

MS GENERAL SURGERY

1. Principles of clinical surgery

Case taking- History, physical examination, Demonstration of physical signs
Clinical assessment of surgical conditions

2. Principles of Preoperative management

Investigations in surgical practice- Scientific principles, Methodology of investigation of surgical case.

Assessment of fitness for surgery and anesthesia. Tests of respiratory cardiac and renal function Patho- physiology of respiratory , cardiovascular and renal systems.

Management of associated medical conditions with a knowledge of pathophysiology diabetes mellitus respiratory disease, cardiovascular disease, bleeding disorders, seizure disorders, neurological diseases, malnutrition, anemia, jaundice, steroid, anticoagulant, immune- suppressant and other drugs therapy and drug therapy and drug therapy and management of psychiatric disorders.

Pre medication and sedation

Prophylaxis prevention and risk factors of thromboembolism

3. Intra operative care

Principles of anaesthesia

Care and monitoring of anaesthesia patient

Recovery from anaesthesia, recovery room

4. Principles of post operative care

Post operative management

Post operative monitoring

High dependency unit, intensive care unit

Assessment and maintenance of fluid and electrolyte balance

Care of tubes, drains and dressings

Pathophysiology, prevention, prevention, recognition and management of postoperative complications. Respiratory infections, atelectasis and failure, deep vein thrombosis, pulmonary, embolism, myocardial infarction, cardiac failure and cardiac arrest, haemorrhage, fluid and electrolyte imbalance, shock, retention of urine renal failure, paralytic ileus, constipation, jaundice, sepsis, wound complications hematoma, infection, dehiscence, cerebral complications and psychiatric disorders.

Blood transfusion indications, hazards, complications, plasma substitutes, blood component therapy.

Techniques of venous access

Nutrition in postoperative patients

Post operative drug therapy

5. Surgical sepsis, prevention and management

Surgical infection- wound infection

Surgically important micro organisms

Principles of microbiology of body's response to infection, SIRS, sepsis, severe, sepsis, septic shock.

Sources of surgical infection- prevention, control, investigation and treatment of surgical infections.

Principles of asepsis and antisepsis

Aseptic techniques, cross infection, sterilization, disinfection

Antibiotic prophylaxis

Principles of antibiotic, therapy, antibiotics in surgery

6. Infections and infestations of surgical importance

Bacterial- Clostridial- tetanus, gas gangrene

Salmonella

Mycobacteria- tuberculosis, leprosy

Treponema- syphilis

Actinomycosts

Anthax

Chancroid, gonorrhoea, LGV, granuloma inguinale

Viral- Herpes simplex infections

Cytomegalovirus infection

Viral hepatitis- A,B,C,D,E

HIV infection- AIDS

AIDS and surgical practice

Fungal candida, Aspergillus, Mycetoma

Parasitic- Hydatid disease, filariasis, amoebiasis, malaria ascariasis

7. Principles of nutrition in surgical practice, nutrition in surgical patients and rehabilitation

Nutrition assessment in surgical practice including pre operative and post operative malnutrition.

Nutritional requirement

Indication of nutritional support

Routes of administration- techniques, indications, management, complication,
Nutritional
Monitoring
Total parenteral nutrition
Principles of rehabilitation and physiotherapy, methods of limiting morbidity.

8. Metabolism in surgical patients

Metabolism of protein and carbohydrate
Protein requirements and turnover
Respiratory quotient
Energy- caloric requirements
Caloric- Nitrogen ratio, Role of fat as caloric source, Regulatory mechanism
metabolic response to trauma, surgery, sepsis and starvation.

