention.
 - Discuss the investigations used to determine the underlying cause.
 - Outline the principles of emergency and definitive management of urinary retention and correlate with common urological disorders.
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Purpose (3 min)

To provide students with the knowledge and clinical skills required to recognize urinary retention as a common urological emergency, perform appropriate initial management, investigate the underlying cause, and plan definitive treatment.

Prerequisite (2 min)

- Basic anatomy and physiology of the urinary tract
 - Knowledge of lower urinary tract symptoms (LUTS)
 - Basic understanding of common urological diseases and clinical examination
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Teaching Contents (40 min)

Definition and Classification

- Definition of urinary retention
- Acute urinary retention
- Chronic urinary retention
- Acute-on-chronic urinary retention

Etiology

- **Obstructive causes**
 - Benign prostatic hyperplasia (BPH)
 - Urethral stricture
 - Bladder neck obstruction
 - Urinary tract stones
 - Prostate and bladder tumors
- **Neurological causes**
 - Spinal cord injury
 - Multiple sclerosis
 - Diabetic neuropathy
 - Stroke
- **Infective and inflammatory causes**
 - Acute prostatitis
 - Severe urinary tract infection
- **Drug-induced causes**
 - Anticholinergics
 - Antihistamines
 - Opioids
 - Tricyclic antidepressants
- **Postoperative and miscellaneous causes**
 - Post-anesthesia urinary retention
 - Constipation
 - Pelvic organ prolapse

Clinical Presentation

- Suprapubic pain and distension
- Inability to void
- Lower abdominal discomfort
- Overflow incontinence
- Lower urinary tract symptoms (LUTS)
- Renal impairment in chronic retention

Clinical Evaluation

- Focused history
- General physical examination
- Abdominal examination
- Palpation and percussion of the bladder
- External genital examination
- Digital rectal examination (DRE)
- Focused neurological examination

Investigations

- Urinalysis
- Urine culture and sensitivity
- Complete blood count (CBC)
- Serum creatinine, urea, and electrolytes
- Ultrasonography (Kidneys, Ureters, Bladder, and Prostate)
- Measurement of post-void residual urine (PVR)
- Uroflowmetry
- Cystoscopy (when indicated)
- CT or MRI in selected cases
- Urodynamic studies (selected patients)

Management

- Initial assessment and stabilization
- Immediate bladder decompression
 - Urethral catheterization
 - Suprapubic catheterization (when urethral catheterization is contraindicated or unsuccessful)
- Pain management
- Monitoring for post-obstructive diuresis
- Management of the underlying cause
 - Medical treatment for BPH (α -blockers, 5α -reductase inhibitors)
 - Surgical management (e.g., TURP)
 - Treatment of urethral stricture
 - Management of bladder stones
 - Treatment of neurological disorders
- Catheter care and patient education
- Indications for urgent urological referral

Clinical Correlations

- Benign prostatic hyperplasia (BPH)
 - Acute prostatitis
 - Urethral stricture disease
 - Neurogenic bladder
 - Postoperative urinary retention
 - Obstructive uropathy
 - Acute kidney injury secondary to urinary retention
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Teaching Methods

- Interactive lecture
 - PowerPoint presentation
 - Clinical case-based discussion
 - Demonstration of urinary catheterization (simulation/model)
 - Question-and-answer session
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Teaching Materials

- Laptop
 - Projector
 - Whiteboard
 - Male and female urinary tract models
 - Foley catheter and suprapubic catheter demonstration models
 - Anatomical charts
 - Ultrasound images
 - Uroflowmetry graphs
 - Clinical photographs and videos
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Assessment (10 min)

- Oral questions
- Diagram labeling of the lower urinary tract
- Interpretation of ultrasound and post-void residual urine findings
- Identification of indications and contraindications for catheterization

- Short clinical case discussion on the diagnosis and management of urinary retention
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Summary (3 min)

Review the definition, causes, clinical features, investigations, and management of urinary retention, emphasizing prompt bladder decompression, identification of the underlying cause, prevention of complications, and the importance of timely urological referral.

References

- Campbell-Walsh-Wein Urology
- Smith & Tanagho's General Urology
- EAU (European Association of Urology) Guidelines on Non-neurogenic Male Lower Urinary Tract Symptoms
- AUA (American Urological Association) Guidelines on Benign Prostatic Hyperplasia
- Bailey & Love's Short Practice of Surgery

Lesson Plan

Urinary Tract Infection (UTI)

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 min)

By the end of the session, students should be able to:

- Define urinary tract infection (UTI) and classify its different types.
 - Describe the etiology, pathogenesis, and risk factors of UTIs.
 - Explain the clinical presentation of upper and lower urinary tract infections.
 - Discuss the laboratory and imaging investigations used in the diagnosis of UTIs.
 - Outline the principles of management, prevention, and complications of urinary tract infections.
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Purpose (3 min)

To provide students with the knowledge and clinical skills required to diagnose, investigate, and manage urinary tract infections effectively, while understanding their complications and preventive strategies.

