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श्रद्धावान् लभते ज्ञानम्

PROGRAM

Curriculum
M.Ch Urology

(Revised with effect from 2016-2017 onwards)

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Goals

1. To train doctors in the scientific and clinical aspects of the specialty of Urology.
2. To empower them to practice the specialty of Urology with competence, care, and compassion thereby delivering the highest standard of Urologic care to the community.
3. To empower the trainee in academic and research aspects of Urology; to empower the trainee to become an effective teacher and communicator in Urology.
4. To establish the required training methods evaluation methodology, and qualifying norms for the successful completion of the M.Ch. course in Urology.

Note:

Urology shall at the present time include the areas of General Urology, Endourology, Paediatric Urology, Urologic Oncology, Reconstructive Urology, Genitourinary Trauma, Female Urology, Neuro –urology and Incontinence, Andrology & Reproductive Urology, Renal Transplantation, Laparoscope Urology and such other fields as may form part of the specialty of Urology in its future evolution.

Statement of Objectives

1. To provide the candidates with the current, latest, scientific and evidence based ***Knowledge*** pertaining to the above – mentioned areas in Urology.
2. To impart the ***Skills*** to undertake independent clinical practice in the above areas of Urology and to provide opportunities to the practice of these skills in a graded manner and under suitable supervision to a point where the candidates is capable of practicing these skills independently.
3. To include in the candidate an *Attitude* of responsibility, accountability and caring; to empower the candidate with a good and sound foundation of ***Ethical Values*** in the practice of urology; and to develop in the candidate the ability to effective Communicative with patients, peers, superiors, and the community in the discharge of his/her clinical role.

Program Ourcomes

PO1: Expertise in the scientific and clinical aspects of the specialty of Urology essential in the practice of the subject in the community.

PO2: Competency to practice the specialty of Urology with care and compassion thereby delivering the highest standard of Urologic care to the community.

PO3: Skill in academic and research aspects of Urology

PO4: Skill to be an effective teacher and communicator in Urology.

Program Specific Outcomes

PSO1: Acquisition of current, latest, scientific and evidence based knowledge necessary for attaining programme outcomes.

PSO2: Skill to undertake independent clinical practice.

PSO3: Correct attitude of responsibility, accountability and caring.

PSO4: Foundation of ethical values in the practice of Urology.

PSO5: Competency to communicate effectively with patients, peers, colleagues, and the community in the discharge of his/her clinical role.

Course Content

1. The predominant course related activity would involved working in the hospital – OPD's, Wards, Operation Theaters, and affiliated Laboratories, Diagnostic facilities etc.
2. Didactic teaching activities will include Lectures, Seminars, Clinical Presentations, Journal Clubs, etc.
3. Practical teaching and learning activities will involve Case Presentations, Demonstrations, Imaging and Diagnostic Procedures and such other related activities.
4. Additional teaching and learning activities will include:
    a) Visits to other Institutions of excellence.
    b) Visits to Laboratories, Diagnostic Facilities, Rehabilitation units, Community based units and such other areas as may be deemed cecessary from time to time.
    c) Attending Continuing Education Programmes, Seminars, Conferences, Workshop etc., in furtherance of the course objectives.
    d) Presenting Papers, Topics, Lectures, Posters, and similar activities to peer groups in furtherance of the learning and objectives of the course.

    The following is a general list of topics to be covered during the course. This list is only representative, and any topic relevant to the science of Urology may be included. Teaching, learning evaluation will, therefore, not be confined to, shall include the topics listed below.

Basic Sciences as Applied to urology

1. Surgical Anatomy of Genito-urinary Tract and Retroperitoneum
2. Normal Renal Physiology
3. Renal Biochemistry –Acid base and fluid regulation
4. Renal Endocrinology
5. Physiology & Pharmacology of Renal Pelvis & Ureter
6. Physiology of Urinary Bladder
7. Genetic determinants of Urologic Diseases
8. Pathophysiology of Urinary Tract Obstruction

a) Upper Urinary Tract
b) Lower Urinary Tract

9. Embryology & Normal Development of the Genito – urinary tract.
10. Embryology of Congenital Anomalies of the G.U. Tract
    a. Vesico – Ureter Reflux, Mega Ureter & Ureteral Re-implantation
    b. Ectopic Ureter & Ureterocoele
    c. Exstrophy of the Bladder, Epispadias & other Bladder Anomalies
    d. Cloacal Malformations.
    e. Prune Belly Syndrome
    f. Posterior Urethral Values & other Urethral Anomalies
    g. Hypospadias
    h. Congenital Anomalies of Testes
11. Renal Function in Foetus & Neonates
12. Renal Dysplasia & Cystic disease of Kidney
13. Disorders of Sexual Differentiation
14. Normal and abnormal spermatogenesis
15. Urologic Examination & Diagnostic Techniques – Imaging of the G.U. Tract
    a. Conventional Radiography of Urogenital system and Retro – peritoneal area
    b. Urologic Ultrasonography
    c. Excretory & Retrograde Pyelography
    d. Conventional Lower Urinary Tract Radiography
    e. Ct, MRI, Angiography and other Imaging modalities

16. Radionuclide studies in Urology
17. Pathologic Techniques in Urology
    a) Urine Analysis
    b) Urinary Cytology
    c) Flow Cytometry
    d) Fine Needle Aspiration Cytology (FNAC)
    e) Needle Biopsy
    f) Immunohistochemistry and other relevant Special Techniques

18. Urinary tract changes in Pregnancy and Puerperium
19. Overview of Genital and Urinary Tract Pathogens

Infections & Inflammations of G.U. Tract

1. Host Defence Mechanisms against Urinary Tract Infections
2. Bacterial infections of the Urinary tract – Diagnosis & Management
3. Urinary Tract Infections in Pregnancy – Screening, Evaluation & Management
4. Management of Acute & Chronic Pyelonephritis, Emphysematous Pyelonephritis
5. Approach to Management of Urinary Tract Infection in Infants & Children
6. Diagnosis & Management of Prostatitis & Related disorders
7. Diagnosis & Management of Sexually transmitted diseases
8. Diagnosis & Management of Cutaneous diseases of External Genitalia
9. Diagnosis & Management of Parasitic diseases of G.U. Tarct
10. Diagnosis & Management of Fungal infections of Urinary Tract

11. Diagnosis & Management of Genito – Urinary Tuberculosis
12. Management of Fournier's Gangrene and Other Soft Tissue Infections
13. Diagnosis & Management of Interstitial Cystitis & Related Syndromes
14. Antimicrobial agents used in treatment of G.U. Tract Infections
15. Urologic manifestations of HIV infections, AIDS and related syndromes

Genito – Urinary Trauma

1. Diagnosis & Management in Blunt Renal Trauma
2. Diagnosis & Management in Penetrating Renal Trauma
3. Diagnosis & Management of Renovascular injuries
4. Diagnosis & Management of Iatrogenic and Intraoperative Ureteral injuries
5. Diagnosis & Management of Bladder injuries
6. Diagnosis & Management of Urethral injuries
7. Diagnosis & Management of Penile injuries
8. Diagnosis & Management of Scrotal and Testicualr trauma
9. Diagnosis & Management of Retroperitoneal Haematoma

Adrenal Disorders

1. Evaluation and Management of Adrenal Cortical Disorders
2. Evaluation and Management of Adrenal Medullary Disorders
3. Evaluation and Management of Adrenal Carcinoma

Renal Failure & Renal Replacement Therapy

1. Aetiology of Acute and Chronic Renal Failure
2. Management of Acute Renal Failure
3. Management of Chronic Renal Failure
4. Complications of Renal Failure and their Management
5. Principles of Dialysis therapy – Haemodialysis, Peritoneal Dialysis
6. Immunological considerations in Renal Transplantation
7. Live Donor evaluation for Renal Transplantation
8. cadaver Donor evaluation for Renal Transplantation

Urinary Calculus Disease

1. Etiopathogenesis of Urinary Tract Calculi
    a. Theories of Urolithiasis
    b. Endocrine factors in the development of Urolithiasis
    c. Role of Modulators
    d. Types of composition of Urinary Calculi
    e. Role of Stone Analysis and types of stone analysis

2. Dietary and Medical Management of Calculus Disease

3. Principles and practice of Extracorporeal Shock Wave Lithotripsy (ESWL)
    a. Evolution of ESWL
    b. Types of Lithotriptors
    c. Indications of ESWL
    d. Post ESWL management
    e. Complications of ESWL and followup

Benign Prostatic Hyperplasia

1. Pathophysiology of Benign Prostatic Hyperplasia
2. Clinical evaluation of Benign Prostatic Hyperplasia
3. Medical management of Benign Prostatic Hyperplasia
4. Minimally Invasive Therapy in Benign Prostatic Hyperplasia