9. Clinical immunology & Organ transplantation

Immune system- components,function
Immune response
Major histocompatibility complex (MHC)
Immune suppression, immune suppressive drugs, problems with immune suppression
Transplantation
Immunology
Organ donation, preservation
Tissue typing
Technical aspects of transplantation of kidney, heart pancreas, lung, liver, heart lung
and intestine
Ethical aspects of organ transplantation
Indian Law of Organ Transplantation

10. Surgical technique and principles of operative surgery

Skin preparation
Local anaesthesia-techniques
Incision, placement and techniques of closure
Suture & ligature materials
Suture techniques, anastomosis, tissue handling
Dressings
Tubes and drains, Catheters Cannulae
Methods of hemostasis
Principles of wound Management
Classification of surgical wounds
Pathophysiology of wound healing

Scars & Contracture, wound dehiscence
Excision of cysts and benign tumors of skin & subcutaneous tissue
Drainage of abscess
Growing, Masks, Scrubbing up, Gloves
Customs and conduct in operative theatre (Basic surgical skills training mandatory)

11. Technology in surgical practice

Diathermy principles. Usage, precautions
Lasers in surgical practice-principles, usage, precautions
Ultrasonic's in surgical practice
Endoscopic in surgical practice
Endoscopes, thoracoscope, laparoscope scientific operation complications
Instruments for operative surgery
Operating for operative surgery
Operating microscopes
Monitors in surgical practice
Ventilators
Properties of various implant materials
Operation theatre technology
Technology of illumination (lighting) in surgical practice
Computers in surgical practice
Robots in surgical practice
Internet and surgeon
Tele surgery
Applications of principles of information technology in surgical practice

12. Trauma management

Applied basic sciences relevant to the assessment of injured patients and to the understanding of
Disorders of function caused by trauma hemorrhage and shock
Epidemiology of trauma in-India
Mechanisms of trauma-blunt, sharp & Blast injury.
Metabolic response to trauma
Principles of pre- hospital care. First and ambulance service emergency management team, transport of trauma patients
Clinical assessment and management of trauma victim
Priority decisions in trauma management
Resuscitation –airway breathing & circulation management
Monitoring & repeated clinical assessment
Management of airway
Management of hemorrhage and shock
Management of traumatic wounds

Traumas scoring systems
Burns
Management of skin loss
Management of fractures, pathophysiology of fracture healing, immobilization of fracture treatment
Chest injuries, management of cardiac lemonade
Abdominal trauma
Head & spinal trauma
Pelvic injuries. Perineal, rectal and vaginal injuries and maxillofacial injuries
Traumatic edema and compartment syndrome

13. Intensive care and management of critical illness

Intensive care-principles& practice
Intensive care unit-structure &function
Indication of admission to ICU
Clinical assessment of critically ill
Scoring systems
Monitoring in ICU
Transportation of the critically ill patients
Applied cardiovascular and respiratory physiology. And assessment
Pathophysiology of shock &management
Respiratory and cardiovascular support ,
Cardiopulmonary resuscitation
Acute renal failure, dialysis
Hepatic failure-assessment and management
Selective decontamination of gut
Alimentary system management
Nutrition. Fluids & electrolyte management. In critically ill
Prevention of stress ulceration
Psychological & behavioral problems in ICU patients
Management of unconscious patient
Multiple organ dysfunction syndrome

14. Principles of diagnostic & therapeutic radiology

Imaging methods and principles of functioning-plain radiography contrast radiography ultrasound, CT scan, MR imaging scintigraphy etc.
Imaging of body systems
Interventional radiology-importance in surgical context- binary vascular, renal etc.

15. Principles of clinical oncology

Molecular biology of cancer
Carcinogenesis
Molecular basis of carcinogenesis tumor kinetic

Genetics & cancer
Pathological classification of tumors- in general
Staging of cancers
Mechanisms of metastasis
Premalignant conditions
Epidemiology of common cancers, cancer registers
Diagnostic modalities
Cancer screening. Tumor markers
Clinical problems associated with cancer
Treatment modalities in general surgery chemotherapy, radiotherapy, hormonal therapy immunotherapy
Terminal care of cancer patients psychological factors, pain relief

16. Principles of pathology in surgical practice

Biopsy techniques & cytological examination
Excision biopsy, incision biopsy, FNAC brush cytology, endoscopic biopsy
Basics of handling of specimen
Tissue processing, cutting & staining
Frozen section biopsy
Enzyme histochemistry
Immunohistochemistry
Electron microscopy

17. Pharmacology in surgical practice

Principles related to drug action
Half life, bioavailability , volume of distribution, clearances, drug interaction advice
drug reactions
Drug therapy in surgical practice-anticoagulants, diuretics inotropics, drugs, steroids, analgesics
Drug therapy in of diabetes mellitus, hypertension and bronchospasm
Drug therapy in young and old age
Drug usage in pregnancy
Drug usage in diseased states-renal failure, liver disease cardiac failure

18. Principles of genetics & genetic aspects of surgical practice

Fundamentals of genetics- chromosomes, genes, genetic code. Structure of DNA mutations.
inheritance, polymerase chain reaction gene mapping.
Applied genetics in diagnosis and management pedigree analysis, prenatal diagnoses, common genetic diseases encountered in surgical practice. Screening consideration counseling.