Prerequisite (2 min)

- Basic anatomy and physiology of the urinary tract
 - Knowledge of common urological symptoms
 - Basic microbiology and pharmacology of antimicrobial agents
-

Teaching Contents (40 min)

Definition and Classification

- Definition of urinary tract infection (UTI)
- Lower urinary tract infection (cystitis, urethritis)
- Upper urinary tract infection (pyelonephritis)
- Uncomplicated and complicated UTI
- Community-acquired and hospital-acquired UTI
- Recurrent UTI
- Catheter-associated urinary tract infection (CAUTI)
- Asymptomatic bacteriuria

Etiology and Risk Factors

- Common causative organisms
 - *Escherichia coli*
 - *Klebsiella* spp.
 - *Proteus* spp.
 - *Pseudomonas aeruginosa*
 - *Enterococcus* spp.
- Predisposing factors
 - Female gender
 - Pregnancy
 - Diabetes mellitus
 - Urinary obstruction
 - Urinary catheterization
 - Urinary stones
 - Neurogenic bladder
 - Immunosuppression

Pathogenesis

- Ascending infection
- Hematogenous spread
- Host defense mechanisms
- Bacterial virulence factors

Clinical Features

- Dysuria
- Frequency

- Urgency
- Suprapubic pain
- Hematuria
- Cloudy or foul-smelling urine
- Fever and chills
- Flank pain
- Costovertebral angle tenderness
- Nausea and vomiting (pyelonephritis)

Clinical Evaluation

- History taking
- Physical examination
- Abdominal examination
- Renal angle tenderness
- Pelvic examination (when indicated)
- Digital rectal examination (in suspected prostatitis)

Investigations

- Urinalysis (dipstick and microscopy)
- Urine culture and sensitivity
- Complete blood count (CBC)
- Serum creatinine and renal function tests
- Blood culture (in severe infection)
- Ultrasonography (KUB)
- CT scan (complicated UTI or suspected obstruction)
- Cystoscopy (selected cases)

Management

- Empirical antibiotic therapy
- Culture-guided antibiotic treatment
- Hydration
- Analgesics and antipyretics
- Management of complicated UTI
- Treatment of underlying causes
- Catheter management
- Indications for hospitalization
- Prevention of recurrent UTI
- Antibiotic stewardship

Complications

- Acute pyelonephritis
- Renal abscess
- Urosepsis
- Renal scarring
- Chronic kidney disease
- Recurrent urinary tract infection

Clinical Correlations

- Urinary tract infection in pregnancy
- Catheter-associated UTI (CAUTI)
- UTI in diabetic patients
- Pediatric vesicoureteral reflux
- Benign prostatic hyperplasia with UTI
- Urosepsis

Teaching Methods

- Interactive lecture
- PowerPoint presentation
- Clinical case-based discussion
- Demonstration of urine dipstick interpretation and culture reports
- Question-and-answer session

Teaching Materials

- Laptop
- Projector
- Whiteboard
- Urinary tract anatomical models
- Clinical photographs
- Urinalysis reports
- Urine culture and sensitivity reports
- Ultrasound and CT images
- Diagnostic flowcharts
- Antibiotic treatment guidelines

Assessment (10 min)

- Oral questions
- Interpretation of urinalysis and urine culture reports
- Image identification (Ultrasound/CT findings)
- Clinical case discussion on diagnosis and management of UTI
- Short-answer questions on antibiotic selection and prevention strategies

Summary (3 min)

Review the classification, etiology, clinical presentation, investigations, management, and prevention of urinary tract infections, emphasizing early diagnosis, appropriate antimicrobial therapy, recognition of complications, and rational antibiotic use.

References

- Campbell-Walsh-Wein Urology
- Smith & Tanagho's General Urology
- European Association of Urology (EAU) Guidelines on Urological Infections
- American Urological Association (AUA) Guidelines
- Bailey & Love's Short Practice of Surgery

Lesson Plan

Urolithiasis (Urinary Stone Diseases)

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and physiology of the urinary tract relevant to stone formation.
- Classify urinary stone diseases based on composition and location.
- Recognize the clinical features and complications of urolithiasis.
- Outline the investigations and management of urinary stone diseases.
- Identify urological emergencies requiring urgent intervention.

Purpose (3 minutes)

To enable students to understand the etiology, pathophysiology, diagnosis, management, and prevention of urinary stone diseases.

Prerequisite of Learning (2 minutes)

- Anatomy of the kidneys, ureters, bladder, and urethra
- Physiology of urine formation and urinary tract function
- Basic knowledge of renal physiology and urinary tract infections
- Principles of diagnostic imaging

Teaching Contents (40 minutes)

- Anatomy and physiology of the urinary tract
- Epidemiology and risk factors of urolithiasis
- Pathophysiology and mechanisms of stone formation
- Classification of urinary stones:
 - Calcium oxalate and calcium phosphate stones
 - Uric acid stones
 - Struvite (infection) stones
 - Cystine stones
- Clinical features:
 - Renal colic
 - Hematuria

