

Paediatric Surgery

POST GRADUATE DEGREE STANDARD

1. EMBRYOLOGY

A- Basic Embryology

B- Normal Embryogenesis

C- Disorderly Embryogenesis of the following organs:

1 Development of Brain and Spinal Cord 2 Development of Face, Lip & Palate

3 Development of Branchial arches 4 Development of Lymphatics

5 Development of Thyroid. 6 Development of Heart and Great Vessels

7 Development of Lungs 8 Development of Diaphragm

9 Development of Liver and Biliary tree and Pancreas 10 Development of Spleen

11 Rotation of the Gut-Fore gut, Mid gut, Hind gut 12 Development of Kidneys, Ureter, Bladder, Urethra, Prepuce

13 Development of Anus and Rectum 14 Development of Female Internal and External Genitalia

15 Development of Male Internal and External Genitalia

16 Development of Limbs

17 Development of sex of individual. 18 Umbilicus development and abnormalities.

2. GENETICS:

Basics, Karyotyping, Chromosomal abnormalities, Genethrapy. Genetics in Oncology.

3. ANAESTHESIA AND INTENSIVE CARE:

Intubation, Ventilatory Support, Malignant hyperpyrexia, Fluid and Electrolytes, Acid base disturbance, Monitoring of new born, Sterilisation and disinfection .

4. NORMAL AND ABNORMAL PHYSIOLOGY :

In new born and infants

5. HAEMATOLOGY:

Blood, Blood transfusions, Anemia, Hemolytic anemias, ITP, AIDS..

6. NUTRITION :

Nutrition, Total paranal nutrition, Short bowel syndrome.

7. CHEMOTHERAPY AND RADIOTHERAPY:

In Paediatric Oncology

8. DIAGNOSTIC STUDIES :

Lab, Radiology, Ultrasonogram, MRI, Isotop Studies, CT Scan

9. SURGICAL INFECTIONS :

Soft tissues, Bone, Brain, Infra abdominal, Pleural and mediastinal, Urinary tract, Septicaemia

10. PATHOPHYSIOLOGY OF SHOCK:

Haemorrhagic, Septicaemic.

11. Pathology of Tumours.

12. Neonatology :

Incidence and causation of congenital defects Organization of Neo Natal Surgical Service Neo Natal

Surgical Unit : Layout and equipment Nursing care of patients in intensive surgical care unit. Neo Natal Physiology and its relevance to Neo Natal Surgical care Neo Natal respiratory complications and its management

13. Physiology of CSF Circulation

14. Physiology of Renal Function in Newborn

15. Diagnosis of Urological Conditions Embryology, Agenesis

16. Surgical anatomy-Diaphragm, Adrenals, pancreas, Lungs

17. Surgical Physiology-Adrenals, Pancreas

18. Trauma, Paediatric Surgeon and the legalities

I Parental abuse of children

II Battered baby Syndrome

III Responsibilities of the Paediatric Surgeon

IV Legal limitations and powers of paediatric Surgeon

V Ethical implications of certain procedures

Paper -II

Proposed Syllabus - Paediatric Surgery-II

NEONATAL SURGERY

Head and Neck 1 Pierre - Robin Syndrome (Mandibular Retro Gnathia) 2 Posterior Choanal Atresia
3 Cleft Lip and Cleft Palate 4 Sterno Mastoid Tumour

Chest wall and Diaphragm

1 Congenital absence of ribs and cleft sternum 2 Congenital Diaphragmatic Hernia

3 Eventration or Diaphragm 4 Hiatus Hernia

Oesophageal Disorders

1 Oesophageal Atresia and Tracheo Oesophageal fistula

2 Congenital Oesophageal Stenosis and Oesophageal Diaphragm

3 Gastro Oesophageal reflux

Disorders of Lungs, Pleura and Mediastinum

1 Pneumo Thorax and Pneumo mediastinum 2 Chylo thorax

3 Empyema 4 Congenital Lobar Emphysema

5 Broncho genic cysts 6 Congenital Cystic Adenomatoid Malformation

7 Intra Lobar Pulmonary Sequestration 8 Extra Lobar Pulmonary Sequestration

9 Mediastinal Teratoma of newborn 10 Congenital Broncho Biliary Disorder

Heart and Great vessels

1 Pericardial Teratoma

2 Vascular Rings

Abdominal Wall

1 Inguinal Hernia

2 Umbilical Anomalies

i Exomphalos Major ii Exomphalos Minor iii Gastro Schisis iv Omphalo Mesenteric Remnants v Umbilical