Urologic Oncology

1. Overview of Cancer Biology and Principles of Urologic Oncology
2. Paediatric Urogenital tumours
3. Benign & Malignant tumours of the GU tract in adults
    a. Renal tumous
    b. Upper tract transitional cell tumours
    c. Bladder tumours
    d. Tumours of the prostate
    e. Tumours of the Seminal Vesicles
    f. Tumours of the Urethra
    g. Tumours of the penis
    h. Tumours of the Penile & Scrotal Skin
    i. Testicular tumours
    j. Extragonadal germ – cell tumours
    k. Restroperitoneal tumours
    l. Metastatic tumours of the G.U. Tract
4. Radiotherapy in Genitourinary tumours
5. Chemotherapy of Genitourinary tumours
6. Genitourinary tumours
7. Immunotherapy of Genitourinary tumours
8. Gene therapy in Genitourinary tumours
9. Other advanced therapeutic modalities in Genitourinary tumours

Foetal & Perinatal Urology

1.Prenatal & Postnatal Urologic diagnosis and management

2. Neonatal & Perinatal Emergencies – Diagnosis & Management

Paediatric Urology

1. Cryptorchidism and Ectopic Testes
    a. Etiopathogenesis
    b. Diagnosis and Imaging
    c. Hormone therapy
    d. Surgical Management
2. Vesico – ureteric reflux
    a. Primary and Secondary Vesico – ureteric reflux
    b. Evaluation and Principles of Management of Primary Vesico – ureteric reflux
    c. Urinary Tract Infections – Role of chemoprophylaxis
    d. Renal and Bladder complications in Vesico – ureteric reflux
3. Megaureter
    a. Primary obstructive Megaureter – Diagnosis & Management
    b. Principles of Ureteric Reimplantation
4. Ectopic Ureter and ureterocoele – Diagnosis & Management
5. Exstrophy – Epispadias complex – Principles of Management
6. Cloacal Malformations – Principles of Management
7. Diagnosis & Management of Prune Belly Syndrome
8. Posterior Urethral Valves & other Urethral Anomalies
    a. Diagnosis
    b. Complications
    c. Principles of Management

Andrology

1. Normal Physiology of Male Reproduction
2. Diagnosis Approach in Male Infertility
3. Varicocoeles – Diagnosis & Management
4. Endocrine & Medical Management of Male Infertility
5. Surgical Management of Male Infertility
6. Overview of Assisted Reproduction Techniques
7. Physiology & Pharmacology of Penile Erection and Pathophysiology of Erectile Dysfunction
8. Diagnistic tests in Erectile Dysfunction
9. Medical and other therapies in Erectile Dysfunction
10. Peyronies Disesse
11. Penile Prosthesis implantation – Types, indications and complications
12. Phallic reconstruction following trauma

Neuro – Urology

1. Neurophysiology and Pharmacology of Micturition and Continence

2. Pathophysiology of Neurovesical dysfunction
    a. CNS Disorders
    b. Spinal trauma
    c. Spinal dysraphism
    d. Pelvic surgery
    e. Diabetes
3. Urodynamics & its applications in Incontinence and Voiding dysfunction
    a. Uroflowmetry
    b. Cystometrogram
    c. Urethral Pressure Profile & EMG
    d. Videourodynamics
    e. Ambulatory Urodynamics
4. Medical Management of Urinary Incontinence.
5. Female Urinary Incontinence – Eavluation & Management
    a. Urge Incontinence
    b. Stress Incotinence
    c. Mixed Incontinence
6. Implantation of Artificial Sphincter in men and women
7. Reconstruction of Dysfunction Urinary Tract

Female Urology

1. Management of Urologic conditions in Pregnancy
2. Management of Urogenital Fistulae in women
3. Gynaecological tumours & the Female Urinary Tract
4. Female Lower Urinary Tract Reconstruction
5. Urinary incontinence in females
6. Treatment of Stress Incontinence
7. Surgery for Incontinence
8. Stress Incontinence and Cystocoele
9. Posterior Vaginal Wall Prolapse
10. Enterocoele
11. Uterine Prolapse
12. Urethral Diverticulum
13. Vesico Vaginal Fistula
14. Injuries (latrogenic) during Gynaecologic procedures and management
15. Pathology affecting primarily Genital organs in females – causing secondary effects on urinary organs and management

Renal Transplantation

1. Immunological considerations in renal Transplantation
2. Live Donor evaluation for Renal Transplantation
3. Recipient evaluation for Renal Transplatation
4. Complications of Renal Transplantation and their management

a. Medical
b. Surgical

5. Transplantation in Special Groups
    a. Patients with Neuropathic Bladder / Urinary Diversions
    b. Paediatric patients
    c. Previously transplanted patients
    d. Multiple Organ Recipients

6. Cadaver Donor evaluation for Renal Transplantation
    a. Evaluation of Cadaver Donor
    b. Cadaver Donor Management
    c. Certification of Brain Death
    d. Organ retrieval, storage and transport
7. Legal and Ethical aspects of Organ Transplantation – The transplantation of Human organs Act – 1994 & Rules – 1995

Reconstructive Urology

1. Principles of Ureteral Reconstruction
2. Principles of Bladder Reconstruction
3. Principles of Urethral Reconstruction
4. Principles of Bladder Substitution procedures
5. Principles governing use of Intestinal Segments in Urological Reconstruction
6. Autologus tissue transfer options in Urology
7. Principles of Urinary Diversion & Undiversion
8. Complications of Urinary Diversion

Endo Urology

1. Endoscopic anatomy of the Upper and Lower Urinary Tract
2. Physics governing endourologic equipment
3. Basic technical aspects of Endourologic equipment
    a. Cystoscope
    b. Resectoscope
    c. Ureterorenoscope
    d. Nephroscope
    e. Laproscope
    f. Associated accessories
4. Anaesthetic consideration in Endourologic surgery
   Endourologic procedures – Indications, Performance, and Complications
    a. Lower Urinary Tract Endoscope
    b. Transsurethral Resection of Prostate
    c. Transurethral Resection of Bladder Tumours
    d. Ureterorenoscopy

e. Percutaneous Nephroscopy
f. Intracorporeal Lithotripsy devices
g. Endoscopic Reconstructive Procedures
h. Endoscopic Laser Applications

5. Implants, Biomaterials and others
    a. Urethral Catheters
    b. Urethral Stents
    c. Ureteric Catheters
    d. Ureteric Catheters
    e. Baskets & Graspers
    f. Endoscopic Laser Devices
    g. Ureteric Dilators
    h. Guide wires
    i. Autologus Biomaterials
    j. Synthetic Biomaterials
    k. Prosthesis & Sphincter Implants
    l. Tissue Culture Products

Operative Urology

1. Surgical approaches to the Kidneys

2. Surgical approaches to the Adrenals

3. Surgery of the Kidneys
    a. Surgery in Renal Trauma
    b. Surgical procedures in Renovascular disease
    c. Auto transplantation of the Kidney
    d. Surgical procedures for Pelvi – ureteric junction obstruction
    e. Surgical procedures on Adrenals
    f. Nephrectomy for benign disease
    g. Nephrectomy for malignant disease
    h. Nephron sparing Surgical procedures

4. Surgical procedures for Renal Calculi
    a. Pyelolithotomy & Extended Pyelolithotomy
    b. Anatrophic Nephrolithotomy
    c. Coagulum Pyelithotomy
    d. Nephrolithotomy
    e. Percutaneous Nephrostolithothomy (PCNL)

5. Surgery of the Adrenal Glands
    a. Adrenal Tumours
    b. Adrenal Cysts
    c. Phaeochromocytoma

6. Surgery of the Ureter
    a. Ureterolithotomy
    b. Uretero- ureterostmy
    c. Trans Uretero – ureterostomy
    d. Ureteral replacement
    e. Ureteral Tailoring and Reimplantation
    f. Boari's Flap Reimplantation
    g. Ureterolysis &Ureteral Transposition
7. Surgery of the Urinary Bladder
    a. Suprapublic Cystostomy
    b. Surgery for Vesical Calculi
    c. Bladder diverticulectomy
    d. Augmentation Cystoplasty
    e. Partial Cystectomy
    f. Radical Cystectomy
    g. Transurethral Resection of Bladder tumour
    h. Repair of Vesico – vaginal Fistulae.
        i. Vaginal repair
        ii. Abdominal repair
        iii. Repair of complex fistulae
    i. Repair of Rectovesical Fistulae
    j. Bladder neck reconstruction
8. Surgery of the Prostate
    a. Transurethral Resection of the Prostate
    b. Retropubic Prostatectomy
    c. Transvesical Prostatectomy
    d. Radical Retropubic Prostatectomy
    e. Radical Perineal Prostatectomy
    f. Nerve sparing prostatectomy
    g. Minimally Invasive surgery of Prostate.
9. Surgery of the Urethra
    a. Reconstruction of Posterior Urethral Strictures
    b. Reconstruction of Bulbar Urethral Strictures
    c. Reconstruction of Anterior Urethral Strictures
    d. Endoscopic Urethrostomy
    e. Perineal Urethrostomy
    f. Meatoplasty & Glanuloplasty
    g. Single – stage repair of Hypospadias
    h. Staged repair of Hypospadias
    i. Surgery of Urethral Carcinoma