- Dysuria
 - Nausea and vomiting
 - Fever and signs of urinary tract infection
- Differential diagnosis of acute flank pain
- Investigations:
 - Urinalysis and urine culture
 - Serum biochemical tests
 - Stone analysis
 - Ultrasonography (USG)
 - Non-contrast CT KUB (gold standard)
 - Plain X-ray KUB and Intravenous Urography (IVU) where indicated
- Medical management:
 - Pain control
 - Hydration
 - Medical expulsive therapy
 - Antibiotics for infected stones
 - Metabolic evaluation and preventive measures
- Surgical management:
 - Extracorporeal Shock Wave Lithotripsy (ESWL)
 - Ureteroscopy (URS)
 - Percutaneous Nephrolithotomy (PCNL)
 - Retrograde Intrarenal Surgery (RIRS)
 - Open or laparoscopic stone surgery (selected cases)
- Complications:
 - Urinary obstruction
 - Hydronephrosis
 - Recurrent urinary tract infection
 - Pyonephrosis
 - Renal impairment
- Prevention:
 - Dietary modification
 - Adequate fluid intake
 - Medical prophylaxis for recurrent stone formers
 - Patient education and follow-up

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical case-based discussion, radiological image interpretation (X-ray KUB, ultrasound, CT KUB), and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the urinary system, radiological images (X-ray KUB, CT KUB, ultrasound), urine analysis reports, and stone specimens (if available).

Assessment (10 minutes)

- Oral questions
- Interpretation of radiological images
- Clinical case discussion
- Short end-session quiz

Summary (3 minutes)

Review the etiology, classification, clinical presentation, investigations, management, complications, and prevention of urinary stone diseases.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Urolithiasis
5. AUA (American Urological Association) Guidelines on Surgical Management of Stones

Lesson Plan

Urological Emergencies

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the common types and causes of urological emergencies.
- Recognize the clinical features of common urological emergency conditions.
- Outline the appropriate investigations and initial management of urological emergencies.
- Identify conditions requiring urgent surgical intervention and referral.
- Understand the principles of emergency stabilization and prevention of complications.

Purpose (3 minutes)

To enable students to understand the diagnosis, initial assessment, emergency management, and timely referral of common urological emergencies encountered in clinical practice.

Prerequisite of Learning (2 minutes)

- Anatomy of the urinary tract and male genitalia
- Physiology of the urinary system
- Principles of history taking and physical examination
- Basic knowledge of urinary tract infections and renal physiology

Teaching Contents (40 minutes)

- Overview and principles of urological emergencies
- Initial assessment and resuscitation (ABCDE approach)
- Acute urinary retention: causes, clinical features, catheterization, and management
- Obstructive uropathy and anuria
- Renal and ureteric colic due to urinary stones
- Urosepsis: diagnosis, emergency management, and indications for urgent drainage
- Gross hematuria with clot retention
- Testicular torsion: clinical diagnosis, differential diagnosis, and emergency surgical management
- Acute epididymo-orchitis
- Fournier's gangrene: recognition and initial management

- Paraphimosis and priapism
- Genitourinary trauma:
 - Renal trauma
 - Bladder injury
 - Urethral injury
 - External genital trauma
- Investigations:
 - Urinalysis and urine culture
 - Complete blood count and renal function tests
 - Serum electrolytes
 - Ultrasonography (USG)
 - Non-contrast CT KUB
 - Contrast-enhanced CT abdomen and pelvis (where indicated)
 - Retrograde urethrogram and cystography
- Emergency management:
 - Fluid resuscitation
 - Pain management
 - Antibiotic therapy
 - Bladder decompression
 - Percutaneous nephrostomy and ureteric stenting
 - Emergency surgical intervention
- Complications and prevention

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical case-based discussion, emergency scenario simulation, radiological image interpretation, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the urinary tract, ultrasound and CT images, X-ray KUB, Foley catheter, suprapubic catheter kit (demonstration), and clinical photographs.

Assessment (10 minutes)

- Oral questions
- Clinical case discussion
- Interpretation of radiological and clinical images
- Short end-session quiz

Summary (3 minutes)

Review the recognition, diagnosis, emergency investigations, initial stabilization, definitive management, and prevention of complications in common urological emergencies.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Urological Emergencies
5. American Urological Association (AUA) Guidelines

Lesson Plan

Obstructive Uropathy and Hydronephrosis

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and physiology of the urinary tract relevant to urinary drainage.
- Classify the causes of obstructive uropathy and hydronephrosis.
- Recognize the clinical features and complications of urinary tract obstruction.
- Outline the investigations and management of obstructive uropathy and hydronephrosis.
- Identify urological emergencies requiring urgent decompression of the urinary tract.

Purpose (3 minutes)

To enable students to understand the etiology, pathophysiology, diagnosis, and management of obstructive uropathy and hydronephrosis, with emphasis on early recognition and timely intervention to preserve renal function.