Polyp vi Omphalo mesenteric Duct sinus vii Fibrous Omphalo Mesenteric Remnants viii Meckel's Diverticulum ix Patent Omphalo mesenteric duct x Urachal Remnants

Gastric outlet Problems

- 1 Congenital Intrinsic obstruction of the Antrum and Pylorus
- 2 Infantile Hypertrophic Pyloric Stenosis

Intestinal Obstruction

- 1 Duodenal Atresia and Stenosis
- 2 Annular Pancreas
- 3 Malrotation and volvulus of the Intestines
- 4 Intestinal Atresia and Stenosis other than Duodenal Atresia
- 5 Duplications of the Alimentary Tract
- 6 Intra luminal Intestinal obstructions i Meconium Ileus ii Meconium Plug Syndrome iii Milk curd obstruction
- 7 Hirschsprung's Disease
- 8 Anorectal Malformations

Necrotising Entero colitis

Peritonitis

- 1 Meconium Peritonitis
- 2 Bacterial Peritonitis

Liver and Bile ducts

- 1 Extrinsic obstruction of Bile duct
- 2 Spontaneous Perforation of the common Bile duct
- 3 TPN Associated Chole stasis
- 4 Inspissated Bile Syndrome
- 5 Biliary Atresia
- 6 Choledochal cyst

CNS

- 1 Hydrocephalus
- 2 Spina bifida and Myelo Meningo cele
- 3 Encephalocele

Disorders of Renal System

- 1 Urinary Tract Infection
- 2 Hydro nephrosis
- 3 Posterior Urethral valves
- 4 Renal cyst disease
- 5 Prune - Belly Syndrome

Disorders of Female Genital Tract

- 1 Hydro colpos
- 2 Vaginal Atresia
- 3 Cloacal Anomaly
- 4 Vaginal cyst
- 5 Hymenal Polyp
- 6 Para urethral cyst

Male Genital Tract

- 1 Hydrocele
- 2 Torsion Testis
- 3 Phimosis
- 4 Buried Penis
- 5 Webbed Penis
- 6 Micro Penis
- 7 Double Penis
- 8 Megalo urethra
- 9 Penile Agenesis
10. Extrophic Anomalies

Ambiguous Genitalia

Foetal Surgery

Regional Paediatric Surgery

Face and neck lesions

- 1 Cranio facial Anamolies

- 2 Cleft Lip and Palate

- 3 Salivary glands

i Sialadenitis ii Trauma iii Tumours iv Technique of Parotidectomy

- 4 Oro pharynx and Jaws

i Congenital anamolies ii Trauma iii Tumours

- 5 Lymph glands of the neck

i Infection ii Tumours

- 6 Thyroid & Para thyroid

i Goitre ii Ectopic Thyroid iii Thyro glossal cyst iv Thyroiditis v Cancer thyroid vi Parathyroid & Hyper Para thyroidism

- 7 Cystic Hygroma
- 8 Cysts and Sinuses of the neck
- 9 Torticollis

Thoracic lesions

1 Tracheostomy 2 Breast i Anomalies ii Tumours 3 Chest Wall i Deformities ii Poland's Syndrome iii Tumours of Chest wall 4 Congenital Diaphragmatic Hernia 5 Oesophagus i Congenital Disorders ii Corrosive Structures iii Hiatus Hernia and Gastro Oesophageal Reflux iv Oesophageal Replacement v Achalasia of the Oesophagus vi Diverticulum of the Oesophagus 6 Mediastinal - Infections, Cysts and Tumours 7 Endoscopy i Broncho scopy ii Oesophago scopy iii Thoraco scopy 8 Lungs i Congenital Malformations ii Neonatal Problems of the Respiratory Tract iii Infectious Disease of Lungs and Pleura iv Tumours of Lung 9 Surgically correctable Hypertension in children 10 Vascular Anomalies Compressing Oesophagus and Trachea 11 Anomalous Pulmonary venous return