Applied genetics in cancer management cellular biology of cancer tumor viruses, ontogenesis tumor suppressor genes. Genetic basis of carcinogenesis. Familial cancers, genetic basis of familial cancers, screening of familial cancers.
Gene therapy

III) General Principles in Surgical Practice

Decision making in surgical practice
Principles of good surgical practice
Consent for surgical treatment informed consent unconscious patient, consent for children, mental handicap and psychiatric illness. Informed consent and surgical research – Nuremberg code.
Surgical Audit
Economic aspects in surgical practice
Principles of management in surgical care delivery
Principle of management in surgical care delivery
Principle of referral practice in surgery
Medical documentation & information systems
Quality assurance in surgical practice
Principles of research and design & analysis of clinical trials
Quality of Life assessment – part of surgical research
Critical evaluation – literature and innovations
Medicolegal aspects in surgical practice
Ethical aspects in surgical practice
Communication with patients, relative and colleagues
Decision, certification and declaration of death
Decision on brain death
Psychological effects of Surgery and bereavement
Civil responsibilities of surgeon in practice

IV) Systemwise Operative Surgery

- 1 Abdominal surgery
- 2 Haemopoietic
- 3 Vascular surgery
- 4 Head and neck surgery
- 5 Endocrine surgery
- 6 Breast
- 7 Thoracic surgery
- 8 Plastic and reconstructive surgery
- 9 Genito urinary surgery
- 10 Neuro surgery
- 11 Orthopedics and traumatology
- 12 Pediatric surgery
- 13 Faciomaxillary surgery
- 14 Minimal Access Surgery

Operative Surgery of Systems in detail

1) Abdominal Surgery

Surgical anatomy of abdomen & viscera
Applied physiology of GIT
Clinical presentation, pathology and pathophysiology of disease process
Investigative modalities & indications
Management decisions
Condition affecting Stomach, duodenum Small Intestine, Hepatobiliary System
Pancreas and Large Intestine & Appendix
Abdominal wall hernia, complication, management
Conditions affecting retroperitoneum, retroperitoneal tumors
Mesentery, peritoneal cavity, mesenteric tumors, peritonitis, ascites, mesothelioma, intraperitoneal abscesses
Surgical management of obesity
Abdominal trauma – investigation and management with respect to organ involvement.
Abdominal emergencies – investigation, management
Principles of operative surgery-
Decision making Pre-operative preparation
Incisions and access
Abdominal closure methods.
Laprostomy
Gastrostomy, ileostomy, colostomy and ostomy management
Gastrointestinal fistulae – management

2. Haemopoetic and lymphatic system

Anatomy & physiology of spleen, lymphnodes and lymphatics system investigative modalities
Splénomegaly - causes, management
Splenic trauma, splenic conservations, management of Lymphedema

3. Vascular surgery

Vascular anatomy of body
Newer concepts in vascular physiology endothelium dependent relaxation factor
Pathology of aneurysms, thrombosis, embolism, atherosclerosis Investigative modalities in vascular surgery
Doppler, Duplex scan, angiogram, DSA, Magnetic Resonance Angiogram.
Angioscopy,
Transcutaneous oxygen tension
Varicose veins
Deep vein thrombosis
Vascular malformations
Occlusive arterial diseases – evaluation, management
Arterial aneurysms – Aortic aneurysms
Vascular trauma
Angioplasty & endovascular procedures

Vascular prosthesis, vascular reconstruction Principles of operative surgery vascular bypass,
Carotid body tumor.
Mesenteric and renal vascular disease