Prerequisite of Learning (2 minutes)

- Anatomy of the kidneys, ureters, bladder, and urethra
- Physiology of urine formation and urinary drainage
- Basic renal physiology and renal function tests
- Principles of urinary tract imaging

Teaching Contents (40 minutes)

- Anatomy and physiology of the upper and lower urinary tract
- Definition of obstructive uropathy and hydronephrosis
- Etiology:
 - Congenital causes (e.g., pelvi-ureteric junction obstruction, urethral valves)
 - Acquired causes:
 - Urinary calculi
 - Benign prostatic hyperplasia (BPH)
 - Urethral stricture
 - Tumors of the urinary tract and pelvis
 - Retroperitoneal fibrosis

- Blood clots and external compression
- Pathophysiology of urinary tract obstruction
- Classification:
 - Acute and chronic obstruction
 - Partial and complete obstruction
 - Unilateral and bilateral obstruction
- Clinical features:
 - Flank pain and renal colic
 - Hematuria
 - Lower urinary tract symptoms
 - Anuria or oliguria
 - Fever and urosepsis
 - Palpable kidney (in selected cases)
- Complications:
 - Hydronephrosis
 - Hydroureter
 - Urinary tract infection
 - Pyonephrosis
 - Acute kidney injury
 - Chronic kidney disease
- Investigations:
 - Urinalysis and urine culture
 - Complete blood count
 - Serum creatinine, blood urea, and electrolytes
 - Ultrasonography of the kidneys, ureters, and bladder (USG KUB)
 - Non-contrast CT KUB
 - Contrast-enhanced CT urography (when indicated)
 - Intravenous urography (IVU) and renal nuclear scan (selected cases)
- Medical management:
 - Pain relief
 - Fluid and electrolyte management
 - Antibiotic therapy for associated infection
 - Monitoring renal function
- Surgical and interventional management:
 - Urethral catheterization
 - Suprapubic cystostomy
 - Double-J (DJ) ureteric stenting
 - Percutaneous nephrostomy (PCN)
 - Definitive treatment of the underlying cause (stone removal, TURP, urethral dilatation, pyeloplasty, tumor surgery)
- Prevention and follow-up

Teaching Methods

Interactive lecture, PowerPoint presentation, radiological image interpretation (ultrasound and CT KUB), clinical case-based discussion, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the urinary tract, ultrasound images, CT KUB images, IVU films, nephrostomy and DJ stent photographs, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Interpretation of ultrasound and CT images
- Clinical case discussion
- Short end-session quiz

Summary (3 minutes)

Review the anatomy, causes, pathophysiology, clinical presentation, investigations, management, complications, and prevention of obstructive uropathy and hydronephrosis, emphasizing early diagnosis and prompt urinary tract decompression to prevent irreversible renal damage.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Upper Urinary Tract Obstruction
5. American Urological Association (AUA) Guidelines

Lesson Plan

Benign and Malignant Enlargement of the Prostate

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and functions of the prostate gland.
- Differentiate between benign prostatic hyperplasia (BPH) and carcinoma of the prostate.
- Recognize the clinical features of benign and malignant enlargement of the prostate.
- Outline the investigations and management of common prostatic diseases.
- Identify complications and indications for urgent urological intervention.

Purpose (3 minutes)

To enable students to understand the pathology, diagnosis, investigations, and management of benign and malignant enlargement of the prostate and their impact on urinary tract function.

Prerequisite of Learning (2 minutes)

- Anatomy and physiology of the prostate gland and lower urinary tract
- Physiology of micturition
- Basic knowledge of urinary tract obstruction
- Principles of digital rectal examination (DRE)

Teaching Contents (40 minutes)

- Anatomy and physiology of the prostate gland
- Epidemiology and risk factors for prostatic diseases
- Benign Prostatic Hyperplasia (BPH):
 - Definition and pathophysiology
 - Etiology and risk factors
 - Clinical features (Lower Urinary Tract Symptoms—LUTS)
 - Complications: acute urinary retention, recurrent urinary tract infection, bladder stones, hydronephrosis, renal impairment
- Carcinoma of the prostate:
 - Epidemiology and risk factors
 - Pathology and staging

- Clinical presentation
 - Metastatic disease (especially bone metastasis)
- Comparison between BPH and carcinoma of the prostate
- Clinical examination:
 - General examination
 - Abdominal examination
 - Digital Rectal Examination (DRE)
- Investigations:
 - Urinalysis and urine culture
 - Serum Prostate-Specific Antigen (PSA)
 - Renal function tests
 - Ultrasonography (KUB and transrectal ultrasound)
 - Uroflowmetry and post-void residual urine
 - Multiparametric MRI of the prostate
 - Prostate biopsy
 - Bone scan and CT scan for staging (when indicated)
- Medical management:
 - Lifestyle modification
 - Alpha-adrenergic blockers
 - 5-alpha reductase inhibitors
 - Combination therapy
 - Hormonal therapy for advanced prostate cancer
- Surgical management:
 - Transurethral Resection of the Prostate (TURP)
 - Open or minimally invasive simple prostatectomy
 - Radical prostatectomy
 - Radiotherapy
 - Androgen deprivation therapy
- Complications and follow-up
- Screening, prevention, and patient counseling

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical case-based discussion, digital rectal examination demonstration using models, radiological image interpretation, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, prostate anatomical model, ultrasound and MRI images, PSA reports, histopathology slides, clinical case scenarios, and DRE teaching model.

Assessment (10 minutes)

- Oral questions
- Clinical case discussion
- Interpretation of PSA values and imaging findings
- Short end-session quiz

Summary (3 minutes)

Review the anatomy, pathology, clinical presentation, diagnosis, investigations, and management of benign and malignant enlargement of the prostate, emphasizing differentiation between BPH and prostate cancer and the importance of early diagnosis and appropriate treatment.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Benign Prostatic Hyperplasia and Prostate Cancer
5. American Urological Association (AUA) Guidelines

Lesson Plan

Malignancies of the Urinary Tract

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and functions of the urinary tract relevant to urinary tract malignancies.
- Classify the common malignancies affecting the urinary tract.
- Recognize the clinical features of urinary tract cancers.
- Outline the investigations and management of urinary tract malignancies.
- Identify urological emergencies associated with urinary tract cancers requiring urgent intervention.