10. Surgery in Male Infertility
    a. Varicocoele ligation
    b. Ejaculatory duct incision
    c. Vaso- vasectomy
    d. Vaso – epididymostomy

e. Vaso – epididymostomy

11. Surgery of the Scrotum
    a. Surgery for Hydrocoele & Chylocoele
    b. Surgery for Haematocoele
    c. Reconstructive procedures in trauma

12. Surgery for Testes
    a. Orchidopexy in Cryptorchidism
    b. Orchidopexy in Torsion
    c. Orchidopexy for benign conditions
    d. Orchidopexy for malignant conditions
    e. Testicular biopsy
    f. Tesicular reimplantation
13. Surgery of the Penis
    a. Surgery for Penile Curvature
    b. Biopsy of Penile lesion
    c. Circumcision
    d. Partial Penectomy
    e. Total Penectomy
    f. Organ conserving procedures in Penile Carcinoma
    g. Post traumatic Penile reconstruction
    h. Penile Prosthesis Implantation
14. Urinary Diversions
    a. Vesicostomy
    b. Cutaneous Ureterostomy
    c. Illeal conduit
    d. Continent diversion using ileum
    e. Continent diversion using illeo – caecal valve
    f. Orthotopic Neobladder
    g. Mitrofanoff and Benchecroun Procedures
    h. Ureterosigmoidostomy
15. Surgery for Associated Conditions
    a. Retroperitoneal Lymphadenectomy
    b. Nerve sparing Retroperitoneal Lymphadenectomy
    c. Illio – inguinal Lymphadenectomy
16. Renal Transplantation
    a. Techniques of Renal Transplantation
    b. Cadaver & Live Donor harvesting technique
    c. Complications of Donor Nephrectomy
        i. Medical (ii) Surgical
    d. Vascular access in Renal failure
17. Surgery for Incontinence
    a. Endoscopic Bladder Neck Suspension
    b. Transabdominal Bladder Neck Suspension
    c. Abdominal & Vaginal Sling Procedures

d. Endoscopic Injection Procedures
e. Artificial Sphincter implantation

18. Basic Principles of Laparoscopic procedures in Urology

Recent Advances in Urology (including other emerging topics related to Urology)

The broad objectives set out above are to be achieved through assumption of graded responsibility in patient care and operative work. A broad outline of such graded responsibility is given below:

I Year

Months 0 – 3	**Orientation to the Institution & Department** Introduction to OPD, Ward and Patient Care routine Introduction to Case Record Maintenance Introduction to Diagnostic procedures Introduction to Preoperative and Postoperative Care Introductio to Consultations, inter – departmental activities
Months 3-6	Allocation of patient beds Comprehensive record maintenance Planning and execution of Diagnostic cascade Planning and execution of Pre and Postoperative Care Attending emergency Consultation Attending cases in the Emergency and Casualty services Assisting at emergency and Elective Operative Procedures Introduction to basic Diagnostic Urology Endoscopy Long - term monitoring of patients
Months 6 – 12	Further refinement of above Performing Diagnostic Urologic procedures Attending operation theatres Independently attending emergency and casuality calls Performing emergency operation under supervision Performing elective operations under supervision Introduction to Therapeutic Lower Tract Endoscopy

II Year

Months 12- 18	Assisting juniors in their patient care responsibilities Performing advanced diagnostic procedures Performing assigned operations

	Assisting seniors at Complicated Urologic procedures Performing diagnostic Lower Tract Endoscopy Performing assigned Therapeutic Endoscopy Documentation of Clinical Case Material and archiving Supervising clinical and operative work of juniors
Months 18 – 24	Assisting juniors operative procedures Performing Therapeutic Lower tract Endoscopy Performing assigned reconstructive operations Performing complicated diagnostic procedures Performing advanced operations under supervision Supervising clinical and operative work of juniors

III Year

Months 24 – 36	Providing peer support to juniors in all above activities Rotations through allied specialties like Nephrology and to other Units / Institutions for exposure to advanced aspects of Urology Undertaking camps, surveys, clinical studies etc. as part of Departmental activity from time to time.

In addition to patient – care, the candidates will have responsibilities in the following areas:

1. Clinical Responsibilities

I Year	Diagnosis of all Urology disorders and allied patient care
II Year	Management of complex Urologic disorders, as well as complications of surgery and interdisciplinary problems.
III Year	Practice of protocol – based management and Development of such management protocol

2. List of operative procedures to be performed

The following list is a compilation of operative procedures that will be performed by Trainees as part the M.ch. (Urology) Programme in the University. The time frame under which these procedures will be performed has been evolved based on the degree of competence and knowledge required. As that trainee progresses through the course, he/ she

will assist seniors in performing procedures under the higher category as a build up to performance of the higher category procedure.

This list consists of the most common procedures as currently practiced. Additional procedures will be added to each category as and when they evolve. The classification will again be based on the degree of training and expertise required to perform those new procedures.

This schedule is meant to serve as a guideline for trainees, as well as for trainers. It is incumbent on both to make all efforts to fulfill the requirement. The exact number of such procedures performed is likely to vary. It is suggested that at least a majority of the procedures in each Category up to Category IV be performed mandatorily. The training institutions may keep this in mind when they draw up the training schedule for their candidates.

Category I **0 – 6 months**

1. Biopsy
2. Bladder Distension
3. Circumcision
4. Clot Evacuation
5. Dorsal Slit
6. Stent Removal
7. Testicular Biopsy
8. Urethral Dilatation
9. Cystoscopy (Diagnostic)
10. Filiform Dilatation
11. Retrograde Catheterisation
12. Retrograde Pyelography
13. Endoscopy Biopsy
14. Hydrocele & Spermatocoele Repair

Category II 6 – 12 months

1. Cystolithotomy
2. Meatoplasty
3. Orchidectomy
4. Shunt for Priaprism
5. Suprapubic Cystostomy
6. Ureteric Stenting
7. Visual Internal Urethrotomy
8. Vesicostomy
9. High Orchidectomy
10. Rovesing’s Operation

11. Varicocoele ligation
12. Amputation of penis – partial
13. Orchidopexy
14. Bladder repair after trauma

Category III 12 – 18 months

1. Bladder Diverticulectomy
2. Bladder Neck Resection / Incision
3. Endoscopic Removal of F.B
4. Epididymectomy
5. Nephrostomy
6. Uretero Sigmoidostomy – Ist
7. Ureterolithotomy
8. Perinephric Abscess Drainage
9. Perinephric Abscess Drainage
10. Ureteric Meatotomy
11. Cutaneous Ureterostomy
12. Amputation of Penis – Total
13. Epididymo Vasostomy
14. Hypospadias – Staged repair
15. Diagnostic Ureterorenoscopy
16. Prostatectomy Frayers / Millin's
17. Dialysis access surgery
18. Fulguration of PUV

Category IV 18 - 24 months

1. Exploration of Renal Trauma
2. Hypospadias – Single Stage
3. Nephrectomy
4. Partial Cystectomy
5. Ureteric re – implantation
6. Urethroplasty (Staged)
7. Boar's flap Ureteric implantation
8. Illeocystoplasty
9. Pyelolithotomy

10. Nephrolithotomy
11. Pyeloplasty
12. Anatrophic Nephrolithotomy
13. Coagulum Pyelolithotomy
14. Percutaneous Nephrolithotomy
15. Transurethral Resection of Prostate (Small)
16. Transurethral Resection of Bladder Tumour
17. Ilio – inguinal block dissection

Category V 24 –30

1. Bladder neck suspension
2. Transurethral Resection of Prostate
3. Urethroplasty – Single stage
4. Uretero ureterostomy
5. Vesical / Ureteral Fistula repair
6. Donor Nephrectomy
7. Renal Transplantation
8. Illeal loop conduit
9. Nephro ureterectomy
10. Partial nephrectomy
11. Radical Nephroureterectomy
12. Penile Proshesis
13. Adrenalectomy
14. Therapeutic Ureteroscopy
15. Introduction to Basic steps in Laparaoscopic Urology