Abdominal lesions

1 Duplications of the Alimentary canal 2 Small Intestine i Atresia ii Stenosis 3 Meconium Ileus & Peritonitis 4 Surgical Implications of Meckel's Diverticulum 5 Miscellaneous causes of small Bowel Obstruction i Mesenteric defects ii Tumours iii Cords iv Bands v Post operative Obstruction 6 Omental and Mesenteric cyst 7 Neonatal Ascitis 8 Necrotising Entero colitis 9 Polypoid Diseases of the gastrointestinal Tract 10 Intussusception 11 Appendicitis 12 Inflammatory Bowel Disease 13 Neonatal Colonic Problems 14 Hirschsprung's Disease 15 Anorectal Malformations 16 Retro peritoneal Tumours 17 Sacro Coccygeal Teratoma

ABDOMINAL PARIETES 1 Congenital Anomalies 2 Infection 3 Surgery 4 Umbilicus i Tumours and Infections ii Omphalocele iii Hernia iv Umbilical cord 5 Gastroschisis 6 Cloacal Extrophy 7 Conjoined Twins

Inguinal Hernia

Liver

1 Biliary Tree - Obstructive Jaundice in Infancy 2 Hepatic Abscess 3 Gallbladder Diseases 4 Tumours of the Liver i Benign ii Malignant 5 Congenital Cysts of Liver 6 Technique of Liver Resection 7 Liver Transplantation 8

Portal Hypertension

Pancreas

1 Pancreatitis 2 Tropical Pancreatitis & Pancreo lithiasis 3 Pancreatic Cyst 4 Pancreatum Divisium 5 Pancreatic Neoplasms, Hypoglycemia

Spleen

1 Trauma 2 Haematological Disorders 3 Splenomegaly 4 Operative Technique 5 Post Splenectomy Infection

Stomach and Duodenum

1 Pre pyloric and Pyloric Obstruction 2 Volvulus of the stomach 3 Gastric Perforation of Newborn 4 Infantile Hypertrophic Pyloric Stenosis 5 Peptic ulcer 6 Foreign bodies 7 Bezoars 8 Neoplasms 9 Duodenal Obstruction due to Atresia, Stenosis 10 Annular Pancreas 11 Malrotation of Intestines

UROLOGY

1 Enuresis 2 Recurring Urinary Tract Infections 3 Dysplasia, Aplasia, Agenesis & cystic Disease of Kidneys 4 Renal Fusion and Ectopia 5 Renal vein thrombosis 6 Uro lithiasis 7 Vesical Calculus 8 Pelvi Ureteric Junction Obstruction 9 Bifid and Double ureter 10 Ureterocele 11 Fused Kidneys 12 Mega Ureter 13 Vesico Ureteric Reflux 14 Abdominal Muscular Deficiency Syndrome 15 Defects of Bladder Innervations 16 Extrophy of the Urinary Bladder 17 Urinary Diversion and un diversion 18 Kidney Transplantation 19 Abnormalities of Bladder and prostate 20 Tumours 21 Foreign bodies 22 Cystitis 23 Bladder neck obstruction 24 Renal Tuberculosis 25 Abnormalities of Penis Scrotum 26 Abnormalities of urethra i Posterior, Urethral valves ii Anterior urethral valves iii Urethral Diverticula iv Megalo urethra v Hypospadias vi Epispadias 27 Abnormalities of testis i Congenital Anomalies ii Torsion iii Orchitis iv Tumours of Testis v Cryptorchids 28 Intersex

Adrenal Glands

i Phaeo chromo cytoma ii Cortical lesions iii Cysts and stromal Tumours

Ovarian Cysts and Tumours

1 Vaginal and Uterine Anomalies 2 Tumours of the vagina and Uterus 3 Effects of Ovarian Irradiation in children

SKIN AND SOFT TISSUES AND MUSCULOSKELETAL SYSTEM

1 Congenital Lesions 2 Congenital Defects of skin 3 Congenital Defects of muscle 4 Congenital Defects of Hand and Fingers

Neoplasms

1 Ectopic Tissue 2 Teratoid Tissue 3 Hamartomatous lesions 4 Epithelial Tissue Lesions 5 Neural Lesions
6 Pigmented Lesions 7 Mesenchymal Lesions 8 Tumours of Muscle origin 9 Synovial Tissue Lesions
10 Rhabdomyosarcoma 11 Neurofibromatosis