Purpose (3 minutes)

To enable students to understand the epidemiology, pathology, diagnosis, staging, and management of common malignancies affecting the urinary tract and the importance of early detection and multidisciplinary care.

Prerequisite of Learning (2 minutes)

- Anatomy of the kidneys, ureters, bladder, and urethra
- Physiology of the urinary system
- Principles of oncology and tumor biology
- Basic knowledge of diagnostic imaging and pathology

Teaching Contents (40 minutes)

- Anatomy and physiology of the urinary tract
- Epidemiology and risk factors for urinary tract malignancies
- Classification of urinary tract malignancies:
 - Renal cell carcinoma
 - Upper tract urothelial carcinoma (renal pelvis and ureter)
 - Bladder carcinoma
 - Urethral carcinoma
- Etiology and pathogenesis:

- Smoking
 - Occupational exposure to carcinogens
 - Chronic inflammation and recurrent infections
 - Schistosomiasis
 - Genetic and hereditary factors
- Clinical features:
 - Painless hematuria
 - Flank pain
 - Lower urinary tract symptoms
 - Palpable abdominal mass
 - Constitutional symptoms
 - Symptoms of metastatic disease
- Clinical examination
- Investigations:
 - Urinalysis and urine cytology
 - Complete blood count and renal function tests
 - Ultrasonography
 - Contrast-enhanced CT urography
 - MRI (selected cases)
 - Cystoscopy with biopsy
 - Ureteroscopy (where indicated)
 - Histopathological examination
 - TNM staging
- Medical management:
 - Intravesical therapy (e.g., BCG, chemotherapy)
 - Systemic chemotherapy
 - Immunotherapy
 - Targeted therapy
- Surgical management:
 - Transurethral Resection of Bladder Tumor (TURBT)
 - Radical cystectomy
 - Partial cystectomy (selected cases)
 - Radical nephrectomy
 - Nephroureterectomy
 - Urinary diversion techniques
- Radiotherapy: indications and role
- Complications:
 - Urinary obstruction
 - Hydronephrosis
 - Hematuria
 - Metastatic disease
 - Renal failure
- Prevention:
 - Smoking cessation
 - Occupational safety measures
 - Early diagnosis and surveillance

- Regular follow-up after treatment

Teaching Methods

Interactive lecture, PowerPoint presentation, radiological image interpretation (ultrasound, CT, MRI), cystoscopic photographs, histopathology slides, case-based discussion, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the urinary tract, CT urography images, cystoscopic photographs, histopathology slides, urine cytology reports, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Clinical image interpretation
- Case discussion
- Short end-session quiz

Summary (3 minutes)

Review the anatomy, classification, clinical features, investigations, staging, and management of common urinary tract malignancies, emphasizing the importance of early diagnosis, multidisciplinary treatment, and long-term follow-up.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Urological Cancers
5. American Urological Association (AUA) Guidelines

Lesson Plan

Scrotal Swellings

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and functions of the scrotum and its contents.
- Classify the common causes of scrotal swellings.
- Recognize the clinical features of benign and malignant scrotal swellings.
- Outline the investigations and management of common scrotal swellings.
- Identify acute scrotal conditions requiring urgent surgical intervention.

Purpose (3 minutes)

To enable students to understand the etiology, clinical presentation, diagnosis, and management of common scrotal swellings, with emphasis on differentiating surgical emergencies from non-emergency conditions.

Prerequisite of Learning (2 minutes)

- Anatomy of the scrotum, testes, epididymis, spermatic cord, and inguinal canal
- Physiology of the male reproductive system
- Principles of history taking and physical examination
- Basic knowledge of ultrasonography and Doppler imaging

Teaching Contents (40 minutes)

- Anatomy and physiology of the scrotum and its contents
- Clinical examination of the scrotum
- Classification of scrotal swellings:
 - Testicular swellings
 - Epididymal swellings
 - Spermatic cord swellings
 - Scrotal wall swellings
- Common causes of scrotal swellings:
 - Hydrocele
 - Varicocele

- Epididymal cyst and spermatocele
 - Epididymo-orchitis
 - Testicular torsion
 - Testicular tumors
 - Inguinoscrotal hernia
 - Hematocele and pyocele
- Clinical features and differential diagnosis
- Acute scrotum: causes and emergency management
- Investigations:
 - Urinalysis and urine culture
 - Complete blood count
 - Serum tumor markers (AFP, β -hCG, LDH)
 - Scrotal ultrasonography with color Doppler
 - CT scan for staging of testicular malignancy (when indicated)
 - Histopathological examination
- Medical management:
 - Antibiotics and analgesics
 - Scrotal support
 - Conservative management where appropriate
- Surgical management:
 - Hydrocelectomy
 - Varicocelectomy
 - Excision of epididymal cyst
 - Emergency exploration for testicular torsion
 - Radical inguinal orchidectomy for testicular tumors
 - Hernia repair
- Complications and prevention
- Patient counseling and follow-up