4. Head and neck surgery

Surgical anatomy of nasopharynx, oropharynx oral cavity and neck salivary glands, nose & ear, & Principles of investigation.
Neck lumps – differential diagnosis, pathology, investigations and management
Thyroglossal cyst, fistula
Lymphangiomas
Neurogenic tumors of neck
Head and neck cancers – management
Neck dissections for malignancy – radical, modified radical, functional and selective
neck injuries
Diseases of salivary glands, salivary gland tumors
Principles of operative surgery- head and neck
Reconstruction after radical surgery – head and neck

5. Endocrine Surgery

Surgical anatomy of thyroid, parathyroid and adrenal
Physiology of thyroid parathyroid and adrenal
Disorders in function
Principles of investigation of disease process
Hyperthyroidism hypothyroidism
Solitary nodule thyroid- pathology investigation
Diseases affecting thyroid gland
Tumours of thyroid papillary carcinoma, follicular carcinoma, medullary carcinoma
anaplastic carcinoma investigations, management.
Surgery of thyroid gland- thyroidectomy- technique complications
Hyper parathyroidism, hypoparathyroidism
Parathyroid tumors
Surgery of parathyroid
Functional disorders of adrenal gland
Tumors of adrenal gland
Pheochromocytoma
Neuroendocrine tumors- carcinoids
Paraneoplastic syndromes

6. Breast

Surgical anatomy and applied physiology
Investigations for breast disease
Mammogram
Breast infections
Nipple discharge, breast lumps- pathology and investigations
Benign breast disease mastalgna

Carcinoma of breast- epidemiology, aetiology and risk factors, pathology, staging, investigations and treatment:

Carcinoma breast during pregnancy & lactation

Mastectomy- principles of operative surgery

Excision biopsy of breast lumps

Breast conservation in malignancy

Breast reconstruction

Aesthetic breast surgery

Gynaecomastia male breast

Male breast cancer

7. Thoracic Surgery

Surgical anatomy of chest, mediastinum, airway& lungs, diaphragm, heart ad great vessels in thorax and esophagus.

Surgical physiology of chest, pulmonary system esophagus and heart

Bronchoscopy & mediastinoscopy

Trauma to chest- principles of clinical examination, investigations and management

Pneumothorax

Tube thoracostomy

Pleural effusion

Infections of lung, pulmonary tuberculosis

Emphyema

Bronchiectasis

Emphysema

Pulmonary aspergillosis

Tumors of pleura and lungs ; Thoracoscopy; thoracoscopic surgery

Techniques of thoracotomy & thoracic surgery

Mediastinal tumors

Deformities of chest wall

Chest wall tumors

Investigations for esophageal disease- esophagoscopy, manometry, ambulatory pH monitoring; Gastro esophageal reflux disease

Hiatus hernia

Barret's esophagus

Esophageal trauma

Esophageal diverticula

Tumours of esophagus

Surgery of esophagus

Congenital anomalies of heart & great vessels and surgical management

Cardiopulmonary by pass- general principles

Principles of myocardial revascularization surgery, coronary artery bypass graft (CABG)

Injury to heart and great vessels

Aneurysms of thoracic aorta, aortic dissection

Complications of thoracic surgery

Diaphragmatic hernia, eventration of diaphragm, traumatic rupture of diaphragm

8. Plastic and Reconstructive surgery

Principles of plastic surgery- tissue handling excision & revision of scars and contractures, skin grafting flaps microsurgery, bone grafting nerve repair.

Reimplantation of amputated limbs, digits and organs

Care of burns and complications

Cosmetic Surgery

Reconstructive surgery reconstruction after head and neck surgery reconstruction of chest wall defects, reconstruction of abdominal wall

Hernia surgery

Craniofacial surgery

9. Genito urinary surgery

Surgical anatomy and physiology of genitor urinary system

Symptomatology and clinical examination

Investigations- GU disease

Oliguria, anuria- investigation, management

Congenital anomalies- genitourinary system

Hematuria

Infections of urinary tract

Tuberculosis of kidney and urinary tract

Renal trauma, trauma of urinary tract

Tumors of kidney and urinary tract

Urinary retention

Urinary incontinence

Urinary fistulae

Urinary diversion

Diseases of prostate and seminal vesicles

Carcinoma of prostate

Hypospadias, epispadias, phimosis

Urethral injuries

Extravasation of urine

Urethral strictures

Paraphimosis

Carcinoma of penis

Imperfect descent of testes

Torsion testes

Hydrocele, scrotal swellings- investigations, pathology, treatment

Epididymo orchitis

Testicular tumors

Fourniers gangrene

Carcinoma of scrotum

Infertility investigations, management

Impotence –Management

Prosthetics in urological surgery

Principles of operative surgery- exposure of kidney, nephroectomy, surgery for renal injuries