Category VI 30 – 36

1. Auto Transplantation of Kidney
2. Complex VVF Repair
3. Total Cystectomy
4. Continent Diversion
5. Ureteric replacement
6. Radical Prostatectomy
7. Diagnostic Laparoscopy
8. Retroperitoneal Lymphadenectomy
9. Renovascular surgery
10. PCNL Laproscopic Procedures

3. Teaching Learning Responsibilities

I Year	Presenting Journal Clubs Undergraduate Medical Teaching *

	Postgraduate teaching of surgical trainees and trainees in other specialties * Teaching Paramedical staff
II Year	Presenting Seminars Critical appraisal of presentations and papers Presenting papers at State, Regional, and National Conferences
III Year	Developing and leading specific projects related Urology Guiding juniors and peers in academic activities and presentations

* Continuous in II & III year

4. Schedule of Departmental Activities

Postgraduate departments of Urology offering M.Ch. training have evolved a variety of departmental training activities. The following schedule shall serve as a guideline with further refinements being made whenever necessary

Activity	**Frequency**
1. Clinical rounds	Thrice weekly
2. Journal Clubs	Once weekly
3. Seminars	Once weekly
4. Audit / Statistical meeting	Once weekly
5. Inter – departmental meetings	
• Nephrology	Fortnightly
• Radiology	Fortnightly
• Pathology	Monthly
• Radiation Oncology	Monthly
• Inter – institutional	Monthly / Bi- monthly

Please see Chapter IV: Monitoring Learning Progress for check – lists and other details

5. Orientation

a. Library

The postgraduate student will become familiar with the books, periodicals, and other publications pertaining to Urology that are available in the Institution. A list of such books etc. will be on record in the department. In addition to this, departments will develop and maintain Departmental Liabraries, which will contain highly specialized books and publications from which the postgraduate can benefit.

b. Laboratory Procedures

The candidate will familiarize himself / herself with the different diagnostic procedures in Urology through a process of interaction with the departments like Clinical Biochemistry, Pathology, Radiology etc., wherever feasible. The candidate may be rotated through these departments in order to familiarize him/ her with the nuances of these procedures.

The following diagnostic procedures are specialized and specific to Urologic practice:

1. Urodynamic procedures
2. Nocturnal penile tumescence (NPT)

Certain other diagnostic evaluations like CT Scan, MRI, Colour Doppler scans are in increasing use in Urology. Familiarity with these is vital for the practice of Urology today. Therefore, if facilities for these are not available within the Institution, postgraduates may be posted to other Institutions where they are available. A similar practice may be employed for any other upcoming diagnostic modalities.

c. Resesrch

The component of research shall be promoted by encouraging candidates to undertake projects during the first two years' of their course. In this period, they will be introduced formally to the following aspects of Research:

1. Ethics of Clinical Research
2. Fundamentals of clinical studies
3. Types of clinical studies
4. Data recording
5. Data processing and results
6. Statistical analysis
7. Critical evaluation of published data and reports
8. Publication and peer review

This objective may be achieved either through an intramural programme or by enrolling postgraduates in an extramural programme providing th necessary training.

d. National Programmes

Postgraduate will be familiarized with National Programmes applicable to Urology as well as those of social importance. The department shall encourage inter – departmental activities that will increase the awareness of these programmes. All programmes directly applicable to Urology and meant for implementation shall be duly implemented.

6. Regulations

The postgraduate will be sensitized to regulations under different Legislative Acts, such as the *Medical Council of India Act. The Code of Medical Ethics, Transplantation of Human Organs Act,* etc. They will also be familiarized with other legislations that affect the practice of Clinical Medicine (*like The Consumer Protection Act, The Drugs and Cosmetics Act. The Medical Termination of*

Pregnancy Act, the Narcotics and Psychotropic Substances Control Act, etc.) This will be done through a process of informal contact and engagement with experts in the field.

7. Monitoring of Teaching / Learning Activities

Activity	Periodicity of Assessment	Method
1. Journals Clubs	Monthly	Faculty and review as per check list (see chapter IV)
2. Seminars	Monthly	
3. Theory knowledge	Six monthly	Written test
4. Clinical performance	Six monthly	Clinical exam
5. Operative work	Six monthly	Log book
6. Research & Presentation	Six monthly	Logbook & Faculty peer review using check – list
7. Dissertation		Prerequisite for appearing for the examination

The performance of candidates under these heads will be conveyed to them every six months and a record will be maintained in the department. The Department Head or Director will fulfill all University requirements pertaining to such assessment and keep the University posted 6 monthly.

SCHEME OF EXAMINATION

The examination shall consist of the following parts:

1. Theory

2. Clinical Examination & Viva voce

1. Theory

The theory examination shall consists of four papers of 100 marks each. Each paper in turn shall consist of two long questions of 20 marks each and six short questions of 10 marks each. All questions shall be compulsory. Each theory paper shall be for 3 hours.

Detailed list of topics in each paper enclosed – Appendix I

Paper I (Course Code: M5UR1) Basic Sciences as applied to Urology
CO1: Knowledge of anatomy , physiology and biochemistry as applied to Urology
CO2: Knowledge of Pharmacology , Microbiology and immunology as applied to Urology
CO3:Knowledge of Pathology and genetics as applied to Urology

Basic Sciences as Applied to urology

Surgical Anatomy of Genito-urinary Tract and Retroperitoneum
Normal Renal Physiology
Renal Biochemistry –Acid base and fluid regulation
Renal Endocrinology
Physiology & Pharmacology of Renal Pelvis & Ureter
Physiology of Urinary Bladder
Genetic determinants of Urologic Diseases
Pathophysiology of Urinary Tract Obstruction
- Upper Urinary Tract
- Lower Urinary Tract

Embryology & Normal Development of the Genito – urinary tract.
Embryology of Congenital Anomalies of the G.U. Tract
- Vesico – Ureter Reflux, Mega Ureter & Ureteral Re-implantation
- Ectopic Ureter & Ureterocoele
- Exstrophy of the Bladder, Epispadias & other Bladder Anomalies
- Cloacal Malformations.
- Prune Belly Syndrome
- Posterior Urethral Values & other Urethral Anomalies
- Hypospadias
- Congenital Anomalies of Testes

Renal Function in Foetus & Neonates
Renal Dysplasia & Cystic disease of Kidney
Disorders of Sexual Differentiation
Normal and abnormal spermatogenesis
Urologic Examination & Diagnostic Techniques – Imaging of the G.U. Tract
- Conventional Radiography of Urogenital system and Retro – peritoneal area
- Urologic Ultrasonography
- Excretory & Retrograde Pyelography
- Conventional Lower Urinary Tract Radiography

Ct, MRI, Angiography and other Imaging modalities

Radionuclide studies in Urology
Pathologic Techniques in Urology
Urine Analysis
Urinary Cytology
Flow Cytometry
Fine Needle Aspiration Cytology (FNAC)
Needle Biopsy
Immunohistochemistry and other relevant Special Techniques

Urinary tract changes in Pregnancy and Puerperium
Overview of Genital and Urinary Tract Pathogens

Paper II (Course Code: M5UR2) Principles and Practice of Urology
CO: Skill and competency in diagnosing and treating patients with Urologic Symptoms and signs
CO2: Knowledge of appropriate Diagnostic modalities and tests used to arrive at diagnosis
CO3: Competency in monitoring patients response to treatment and appropriate steps to be taken

1. **Host Defence Mechanisms against Urinary Tract Infections**
2. **Bacterial infections of the Urinary tract – Diagnosis & Management**
3. **Urinary Tract Infections in Pregnancy – Screening, Evaluation & Management**
4. **Asymptomatic bacteriuria in pregnancy**
5. Management of Acute & Chronic Pyelonephritis, Emphysematous Pyelonephritis
6. Approach to Management of Urinary Tract Infection in Infants & Children
7. Diagnosis & Management of Prostatitis & Related disorders
8. **Diagnosis & Management of Sexually transmitted diseases**
9. **Diagnosis & Management of Cutaneous diseases of External Genitalia**
10. **Diagnosis and management of Hematuria**
11. Diagnosis & Management of Parasitic diseases of G.U. Tarct
12. Diagnosis & Management of Fungal infections of Urinary Tract
13. Diagnosis & Management of Genito – Urinary Tuberculosis
14. Management of carcinoma of the genitourinary tract
15. Management of Fournier's Gangrene and Other Soft Tissue Infections
16. **Diagnosis & Management of Interstitial Cystitis & Related Syndromes**
17. Antimicrobial agents used in treatment of G.U. Tract Infections
18. Urologic manifestations of HIV infections, AIDS and related syndromes

Paper III (Course Code: M5UR3) Specialty Urology

CO1: Knowledge of specialty urology topics such as Foetal & Perinatal Urology, Paediatric Urology
CO2: Knowledge of specialty urology topics such as Andrology, Neuro – urology , Female Urology
CO3: Knowledge of specialty urology topics such as Dialysis & Renal Transplantation, Reconstructive urology and Endourology.