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical photographs, ultrasonography and Doppler image interpretation, case-based discussion, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the male genitalia, scrotal ultrasound and Doppler images, clinical photographs, tumor marker reports, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions

- Clinical image interpretation
- Case discussion
- Short end-session quiz

Summary (3 minutes)

Review the anatomy, classification, clinical features, investigations, and management of common scrotal swellings, emphasizing the diagnosis of acute scrotal emergencies and early recognition of testicular malignancy.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Testicular Cancer and Male Genital Disorders
5. American Urological Association (AUA) Guidelines

Lesson Plan

Imaging in Urology

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the principles and indications of common imaging modalities used in urology.
- Classify imaging techniques according to their clinical applications.
- Recognize the characteristic imaging findings of common urological diseases.
- Outline the role of imaging in the diagnosis, staging, and follow-up of urological disorders.
- Identify the appropriate imaging modality for common urological emergencies.

Purpose (3 minutes)

To enable students to understand the indications, interpretation, advantages, limitations, and clinical applications of imaging modalities used in the diagnosis and management of urological diseases.

Prerequisite of Learning (2 minutes)

- Anatomy of the kidneys, ureters, bladder, prostate, and urethra
- Physiology of the urinary system
- Basic principles of radiology and ultrasonography
- Fundamentals of contrast media and radiation safety

Teaching Contents (40 minutes)

- Overview of imaging in urology
- Principles of selecting appropriate imaging modalities
- Plain X-ray KUB:
 - Indications
 - Advantages and limitations
 - Common radiological findings
- Ultrasonography (USG):
 - Kidneys, ureters, bladder (KUB)
 - Prostate and scrotum

- Detection of hydronephrosis, urinary stones, tumors, and post-void residual urine
- Doppler ultrasonography:
 - Renal vascular disorders
 - Testicular torsion
 - Varicocele
- Intravenous Urography (IVU):
 - Indications
 - Technique
 - Interpretation
 - Limitations
- Computed Tomography (CT):
 - Non-contrast CT KUB for urinary stones
 - Contrast-enhanced CT urography
 - CT in renal trauma and urinary tract malignancies
- Magnetic Resonance Imaging (MRI):
 - Evaluation of prostate cancer
 - Renal masses
 - Pelvic malignancies
- Nuclear medicine imaging:
 - DTPA and MAG3 renal scans
 - DMSA renal cortical scan
 - PET-CT in selected urological malignancies
- Retrograde pyelography, micturating cystourethrogram (MCUG), and retrograde urethrogram (RUG):
 - Indications
 - Clinical applications
- Imaging findings in common urological conditions:
 - Urolithiasis
 - Hydronephrosis
 - Benign prostatic hyperplasia
 - Urinary tract malignancies
 - Congenital anomalies
 - Urinary tract trauma
- Radiation safety, contrast reactions, and contraindications
- Role of imaging in treatment planning and follow-up

Teaching Methods

Interactive lecture, PowerPoint presentation, radiological image interpretation, case-based discussion, demonstration of imaging studies, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the urinary tract, X-ray KUB films, ultrasound images, CT and MRI scans, IVU films, nuclear medicine images, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Interpretation of radiological images
- Clinical case discussion
- Short end-session quiz

Summary (3 minutes)

Review the indications, principles, interpretation, and clinical applications of imaging modalities in urology, emphasizing the selection of appropriate investigations for common urological diseases and emergencies.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines
5. American Urological Association (AUA) Guidelines
6. Grainger & Allison's Diagnostic Radiology
7. Sutton's Textbook of Radiology and Imaging

Lesson Plan

Hypospadias and Epispadias

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the embryology, anatomy, and normal development of the male external genitalia.
- Classify the types of hypospadias and epispadias.
- Recognize the clinical features and associated anomalies of hypospadias and epispadias.
- Outline the investigations and principles of management of these congenital anomalies.
- Identify complications and the appropriate timing for surgical correction.

Purpose (3 minutes)

To enable students to understand the embryology, etiology, clinical presentation, diagnosis, and management of hypospadias and epispadias, emphasizing early recognition, appropriate referral, and surgical correction.

Prerequisite of Learning (2 minutes)

- Embryology of the urinary and genital systems
- Anatomy of the male urethra, penis, and external genitalia
- Physiology of micturition
- Principles of congenital anomalies and pediatric urology

Teaching Contents (40 minutes)

- Embryology and development of the urethra and external genitalia
- Anatomy of the penis and urethra
- Definition of hypospadias and epispadias
- Epidemiology and etiology
- Classification of hypospadias:
 - Glanular
 - Coronal
 - Distal penile
 - Midshaft