Axial system

1 Lymphatic and vascular malformations
2 Gangrene of Extremities
3 Infections of Bones and Joints
4 Tumours of Bones 5 Deformities of Spine 6 Myelo dysplasia 7 Amputation

Central Nervous System

1 Spinal and Cranial Dysraphism 2 Infections of the Central Nervous System
3 Tumours of the Brain and Spinal cord 4 Hydrocephalus

Trauma

Burns

Corrosive Burns of Oesophagus and Stomach Foreign bodies

Air way i Genito Urinary ii Gastro Intestinal Head Injury Face and neck Trauma Chest Injuries Injury
Abdomen i Blunt ii Penetrating iii Diaphragmatic injuries Genitourinary Trauma Trauma Due to Sexual
Assault Extremity Trauma and Fractures Blast Injuries Gunshot wounds

Paediatric Oncology

1 Molecular Genetic - Aspects of Paediatric Cancer 2 Tumours of Neural Crest origin i Ganglio Neuroma ii
Ganglio Neuro Blastoma iii Neuro Blastoma 3 Nephro blastoma (Wilm's Tumour) 4 Rhabdomyosarcoma
5 Childhood non Rhabdomyo sarcomas 6 Paediatric Germ Cell Tumours 7 Gonadal i Teratoma Mature ii
Teratoma Immature iii Malignant Teratoma iv Endo dermal Sinus Tumour v Embryonal Carcinoma of
Testis vi Chorio carcinoma 8 Extra Gonadal i Sacro Coccygeal Teratoma ii Mediastinal Teratoma iii Retro
peritoneal Teratoma iv Cervical Teratoma v Pineal Gland Germ cell Tumour 9 Hepatic Tumours - Benign,
Malignant 10 Paediatric Thyroid Cancers 11 Paediatric Parotid Tumours 12 Paediatric Lymphoma -
Hodgkin's & Non Hodgkin's Lymphoma

Syllabus for Procedures - Operative/Diagnostic

PAEDIATRIC ENDOSCOPIC PROCEDURES:

Paediatric surgeon must be assessed in the following minimally invasive surgical techniques.

1 Upper G.I.Endoscopy: Diagnostic & Therapeutic - Sclerotherapy & F.B. Removal 2 Cystourethroscopy:
Diagnostic,fulguration of posterior urethral valves. Ectopic ureterocele - Injection, cut, Mansuplisation
Ureteric Catheterisation Colonoscopy: Diagnostic & Polypectomy, Colonic Biopsy Laproscopic Surgery:
Cholecystectomy appendectomy cyst excision, Biopsy etc., Bronchoscopy: Aspiration of foreign body,
bronchogram Paediatric mediastinal & throcoscopic Procedure It is expected that by the time a candidate

completes the training he should be able to do independently and confidently do the cystoscopic, Upper G.I. endoscopic procedures and Laproscopic Surgeries.

INVESTIGATORY PROCEDURE & DIAGNOSTIC TECHNIQUES: A paediatric surgeon should be familiar with all invasive & non Invasive diagnostic techniques that are commonly done for paediatric problems.

RADIOLOGY:

Invertogram Micturating cystourethrogram Barium meal studies Percutaneous Nephrogram Angiography Cine studies Intravenous pyelogram I.V. cholangiogram

OPERATIVE PROCEDURES:

A. NEW BORN SURGERY:

A Paediatric surgeon should be able to do all indexed Neonatal surgical cases. 1 Tracheo esophageal atresia with Fistula 2 Anorectal malformation (low & high) 3 Exomphalos major and gastroschysis 4 Duodenal atresia & duodenal obstructions 5 Diaphragmatic hernia 6 Hirschsprung's disease - colostomy & all types of primary pull through procedure 7 Neonatal necrotising enterocolitis 8 Spina Bifid and hydrocephalus 9 Congenital hypertrophic pyloric stenosis 10 Meconium Ileus and Intestinal Volvulus 11 Intestinal Obstructions: Atresia, Stenosis, malrotation, congenital bands 12 Neonatal Tumours 13 Neonatal surgical Jaundice -Biliary atresia & Choledochal cyst