Foetal & Perinatal Urology

Prenatal & Postnatal Urologic diagnosis and management

Neonatal & Perinatal Emergencies – Diagnosis & Management

Paediatric Urology

Cryptorchidism and Ectopic Testes

- **Etiopathogenesis**
- **Diagnosis and Imaging**
- Hormone therapy
- Surgical Management

Vesico – ureteric reflux

- **Primary and Secondary Vesico – ureteric reflux**
- Evaluation and Principles of Management of Primary Vesico – ureteric reflux
- Urinary Tract Infections – Role of chemoprophylaxis
- Renal and Bladder complications in Vesico – ureteric reflux

Megaureter

- Primary obstructive Megaureter – Diagnosis & Management
- Principles of Ureteric Reimplantation

Ectopic Ureter and ureterocoele – Diagnosis & Management
Exstrophy – Epispadias complex – Principles of Management
Hypospadiasis – diagnosis and management
Cloacal Malformations – Principles of Management
Mesonephric and paramesonephric duct malformations- diagnosis and management
Diagnosis & Management of Prune Belly Syndrome
ureterocoele
Posterior Urethral Valves & other Urethral Anomalies

- Diagnosis
- Complications
- Principles of Management

Andrology

Normal Physiology of Male Reproduction

Diagnosis Approach in Male Infertility
Varicocoeles – Diagnosis & Management
Endocrine & Medical Management of Male Infertility
Surgical Management of Male Infertility
Overview of Assisted Reproduction Techniques
Physiology & Pharmacology of Penile Erection and Pathophysiology of Erectile Dysfunction
Diagnistic tests in Erectile Dysfunction
Medical and other therapies in Erectile Dysfunction
Peyronies Disesse
Penile Prosthesis implantation – Types, indications and complications
Phallic reconstruction following trauma

Neuro – Urology

Neurophysiology and Pharmacology of Micturition and Continence
Pathophysiology of Neurovesical dysfunction
- CNS Disorders
- Spinal trauma
- Spinal dysraphism
- Pelvic surgery
- Diabetes

Urodynamics & its applications in Incontinence and Voiding dysfunction
- Uroflowmetry
- Cystometrogram
- Urethral Pressure Profile & EMG
- Videourodynamics
- Ambulatory Urodynamics

Medical Management of Urinary Incontinence.
Female Urinary Incontinence – Eavluation & Management
- Urge Incontinence
- Stress Incotinence
- Mixed Incontinence

Implantation of Artificial Sphincter in men and women
Reconstruction of Dysfunction Urinary Tract

Female Urology

Management of Urologic conditions in Pregnancy
Management of Urogenital Fistulae in women
Gynaecological tumours & the Female Urinary Tract
Female Lower Urinary Tract Reconstruction
Urinary incontinence in females
Treatment of Stress Incontinence
Surgery for Incontinence

Stress Incontinence and Cystocoele
Posterior Vaginal Wall Prolapse
Enterocoele
Uterine Prolapse
Urethral Diverticulum
Vesico Vaginal Fistula
Injuries (latrogenic) during Gynaecologic procedures and management
Pathology affecting primarily Genital organs in females – causing secondary effects on urinary organs and management

Renal Transplantation

Immunological considerations in renal Transplantation
Live Donor evaluation for Renal Transplantation
Recipient evaluation for Renal Transplatation
Complications of Renal Transplantation and their management
- Medical
- Surgical

Transplantation in Special Groups
- Patients with Neuropathic Bladder / Urinary Diversions
- Paediatric patients
- Previously transplanted patients
- Multiple Organ Recipients

Cadaver Donor evaluation for Renal Transplantation
- Evaluation of Cadaver Donor
- Cadaver Donor Management
- Certification of Brain Death
- Organ retrieval, storage and transport

Legal and Ethical aspects of Organ Transplantation – The transplantation of Human organs Act – 1994 & Rules – 1995

Reconstructive Urology

Principles of Ureteral Reconstruction
Principles of Bladder Reconstruction
Principles of Urethral Reconstruction
Principles of Bladder Substitution procedures
Principles governing use of Intestinal Segments in Urological Reconstruction
Autologus tissue transfer options in Urology
Principles of Urinary Diversion & Undiversion
Complications of Urinary Diversion

Endo Urology

Endoscopic anatomy of the Upper and Lower Urinary Tract
Physics governing endourologic equipment
Basic technical aspects of Endourologic equipment
- Cystoscope
- Resectoscope
- Ureterorenoscope
- Nephroscope
- Laproscope
- Associated accessories

Anaesthetic consideration in Endourologic surgery
Endourologic procedures – Indications, Performance, and Complications
- Lower Urinary Tract Endoscope
- Transsurethral Resection of Prostate
- Transurethral Resection of Bladder Tumours
- Ureterorenoscopy
- Percutaneous Nephroscopy
- Intracorporeal Lithotripsy devices
- Endoscopic Reconstructive Procedures
- Endoscopic Laser Applications

Implants, Biomaterials and others
- Urethral Catheters
- Urethral Stents
- Ureteric Catheters
- Ureteric Catheters
- Baskets & Graspers
- Endoscopic Laser Devices

m. Ureteric Dilators
n. Guide wires
o. Autologus Biomaterials
p. Synthetic Biomaterials
q. Prosthesis & Sphincter Implants
r. Tissue Culture Products

Paper IV (Course Code: M5UR4) Operative Urology + Recent advances in Urology

CO1: Knowledge of recent advances in the field of Urology
CO2: Skill in operative Urology including choice of procedure and steps to avoid complication
CO3: Familiarity with recent publications in Urology

Operative Urology shall cover all aspects of theory as applicable to Urologic surgical procedures. Specifically, this shall cover points like surgical anatomy, surgical approach, indications and contraindications, choice of procedure, complications and measures to avoid them, salvage procedures etc. in the case of open surgery. In the case of endoscopic surgery, it may also include endoscopic anatomy, endoscopic hardware, and the limitations of endoscopic approach wherever applicable. This paper may also cover certain directly relevant technologic issues like Structure of Endoscopies, Energy sources in endoscopic surgery etc.

Knowledge of Recent Advances covering recent biologic, diagnostic, or technological advances that impact on the current and future practice of Urology. This will also include biomaterials and implants used in Urology (for e.g. Stents, prosthesis, suture materials, clips etc.) and technological advances like Computers, Robotics, etc. The guiding principle for this will be the current relevance to of these to Urologic practice.

Soft Skills (Course Code: M5UR5) Elective Course

CO1: Competency to conduct a clinical research.
CO2: Competency to work as a team leader.
CO3: Knowledge of medical ethics and etiquette.
CO4: Ability to interact with the patients and their relatives in an effective manner.
CO5: Attitude to be a lifelong learner.
CO6: Ability to be an effective teacher/communicator.

There will be no written examination for this course. The following are the expected outcomes. The candidate will be evaluated throughout the programme for these.

2. Clinical Examination

(Amended by notification vide No. UA/ORD – 06/1999 – 2000 dated 31.03.2005)

The clinical examination will aim at examining the clinical skills and competence of candidates in the field of Urology. The total marks shall be 200 and shall be distributed as follows:

- Clinical cases: 150 marks
  - One long case – 75 marks
  - Three short cases x 25 marks for each case = 75 marks
- Ward rounds =50 marks

Part I **Clinical Cases**

This segment shall carry a total of 150 marks (75 marks for the Long case and 25 marks for each of the 3 Short cases). The purpose of this segment of examination will be to assess the candidate's skill and competence in diagnosing the patient's disease and formulating a sound plan for management. In addition, the candidate's ability to elicit history, carry out the relevant physical examination, and present all these in a cohesive and logical order will also be assessed.

For this purpose, one long case and three short cases will be chosen. These will be representative of the variety of pathologies with which Urologic patients commonly present to the hospital. All examiners through a process of consultation shall select the cases. If more than one candidate is appearing for the exam, all efforts shall be made to avoid more than one candidate is getting the same set of cases.

The examiners shall do the marking for this segment independently, in order to give the candidate the fairest chance of success.

Part II Ward Rounds

The marks for this segment shall be 50. The segment of the examination is intended to assess the candidate's ability to pick up every day problems in the management of Urologic patients. To be assessed will be the candidate's ability to correlate the clinical symptoms of the patient with the different investigations, operative findings, postoperative course etc., and the ability to suggest management measures. The stress here will be on the candidate's ability to logically device the best option as well as to formulate alternatives.

Part III Viva Voce

This segment shall carry a total of 100 marks. This segment is meant to assess the candidate's overall understanding of Urology. In a sense, this segment will evaluate the candidate and assess whether the candidate fulfills the requirements of training, skill and competence as set out in the objective of the course. This segment may also feature surgical pathology specimens, histopathology slides, radiographs, reports of diagnostic tests, etc.