- Proximal penile
 - Penoscrotal
 - Scrotal and perineal
- Classification of epispadias:
 - Glandular
 - Penile
 - Penopubic
- Clinical features:
 - Abnormally placed urethral meatus
 - Ventral curvature (chordee) in hypospadias
 - Dorsal urethral opening in epispadias
 - Abnormal urinary stream
 - Cosmetic and functional abnormalities
- Associated anomalies:
 - Undescended testis
 - Inguinal hernia
 - Disorders of sexual development
 - Bladder exstrophy–epispadias complex
- Clinical examination
- Investigations:
 - Ultrasonography of the urinary tract
 - Renal function tests (when indicated)
 - Micturating cystourethrogram (MCUG) in selected cases
 - Karyotyping and endocrine evaluation for ambiguous genitalia
- Principles of management:
 - Counseling of parents
 - Avoidance of neonatal circumcision
 - Timing of surgery (6–18 months of age)
 - Surgical objectives and commonly used repair techniques
 - Management of epispadias and bladder exstrophy
- Postoperative care and follow-up
- Complications:
 - Urethrocutaneous fistula
 - Meatal stenosis
 - Urethral stricture
 - Residual chordee
 - Cosmetic and functional outcomes
- Long-term prognosis and prevention

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical photographs, anatomical diagrams, case-based discussion, operative illustrations, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical models of the male external genitalia, embryological diagrams, clinical photographs, operative illustrations, ultrasonography images, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Clinical image interpretation
- Case discussion
- Short end-session quiz

Summary (3 minutes)

Review the embryology, classification, clinical presentation, investigations, and management of hypospadias and epispadias, emphasizing early diagnosis, timely surgical correction, and prevention of long-term functional and psychological complications.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Paediatric Urology
5. American Urological Association (AUA) Guidelines on Pediatric Urology

Lesson Plan

Phimosis, Paraphimosis, and Circumcision

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and functions of the prepuce and penis.
- Differentiate between physiological and pathological phimosis and paraphimosis.
- Recognize the clinical features and complications of phimosis and paraphimosis.
- Outline the indications, contraindications, techniques, and complications of circumcision.
- Identify urological emergencies requiring urgent treatment.

Purpose (3 minutes)

To enable students to understand the etiology, clinical presentation, diagnosis, and management of phimosis and paraphimosis, and the principles, indications, and complications of circumcision.

Prerequisite of Learning (2 minutes)

- Anatomy of the penis and prepuce
- Physiology of the male external genitalia
- Principles of asepsis and minor surgical procedures
- Basic knowledge of congenital and acquired penile disorders

Teaching Contents (40 minutes)

- Anatomy and physiology of the penis and prepuce
- Development of the foreskin and normal retractability
- Phimosis:
 - Definition
 - Physiological versus pathological phimosis
 - Etiology and risk factors
 - Clinical features
 - Complications (recurrent balanitis, urinary obstruction, urinary tract infection)
- Paraphimosis:
 - Definition

- Etiology
 - Clinical presentation
 - Emergency management
 - Complications (ischemia and gangrene)
- Balanitis and balanoposthitis
- Clinical examination of the penis and prepuce
- Investigations:
 - Diagnosis based mainly on clinical examination
 - Urinalysis and urine culture (when indicated)
 - Blood glucose estimation in recurrent infections
 - Microbiological investigations in selected cases
- Management:
 - Conservative treatment
 - Topical corticosteroid therapy
 - Manual reduction of paraphimosis
 - Dorsal slit procedure
 - Circumcision
 - Preputioplasty (selected cases)
- Circumcision:
 - Indications
 - Contraindications
 - Surgical techniques
 - Postoperative care
 - Complications
- Prevention and patient counseling

Teaching Methods

Interactive lecture, PowerPoint presentation, clinical photographs, operative illustrations, case-based discussion, demonstration of circumcision instruments, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the male external genitalia, clinical photographs, operative videos or illustrations, circumcision instrument set (demonstration), and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Clinical image interpretation
- Case discussion
- Short end-session quiz

Summary (3 minutes)

Review the anatomy, clinical features, diagnosis, investigations, and management of phimosis and paraphimosis, emphasizing the indications, techniques, and complications of circumcision, and the importance of prompt treatment of paraphimosis as a urological emergency.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Penile Disorders
5. American Urological Association (AUA) Guidelines

Lesson Plan

Genitourinary Trauma

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy of the genitourinary tract relevant to traumatic injuries.
- Classify the different types of genitourinary trauma.
- Recognize the clinical features of injuries to the kidneys, ureters, bladder, urethra, and external genitalia.
- Outline the investigations and principles of management of genitourinary trauma.
- Identify urological emergencies requiring urgent surgical intervention.

Purpose (3 minutes)

To enable students to understand the mechanisms, diagnosis, emergency evaluation, and management of genitourinary trauma, emphasizing early recognition and timely intervention to reduce morbidity and preserve urinary and reproductive function.