Genitourinary stents

Renal transplantation

10. Neurosurgery

Fundamental anatomy of skull & brain
Investigations in neurosurgical practice- CT scan, angiogram, MRI Biopsies
Congenital anomalies of central nervous system
Skull tumors
Head injury – assessment, classification, investigation, treatment
Intracranial pressure monitoring
Brain tumors- pathology, treatment
Intracranial infections- meningitis, brain abscess
Intracranial hemorrhage
Hydrocephalus
Principles of operative surgery- burr hole, craniotomy, reconstruction of skull bone defects, drainage of intracranial hematoma
Post operative management in neurosurgical patients
Stereotactic surgery

11. Orthopedics and Traumatology

Surgical anatomy of upper limb lower limb, pelvis and spine
Osteoarthritis
Ankylosing spondylitis
Osteomalacia
Osteomyelitis , Joint infections
Joint effusions
Joint and bony deformities and correction
Bone tumors, soft tissue tumors
Deformities of spine
Paraplegia, quadriplegia
Tuberculosis of bones, joints and spine
Tumors of spinal cord and vertebrae
Management of fractures
Fractures and dislocations- upper limb and lower limb
Pelvic fractures
Spinal trauma
Tendon injuries and management
Joint replacement
Peripheral nerve injuries and repair
Hand infections and injuries
Amputations

12. Pediatric surgery

Essentials of anatomy of neonate
Physiology of new born
Principles of surgery and anaesthesia in new born and children
Fluid and electrolyte management
Common congenital anomalies- cleft lip, cleft palate, tracheoesophageal fistula, gastroschisis, exomphalos, umbilical & inguinal hernia, phimosis, undescended testis.
Hypertrophic pyloric stenosis

Torsion testes, acute scrotum
Acute abdomen in neonates and children
Pediatric malignancies- neuroblastoma, neuroblastoma
Jaundice biliary atresia
Malrotation of intestine
Intestinal atresia
Meconium ileus
Imperforate anus
Hirschsprung's disease
Bleeding per rectum, hematuria

13. Facio- maxillary surgery

Surgical anatomy of face and facial skeleton
Imaging anomalies
Surgical principles of correction and techniques of correction of faciomaxillary congenital anomalies
Principles of surgery of face
Surgical techniques placement of incisions
Tumors of face pathology and management
Tumors of facio- maxillary skeleton pathology investigations and management
Jaw tumors, malignant tumors of mandible maxilla
Congenital and developmental anomalies of teeth
Impacted unerupted teeth
Odontomes, odontogenic tumors
Dental caries, dental infections, alveolar abscess periodontal disease
Surgically important complications of dental disease
Osteomyelitis of jaw
Swellings of gums
Cysts of jaw
Faciomaxillary trauma principles of management- assessment, primary management maintaining airway imaging , surgical principles of treatment
Features of maxilla- Le Fort Classification
Fractures of mandible dislocation
Fracture of zygomatic bone and arch
Innovations in faciomaxillary surgery cranio orbital- Facial surgery

14. Minimal Access Surgery (MAS)

Evolution of MAS
Demerits of conventional open surgery
Nature and principles of MAS
Scope of MAS- Laparoscopic, Thoracoscopic, Endoluminal (CPI and vascular), Perivisceral endoscopic endopelvic, intra articular joint surgery, intracranial spinal combined (MAS combined with open surgery, combined MAS)

Techniques of MAS- in GI surgery, Urological surgery, Thoracic Surgery,
Orthopaedics, cardiovascular surgery and Neurosurgery
Pathophysiology of pneumo peritoneum
Principles of anaesthesia relating MAS
Hazards & limitations of MAS
Innovations- in principles and technology of MAS
Standardization of training in MAS