Criteria for declaring as pass in University Examination

A candidate shall secure not less than 50% marks in each head of passing which shall include (1) theory (2) practical including clinical and viva voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the registrar (Evaluation)

Note : Knowledge of the recent advances may be examined in any or all the papers. The distribution of topics for different papers given is only broad and suggestive and not strict or exhaustive. Some overlapping of topics is inevitable. Candidates should be prepared to answer overlapping topics.

PAPER I

BASIC SCIENCES AS APPLIED TO UROLOGY

1. Surgical Anatomy Of Genito Urinary Tract
2. Normal Renal Physiology
3. Renal Biochemistry – Acid base and fluid regulation
4. Renal endocrinology
5. Physiology & Pharmacology of Renal Pelvis and Ureter
6. Physiology of Urinary Bladder
7. Genetic determinants of urologic diseases
8. Radionuclide studies of Urology
9. Pathophysiology of urinary tract obstruction
    a. Upper Urinary Tract
    b. Lower Urinary tract
10. Embryology & Normal development of the Genito Urinary tract
11. Embryology of congenital anomalies of the G U Tract
    a. Vesico-Ureteric Reflux, Mega Ureter & Ureteral Re-implantation
    b. Ectopic Ureter & Ureterocoele
    c. Exstrophy of the Bladder, Epispadias & other Bladder Anomalies
    d. Cloacal Malformation
    e. Prune Belly Syndrome
    f. Posterior Uretheral Valves & other Urethral Anomalies
    g. Hypospadias
    h. Congenital anomalies of Testes
12. Renal function in Foetus & Neonates
13. Renal Dysplasia & Cystic disease of Kidney
14. Disorders of sexual differentiation
15. Normal and abnormal spermatogenesis
16. Urologic examination & diagnostic Techniques – Imaging of the G U Tract
    a. Urologic Ultrasonography
    b. Excretory & Retrograde Pyelography
    c. Lower Urinary Tract Radiography
    d. CT and other Imaging modalities
17. Urinary tract changes in Pregnancy and Puerperium
18. Pathologic techniques in Urology

a. Urinary Cytology
b. Flow Cytometry
c. Fine Needle Aspiration Cytology
d. Needle Biopsy
e. Immunohistochemistry and other relevant Special Techniques

19. Overview of Genital and urinary Tract Pathogens

PAPER II

PRINCIPLES AND PRACTICE OF UROLOGY

Infections & Inflammations of G.U. Tract

1. Host Defence Mechanisms against Urinary Tract Infections
2. Bacterial infections of the Urinary tract – Diagnosis & Management
3. Urinary Tract Infections in Pregnancy – Screening, Evaluation & Management
4. Management of Acute & Chronic Pyelonephritis, Emphysematous Pyelonephritis
5. Approach to Management of Urinary Tract Infection in Infants & Children
6. Diagnosis & Management of Prostatitis & Related disorders
7. Diagnosis & Management of Sexually transmitted disease
8. Diagnosis & Management of Cutaneous diseases of External Genitalia
9. Diagnosis & Management of Parasitic diseases of G.U. Tract
10. Diagnosis & Management ofFungal infections of Urinary Tract
11. Diagnosis & Management of Genito – Urinary Tuberculosis
12. Management if Fournier's Gangrne and Other Soft Tissue Infections
13. Diagnosis & Management of Interstitial Cystitis & Related Syndromes
14. Antimicrobial agents used in treatment of G.U. Tract infections
15. Urologic manifestations of HIV infections, AIDS and related syndromes

Genito - Urinary Trauma

1. Diagnosis & Management in Blunt Renal Trauma
2. Diagnosis & Management in Penetrating Renal Trauma
3. V Renovascular injuries
4. Diagnosis & Management of latrogenic and Intraoperative Ureteral injuries
5. Diagnosis & Management of Bladder injuries
6. Diagnosis & Management of Ureteral injuries
7. Diagnosis & Management of Penile injuries
8. Diagnosis & Management of Scrotal and Testicular trauma
9. Diagnosis & Management of Retroperitoneal Haematoma

Adrenal Disorders

1. Evaluation and Management of Adrenal Cortical Disorders
2. Evaluation and Management of Adrenal medullary Disorders
3. Evaluation and Management of Adrenal Carcinoma

Renal Failure & Renal Replacement Therapy

1. Aetiology of Acute and Chronic Renal Failure
2. Management of Acute Renal Failure
3. Management of Chronic Renal Failure
4. Complications of Renal Failure and their Management
5. Principle's of Dialysis therapy – Haemodialysis, Peritoneal Dialysis
6. Immunological considerations in Renal Transplantation
7. Live Donor evaluation for Renal Transplantation
8. Cadaver Donor evaluation for Renal Transplantation

Urinary Calculus Disease

1. Etiopathogenesis of Urinary Tract Calculi
    a. Theories of Urolithiasis
    b. Endocrine factors in development of Urolithiasis
    c. Role of Modulators
    d. Types of composition of Urinary Calculi
    e. Role of Stone Analysis and types of stone analysis

2. Dietary and Medical Management of Calculus Disease
3. Principles and practice of Extracorporeal Shock Wave Lithotripsy (ESWL)
    a. Evolution of ESWL
    b. Types of Lithotriptors
    c. Indications of ESWL
    d. Post ESWL management
    e. Complications of ESWL and follow up

Begin Prostatic Hyperplasia

1. Pathophysiology of Begin Prostatic Hyperplasia
2. Clinical evaluation of Begin Prostatic Hyperplasia
3. Medical Management of Begin Prostatic Hyperplasia
4. Minimally Invasive Therapy in Begin Prostatic Hyperplasia

Urologic Oncology

1. Overview of Cancer Biology & Principles of Urologic Oncology
2. Paediatric Urogenital tumours
3. Malignant tumours of the G.U. Tract in Adults
    a. Renal tumours
    b. Upper tract Transitional Cell Tumours

c. Bladder tumours
d. Tumours of the prostate
e. Tumours of the Seminal Vesicles
f. Tumours of the Urethra
g. Tumours of the penis
h. Tumours of the Penile & Scrotal Skin
i. Testicular tumours
j. Extragonadal germ – cell tumours
k. Retroperitoneal tumours
l. Metastatic tumours of the G.U. Tract

4. Radiotherapy in Genitourinary tumours
5. Chemotherapy of Genitourinary tumours
6. Gene therapy in Genitourinary tumours
7. Other advanced therapeutic modalities in Genitourinary tumours

PAPER-III
Specialty Urology

Foetal & Perinatal Urology

1. Prenatal & Postnatal diagnosis and management
2. Neonatal & Perinatal Emergencies- Diagnosis & Management

Paediatric Urology

1. Cryptochidism and Ectopic Testes

    a. Etiopathogenesis
    b. Diagnosis and Imaging
    c. Hormone therapy
    d. Surgical Management

2. Vesico-ureteric reflux
    a. Primary and Secondary Vesico-ureteric reflux
    b. Evaluation and principles of management of Primary Vesico-ureteric reflux.
    c. Urinary Tract Infections- Role of chemoprophylaxis.
    d. Renal and Bladder complications in Vesico-ureteric reflux.

3. Megaureter
    a. Primary obstructive Megaureter- Diagnosis & Management
    b. Principles of Ureteric Reimplantion

4. Ectopic Ureter and Ureterocoele- Diagnosis & Management
5. Exstrophy- Epispadias complex- Principles of Management
6. Cloacal Malformations- Principles of Management
7. Diagnosis & Management of Prune Belly Syndrome
8. Posterior Urethral Valves & other Urethral Anomalies
    a. Diagnosis
    b. Complications
    c. Principles of Management

Andrology

1. Normal Physiology of Male Reproduction
2. Diagnosis Approach in Male Infertility
3. Varicocoeles – Diagnosis & Management
4. Endocrine & Medical Management of Male Infertility
5. Surgical Management of Male Infertility
6. Overview of Assisted Reproduction Techniques
7. Physiology & Pharmacology of Penile Erection and Pathophysiology of Erectile Dysfunction
8. Diagnostic tests in Erectile Dysfunction
9. Medical and other therapies in Erectile Dysfunction
10. Peyronie's Disease
11. Penile Prosthesis implantation – Types, indications and complications
12. Phallic reconstruction following trauma.