B PAEDIATRIC GASTRO INTESTINAL SURGICAL PROBLEMS

1 Colostomy making and closure 2 Esophageal replacement 3 Anti gastro esophageal reflux surgery 4 Gastrostomy 5 Pull through procedures for anorectal anomaly 6 Various pull through procedure for Hirschsprung's disease 7 Intestinal obstruction: Resection & Anastomosis 8 Ileostomy making and closure 9 Intussusception -resection and anastomosis, simple reduction 10 Splenectomy 11 Patent vitello intestinal anomalies - surgery 12 Umbilical hernia repair 13 Appendectomy. 14 Laproscopy -Diagnostic & Therapeutic 15 Biliary Atresia Surgery - Kasai's procedure etc 16 Choledochal cyst surgery 17 Surgery on pancreas - Tumours pseudocyst, And pancreatitis 18 Hepatic tumours resection, Abscess drainage, cyst excision surgery

C PAEDIATRIC UROLOGY SURGERY :

Pyeloplasty for hydronephrosis Pyelolithotomy renal stones Ureteric reimplantation Uretero lithotomy Ureterostomy Cystolithotomy Nephrectomy Nephrostomy Orchidectomy for tumours and Exploration Partial nephrectomy Bladder diverticulum excision Posterior Urethral valves -fulguration, excision, urinary diversion, External & internal with colonic conduit, uretero sigmoidostomy etc Urinary undiversion Operation for torsion Testis Circumcision Orchidopexy Hypospadias repair Ectopia vesicae surgery Vesicostomy urethral stricture surgery

D PAEDIATRIC THORACIC SURGERY:

Oesophageal Dilation, Oesophagoscopy & Foreign body removal Techniques Bronchoscopy
* Foreign body removal techniques, pleural drainage Thoracotomy for excision of Duplicity cyst, CAM resection, pneumonectomy Thoracotomy for tumour excision Decortication and pleural toilet

E PAEDIATRIC ONCOLOGY SURGERY:

Hepatoblastoma -Hepatic resection surgeries Neuroblastoma Rhabdomyosarcoma Wilm's Tumour - Nephro ureterectomy Adrenal Tumours, S.C. Teratoma Ovarian Tumours Testicular Tumours Other Soft Tissue Sarcoma Miscellaneous Chemotherapy for all solid tumours.

F GENERAL PAEDIATRIC SURGICAL CASES

Undescended testis Inguinal Hernia Phimosis Cut downs, Abscess Drainage .Thyroglossal cyst & fistula Bronchial fistula Excision of Lymphangioma and cystic hygroma Vascular tumours & A.V. Fistula, Aneurysm

G PAEDIATRIC PLASTIC SURGICAL PROCEDURES:

Cleft lip Repair-various techniques Cleft Palate Repair Hypospadias Repair Ectopea Vesicae Repair Skin graft and vascularised pedicle technique Syndactyly & Polydactyly surgery

H PAEDIATRIC NEURO SURGICAL PROCEDURES

Hydrocephalus - V.P. Shunt Procedure Encephalocele (Occipital & Nasal) Surgery Meningocele & Meningomyelocele Repair Spina Bifida Surgery

NON OPERATIVE AREAS OF TRAINING:

- *Technique of Resuscitation of the Newborn and Children
- *Antenatal diagnosis and Counseling (Intervention if possible)
- *Orientation with Internet and the Computer technology
- *Management of Day Care Surgery
- *Health Economics. junior and the senior Management
- *Paediatric Transplants (Liver,Kidney,Pancreas,Intestine,Lungs and heart)
- *Maintenance of Case records and the Library Search
- *Surgical Embryology, genetics and the gene therapy
- *Paediatric Chemotherapy regimens for Solid Tumors
- *Problems of babies with Prematurity and small for dates
- *Physiology of the Newborn and the Drug Schedules for the newborns and the Blood Exchange transfusions.
- *National health programs, Progress and Current strategies
- *Organizational capabilities to host Conference , Symposia, Workshops etc
- *Membership of National and International Pediatric Surgical Associations and Subscribing to the established Journals in the specialty.
- *Knowledge about the Progress made in Pediatric Surgery during the past few decades. (Transplants, Endoscopy, Laparoscopy, Tumor markers, antenatal diagnosis, gene therapy).