Prerequisite of Learning (2 minutes)

- Anatomy of the kidneys, ureters, bladder, urethra, penis, scrotum, and testes
- Physiology of the urinary system
- Principles of trauma assessment (ABCDE approach)
- Basic knowledge of radiological imaging

Teaching Contents (40 minutes)

- Anatomy of the genitourinary tract relevant to trauma
- Epidemiology and mechanisms of genitourinary injuries
- Classification of genitourinary trauma:
 - Renal trauma
 - Ureteric trauma
 - Bladder trauma
 - Urethral trauma
 - Penile trauma
 - Scrotal and testicular trauma

- Clinical features:
 - Hematuria
 - Flank pain
 - Suprapubic pain
 - Urinary retention
 - Blood at the urethral meatus
 - Scrotal swelling and hematoma
 - Penile deformity and fracture
- Initial assessment and resuscitation
- Clinical examination
- Investigations:
 - Urinalysis
 - Complete blood count
 - Renal function tests
 - Focused Assessment with Sonography for Trauma (FAST)
 - Ultrasonography
 - Contrast-enhanced CT abdomen and pelvis
 - CT urography
 - Retrograde urethrogram (RUG)
 - Cystography (CT or conventional)
- American Association for the Surgery of Trauma (AAST) grading of renal injuries
- Management:
 - Conservative management of stable injuries
 - Catheterization and bladder drainage
 - Suprapubic cystostomy
 - Endoscopic management
 - Surgical exploration and repair
 - Nephrectomy (when indicated)
 - Repair of bladder and urethral injuries
 - Management of testicular and penile trauma
- Complications:
 - Urinary extravasation
 - Infection
 - Urinary fistula
 - Urethral stricture
 - Erectile dysfunction
 - Renal impairment
- Prevention and follow-up

Teaching Methods

Interactive lecture, PowerPoint presentation, trauma imaging interpretation, clinical photographs, case-based discussion, trauma scenario simulation, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, anatomical model of the genitourinary tract, CT and ultrasound images, retrograde urethrogram and cystogram images, clinical photographs, and trauma case scenarios.

Assessment (10 minutes)

- Oral questions
- Clinical image interpretation
- Case discussion
- Short end-session quiz

Summary (3 minutes)

Review the classification, clinical presentation, investigations, and management of genitourinary trauma, emphasizing systematic trauma assessment, appropriate imaging, timely intervention, and prevention of long-term complications.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Urological Trauma
5. American Urological Association (AUA) Urotrauma Guidelines
6. Advanced Trauma Life Support (ATLS®) Student Course Manual

Lesson Plan

Urinary Catheterization and Suprapubic Catheterization (SPC)

Duration: 60 minutes

Target: 5th Year MBBS Students

Objectives (2 minutes)

- Describe the anatomy and physiology of the lower urinary tract relevant to catheterization.
- Explain the indications, types, and techniques of urinary catheterization and suprapubic catheterization.
- Recognize the clinical situations requiring urethral catheterization or SPC.
- Outline the steps, precautions, complications, and aftercare of urinary catheterization procedures.
- Identify emergency situations requiring urgent bladder drainage.

Purpose (3 minutes)

To enable students to understand the principles, indications, techniques, complications, and clinical applications of urinary catheterization and suprapubic catheterization in routine and emergency urological practice.

Prerequisite of Learning (2 minutes)

- Anatomy of the urinary bladder, urethra, and male and female external genitalia
- Physiology of micturition
- Principles of asepsis and infection prevention
- Basic knowledge of urinary retention and bladder drainage

Teaching Contents (40 minutes)

- Anatomy of the lower urinary tract
- Overview of urinary catheterization
- Types of urinary catheters:
 - Foley catheter
 - Intermittent catheter
 - Three-way catheter
 - Suprapubic catheter

- Indications for urethral catheterization:
 - Acute urinary retention
 - Monitoring urine output in critically ill patients
 - Perioperative bladder drainage
 - Bladder irrigation
 - Neurogenic bladder management
- Contraindications and precautions:
 - Suspected urethral injury
 - Urethral stricture
 - Severe infection or trauma
- Technique of urethral catheterization:
 - Patient preparation
 - Aseptic technique
 - Selection of catheter size
 - Lubrication and insertion technique
 - Confirmation of placement
 - Catheter care
- Difficult catheterization and management approach
- Suprapubic catheterization (SPC):
 - Indications:
 - Failed urethral catheterization
 - Urethral injury
 - Long-term bladder drainage
 - Neurogenic bladder
 - Contraindications
 - Technique and insertion steps
 - Post-procedure care
- Complications:
 - Urinary tract infection
 - Urethral trauma
 - Hematuria
 - False passage formation
 - Bladder injury
 - Catheter blockage and encrustation
 - Leakage and dislodgement
- Catheter care and prevention of complications
- Clinical scenarios requiring urgent bladder decompression

Teaching Methods

Interactive lecture, PowerPoint presentation, demonstration of catheterization techniques, clinical case-based discussion, procedure videos, and question-answer session.

Teaching Materials

Laptop, multimedia projector, whiteboard, urinary tract anatomical model, Foley catheters, suprapubic catheter set, catheterization mannequin, lubricant, sterile gloves, drainage bags, and clinical case scenarios.

Assessment (10 minutes)

- Oral questions
- Demonstration of catheterization steps
- Clinical case discussion
- Short end-session quiz

Summary (3 minutes)

Review the indications, techniques, precautions, complications, and aftercare of urinary catheterization and suprapubic catheterization, emphasizing safe practice, infection prevention, and appropriate patient selection.

References

1. Campbell-Walsh-Wein Urology
2. Smith & Tanagho's General Urology
3. Bailey & Love's Short Practice of Surgery
4. European Association of Urology (EAU) Guidelines on Urological Procedures
5. Royal College of Surgeons of England (RCS) Surgical Skills Guidelines
6. Oxford Handbook of Urology