Neuro-Urology

1. Neurophysiology and Pharmacology of Micturition and Continence
2. Pathophysiology of neurovesical dysfunction
    a. CNS Disorders
    b. Spinal trauma
    c. Spinal dysraphism
    d. Pelvic surgery
    e. Diabetes

3. Urodynamics & its applications in Incontinence and Voiding dysfunction.
    a. Uroflowmetry
    b. Cytometrogram
    c. Urethral Pressure Profile & EMG
    d. Videourodynamics
    e. Ambulatory Urodynamics

4. Medical Management of Urinary Incontinence
5. Female Urinary Incontinence – Evaluation & Management
    a. Urge Incontinence
    b. Stress Incontinence

c. Mixed Incontinence

6. Implantation of Artificial Sphincter in men and women
7. Reconstruction of Dysfunctional Urinary Tract

Female Urology

1. Management of Urologic conditions in Pregnancy
2. Management of Urogenital Fistulae in women
3. Gynaecological tumours & the Female Urinary Tract
4. Female lower Urinary Tract Reconstruction
5. Urinary incontinence in females
6. Treatment of Stress Incontinence
7. Surgery for Incontinence
8. Stress Incontinence and Cystocoele
9. Posterior Vaginal Wall Prolapse
10. Enterocoele
11. Uterine Prolapse
12. Urethral Diverticulum
13. Vesico Vaginal Fistula
14. Injuries during Gynaecologic procedures and management
15. Pathology affecting primarily Genital organs in females- causing secondary effects on urinary organs and mangement.

Renal Transplantation

1. Immunological considerations in Renal Transplantation
2. Live Donor evaluation for Renal Transplantation
3. Recipient evaluation for Renal Transplantation
4. Complications of Renal Transplantation and their management
   a. Medical
   b. Surgical

5. Transplantation in Special Groups
   a. Patients with Neuropathic Bladder/Urinary Diversions
   b. Pediatric patients
   c. Previously transplanted patients
   d. Multiple Organ Recipients

6. Cadaver Donor evaluation for Renal Transplantation
   a. Evaluation of Cadaver Donor
   b. Cadaver Donor Management
   c. Certification of Birth Death
   d. Organ retrieval, storage, and transport

7. Legal and Ethical aspects of Organ Transplantation

Renal Transplantation

1. Principles of Ureteral Reconstruction
2. Principles of Bladder Reconstruction
3. Principles of Urethral Reconstruction
4. Principles of Bladder Substitution procedures
5. Principles governing use of Intestinal Segments in Urological Reconstruction
6. Autologus tissue transfer options in Urology
7. Principles of Urinary Diversion & Undiversion
8. Complications of Urinary Diversion

Endo Urology

1. Endoscopic anatomy of the Upper and Lower Urinary Tract
2. Physics governing Endourologic equipment
3. Basic technical aspects of Endourologic equipment
    a. Cystoscope
    b. Resectoscope
    c. Ureterorenoscope
    d. Nephroscope
    e. Laparoscope
    f. Associated accessories

4. Anaesthetic consideration in Endourologic surgery
5. Endourologic procedures – Indications, Performance, and Complications
    a. Lower Urinary Tract Endoscopy
    b. Transurethral Resection of Prostate
    c. Transurethral Resection of Bladder Tumours
    d. Ureterorenoscopy
    e. Percutaneous Nephroscopy
    f. Intracorporeal Lthotripsy devices
    g. Endoscopic Reconstructive Procedures
    h. Endoscopic Laser Applications

6. Implants, Biomaterials and others
    a. Urethral Catheters
    b. Urethral Stents
    c. Ureteric Catheters
    d. Ureteric Stents
    e. Baskets & Graspers
    f. Endoscopic Laser Devices
    g. Ureteric Dilators
    h. Guide wires
    i. Autologus Biomaterials
    j. Synthetic Biomatrials

k. Prosthesis & Sphincter Implants
l. Tissue Culture Products

PAPER-IV
Operative Urology & Recent Advances

Operative Surgery

1. Surgical approaches to the Kidneys
2. Surgical approaches to the Adrenals
3. Surgeries of the Kidneys
   a. Surgery in Renal Trauma
   b. Surgical procedures in Renovasular disease
   c. Auto transplantation of the Kidney
   d. Surgical procedures for Pelvi-ureteric junction obstruction
   e. Surgical procedures on Adrenals
   f. Nephrectomy for benign disease
   g. Nephrectomy for malignant disease
   h. Nephron sparing Surgical procedures

4. Surgical procedures for Renal Calculi
   a. Pyelolithotomy & Extended Pyelolithotomy
   b. Anatrophic Nephrolithotomy
   c. Coagulum Pyelolithotomy
   d. Nephrolithotomy
   e. Percutaneous Nephrostolithotomy (PCNL)

5. Surgery of the Adrenal Glands
   a. Adrenal Tumours
   b. Adrenal Cysts
   c. Phaeochromocytoma

6. Surgery of the Ureter
   a. Ureterolithotomy
   b. Uretero-ureterostomy
   c. Trans Uretero-ureterostomy
   d. Ureteral replacement
   e. Ureteral Tailoring and Reimplantation

f. Boaris Flap Reimplantation
g. Ureterolysis & Ureteral Transposition

7. Surgery of the Urinary Bladder
   a. Suprapubic Cystostomy
   b. Surgery for Vesical Calculi
   c. Bladder diverticulectomy
   d. Augmentation Cystoplasty
   e. Partial Cystectomy
   f. Radical Cystectomy
   g. Transurethral Resection of Bladder tumour
   h. Repair of Vesico – vaginal Fistulae
      i. Vaginal repair
      ii. Abdominal repair
      iii. Repair of complex fistulae
   i. Repair of Rectovesical Fistulae
   j. Bladder neck reconstruction

8. Surgery of the Prostate
   a. Transurethral Resection of the Prostate
   b. Retropubic Prostatectomy
   c. Transvesical Prostatectomy
   d. Radical Retropubic Prostatectomy
   e. Radical Perineal Prostatectomy
   f. Nerve sparing prostatectomy

9. Surgery of the Urethra
   a. Reconstruction of posterior Urethral Strictures
   b. Reconstruction of Bulbar Urethral Strictures
   c. Reconstruction of Anterior Urethral Strictures
   d. Endoscopic Urethrotomy
   e. Perineal Urethrostomy
   f. Meatoplasty & Glanuloplasty
   g. Single stage repair of Hypospadias
   h. Staged repair of Hypospadias
   i. Surgery of Urethral Carcinoma

10. Surgery in Male Infertility
    a. Varicocoele ligation
    b. Ejaculatory duct incision
    c. Vaso-vasostomy
    d. Vaso-epididymostomy
    e. Vaso- epididymal Fistulae
11. Surgery of the Scrotum
    a. Surgery for Hydrocoele & Chylocoele
    b. Surgery for Haematocoele

c. Reconstructive procedures in trauma

12. Surgery for Tests
    a. Orchidopexy in Cryptorchidism
    b. Orchidopexy in Torsion
    c. Orchidectomy for benign conditions
    d. Orchidectomy for malignant conditions
    e. Testicular biopsy
    f. Testicular reimplantation

13. Surgery of the Penis
    a. Surgery for Penile Curvature
    b. Biopsy of Penile lesion
    c. Circumcision
    d. Partial Penectomy
    e. Total Penectomy
    f. Organ conserving procedures in Penile Carcinoma
    g. Post traumatic Penile reconstruction
    h. Penile Prosthesis Implantation

14. Urinary Diversions
    a. Vesicostomy
    b. Cutaneous Ureterostomy
    c. Illeal conduit
    d. Continent diversion using ileum
    e. Continent diversions using illeo-caecal valve
    f. Orthotopic Neobladder
    g. Mitrofanoff and Benchecroun Procedures
    h. Ureterosigmoidostomy

15. Surgery for Associated Conditions
    a. Retroperitoneal Lymphadenectomy
    b. Nerve sparing Retroperitoneal Lymphadenectomy
    c. Ilio-inguinal Lymphadenectomy

16. Surgery for Incontinence
    a. Endoscopic Bladder Neck Suspension
    b. Transabdominal Bladder Neck Suspension
    c. Abdominal & Vaginal Sling Procedures
    d. Endoscopic Injection Procedures
    e. Artificial Sphincter implantation

17. Basic Principles of Laparoscopic procedures in Urology

JOURNALS

Essential

Current Journals under subscription

1. British Journal of Urology (M)
2. Journal of Urology (M)
3. Urologic Clinics of North America (Q)
4. Transplantation Proceedings (BM)
5. World Journal of Urology (Q)
6. Indian Journal of Urology
7. Urologic Survey
8. Urology
9. Journal of endourology

Optional

1. Genitourinary Medicine
2. Investigative Urology
3. Scandinavian Journal of Urology and Nephrology
4. Journal of Endo-Urology
5. Neuro-Urology and Urodynamics
6. Atlas of Urological Clinics of North America
7. Fertility and Reproduction

Monitoring Learning Progress: See Chapter IV

Log Book For M.Ch Urology

NAME:

INSTITUTION:

CERTIFICATE FROM HEAD OF THE DEPARTMENT

Name :

Nature of Post :

Name of the Hospital / Institution :

Recognised by:
UNIVERSITY / MCI :

Number of Urological beds :

Number undergoing training :

Names of Approved trainers :

Signature of the Head of Department

Table I: Academic activities attended

Name: **Admission Year:**

College:

Date	Type of Activity Specify Seminar, Journal Club, Presentation, UG teaching	Particulars

Table II: Academic presentations made by the student

Name: **Admission Year:**

College:

Date	Topic	Type of Presentation Specify Seminar, Journal Club, Presentation, UG teaching etc.

Table III: Diagnostic Procedures done from (Date To Date)

DATE	HOSPITAL NUMBER	PROCEDURE	P	S	AT	AJ	TOTAL

P – Performed Independently **AT – Assisting Trainer**

S – Done under Supervision **AJ – Assisting Junior Colleagues**

Table IV: List of Operative Procedures to be performed by M.Ch (Urology) Trainees

PROCEDURE	P	S	AT	AJ	TOTAL
Cystoscopy					
Stent Removal					
Retrograde Catheterisation					
Retrograde Pyelography					
Endoscopic Biopsy					
Clot Evacuation					
Ureteric Stenting					
Visual Internal Urethrotomy					
Endoscopic Removal of Foreign body					
Ureteric Meatotomy / Incision of Ureterocoele					
Diagnostic Ureterorenoscopy					
Fulguration of Posterior Urethral Valves					

Percutaneous Nephrolithotomy (PCNL)					
Transurethral Resection of Prostate (TURP)					
Transurethral Resection of Bladder Tumour					
Endoscopic Bladder Neck Suspension					
Therapeutic Ureterorenoscopy					
Diagnostic Laparoscopy					

P – Performed Independently **AT – Assisting Trainer**

S – Done under Supervision **AJ – Assisting Junior Colleagues**

Model Overall Assessment Sheet

Name of the College :

Academic Year :

Check List No.	Particulars	Name of Student and Mean Score		
		A	B	C
I	Journal Review Presentations			
II	Seminars			
III	Clinical work in wards			
IV	Clinical presentation			
V	Teaching skill practice			
Total Score				

Note: 1. Use separate sheet for each year

2. Insert name of candidate

List of Operative Procedures to be performed by M.Ch (Urology) Trainees

BLADDER SURGERY

PROCEDURE	P	S	AT	AJ	TOTAL
Cystolithotomy					
Suprapublic Cystostomy					
Vesicostomy					
Bladder Trauma Repair					
Partial Cystoplasty					
Augmentation Cystoplasty					
Open Bladder Neck Suspension					
Vesical Fistula Repair					
Total Cystectomy					

Ureterovesical Junction & Ureter

PROCEDURE	P	S	AT	AJ	TOTAL
Ureterolithotomy					
Ureteric Reimplantation					
Boari Flap Reimplantation					
Ureteral Fistula Repair					
Ureterorenoscopy					
Uretero-ureterostomy					
Ureteric Replacement					

Renal Surgery

PROCEDURE	P	S	AT	AJ	TOTAL
Open Kidney Biopsy					
Nephrostomy					
Perinephric Abscess Drainage					
Exploration of Renal Trauma					
Nephrectomy					
Pyelolithotomy					
Nephrolithotomy					
Pyeloplasty					
Anatrophic Nephrolithotomy					
Coagulum Pyelolithotomy					
Nephroureterectomy					
Radical Nephrectomy					
Partial Nephrectomy					
Renal Auto Transplantation					
Renovascular Reconstruction					

P – Performed Independently **AT – Assisting Trainer**

S – Done under Supervision **AJ – Assisting Junior Colleagues**

List of Operative Procedures to be performed by M.Ch (Urology) Trainees

TRANSPLANTATION SURGERY

PROCEDURE	P	S	AT	AJ	TOTAL
Arteriovenous Fistula					
CAPD Catheter insertion					
Donor Nephrectomy					
Renal Transplatation					
Cadaver Organ Retrieval					
Graft Nephrectomy					

Adrenal Surgery

PROCEDURE	P	S	AT	AJ	TOTAL
Adrenalectomy					

Urinary Diversions

PROCEDURE	P	S	AT	AJ	TOTAL
Illeal Conduit					
Continent Diversions					
Orthotopic Neobladder					
Ureterosigmoidostomy					
Cutaneous Ureterostomy					
Mitrafanoff Procedure					
Benchekroun Procedure					

Miscellaneus Procedures

PROCEDURE	P	S	AT	AJ	TOTAL
Penile Reconstruction					
Retroperitoneal Lymphadenectomy					
Retroperitoneal Tumour Excision					
Ureterolysis & Transposition					
Diagnostic Laparoscopy					
Laparoscopic Nephrectomy					

P – Performed Independently **AT – Assisting Trainer**
S – Done under Supervision **AJ – Assisting Junior Colleagues**

Table V: List of Operative Procedures to be performed by M.Ch (Urology) Trainees

OPEN SURGICAL PROCEDURES

GENITAL SURGERY

PROCEDURE	P	S	AT	AJ	TOTAL
Dorsal Slit					
Circumcision					
Testicular Biopsy					
Hydrocoele & Spermatocoele repair					
Meatoplasty					
Orchidectomy					
Shunt for Priaprism					
Varicocoele ligation					
Partial Penectomy					
Penile Trauma Exploration					
Total Penectomy					
Epididymovasostomy					
Single Staged Hypospadias repair					
Illeoinguinal Lymphadenectomy					
Penile Prosthesis Implantation					
Urethral Surgery					
Urethral dilatation					
Filiform dilatation					
Perineal Urethrostomy					
Urethrectomy					
Staged Urethroplasty					
Single Staged Urethroplasty					

PROSTATE SURGERY

PROCEDURE	P	S	AT	AJ	TOTAL
Transrectal Biopsy					
Open Prostatectomy					
Radical Prostatectomy					
Nerve Sparing Prostatectomy					

P – Performed Independently

S – Done under Supervision

AT – Assisting Trainer

AJ – Assisting Junior Colleagues

Model Question Papers

MCH EXAMINATION – UROLOGY

PAPER NO: 1 Basic Sciences as Applied to Urology

Time: 3 Hrs **Maximum Marks: 100**

1. Discuss the evaluation and management of Germ cell Testicular tumour (Marks 25)
2. Discuss the surgical complications and its management in Renal Transplantation (Marks 25)
3. Write short notes on

a. Chemotherapy in advanced bladder carcinoma (Marks 10)

b. Role of urodynamic in management of BPH (Marks 10)

c. A.N.N.in Urology (Marks 10)

d. Virtual Cystoscopy (Marks 10)

e. Hormone Refractory Adeno – Carcinoma of prostate (Marks 10)

MCH EXAMINATION – UROLOGY

PAPER NO: II Clinical Urology

Time: 3 Hrs **Maximum Marks: 100**

1. Discuss the evaluation and management of renai injuries (Marks 25)
2. Discuss the management of Peyronie's disease (Marks 20)
3. Write short notes on

a. Urinary markers in bladder cancer (Marks 10)

b. Gene therapy for prostate cancer (Marks 10)

c. Interstitial Cystitis (Marks 10)

d. Management of T1G3 transitional cell carcinoma of bladder (Marks 10)

e. Laparoscopic donor Nephrectomy (Marks 10)

MCH EXAMINATION – UROLOGY

PAPER NO: III Sub –Specialities as Related to Urology

Time: 3 Hrs **Maximum Marks: 100**

1. Discuss the advances in therapeutic energies in urology (Marks 25)
2. Discuss the advances in laparoscopic surgery in urology (Marks 25)

3. Write short notes on

a. Trus guided biopsy of prostate (Marks 10)
b. Buccal mucosa in urethroplasty (Marks 10)
c. Post exposure chemoprophylaxix for HIV (Marks 10)
d. Radiation hazards in endo-urology (Marks 10)
e. Green light (KTP) laser (Marks 10)

MCH EXAMINATION – UROLOGY

PAPER NO: IV Recent advances in Urology

Time: 3 Hrs **Maximum Marks: 100**

1. Renal parenchymal sparing surgery in renal cell carcinoma its present status and long term results (Marks 25)
2. Discuss present status of non operative management of Benign Hyperplasia prostate (Marks 25)

3. Write short notes on

a. Botulinum Toxin and its applications (Marks 10)
b. Prostatosomes (Marks 10)
c. MUC4 (Marks 10)

d. Buccal Mucossa for substitution urothroplasty (Marks 10)
e. Anatomy of fascia Denonvillier in reference to Radical Postatectomy (Marks 10)