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ANNEXURE 3 (P1-24)

Agenda for Board of Studies Meeting of the Department of Surgical Gastroenterology, SGPGIMS ON 23RD APRIL 2023 at 12.00 midday - Online

REVISED SGPGIMS M.Ch. SURGICAL GASTROENTEROLOGY CURRICULUM – 2023

The Department of SGE, SGPGIMS, started an M.Ch. program in Surgical Gastroenterology in 1991, and has been successfully running the program for the last 33 years. The curriculum has been revised from time to time – the curriculum running presently is what had been approved by the MCI (now NMC) in 2021.

The Department has updated on the approved curriculum, incorporating several training and teaching modules currently in vogue at SGPGIMS, which have been duly approved by the Academic Board of the Institute.

Expected Program outcomes

At the end of M.Ch. training in Surgical Gastroenterology - the trainees should have a comprehensive theoretical knowledge base in Surgical Gastroenterology along with practical competence to enable them to function as independent clinicians with requisite teaching, training, and research skills so that they can deliver a high standard of care to the community across the entire spectrum of diseases in surgical gastroenterology. As clinicians working in the present day and age, they are also expected to understand the of need for and ability to collaborate with clinicians in multiple disciplines like gastroenterology, radiodiagnosis, radiotherapy, medical oncology, pathology etc, who would be involved in the modern-day multi-disciplinary management of patients in Surgical Gastroenterology.

Subject specific objectives

The trainee is expected to obtain

1. **Theoretical knowledge**: should have a comprehensive and deep understanding of current information on diagnosis and management of congenital and acquired, (benign and malignant), disorders of the gastrointestinal tract, liver, pancreas, spleen, abdominal wall, peritoneum, mesentery, and retroperitoneum.
2. **Clinical competence**: should be able to diagnose, investigate, manage and follow-up patients with congenital and acquired, (benign and malignant), disorders of the gastrointestinal tract, liver, pancreas, spleen, abdominal wall, peritoneum, mesentery, and retroperitoneum using modern diagnostic and therapeutic methods.
3. **Teaching skills**: Should be able to teach relevant aspects of gastrointestinal and hepato-pancreato-biliary diseases (benign and malignant) to resident doctors, junior colleagues, nursing, and para-medical staff.
4. **Research methodology**: Should be able to identify and investigate a research problem in gastrointestinal and hepato-pancreato-biliary diseases (benign and malignant) using appropriate methodology.

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5. **Group approach**: Should be able to participate in multi-disciplinary meetings with radiologists, pathologists, medical gastroenterologists, oncologists and experts from allied clinical disciplines.
6. **Attitudes including communication skills**: Compassion and empathy must reflect in his/her medical attitude. Should be able to communicate effectively with patients, colleagues and the community about gastrointestinal and hepato-pancreato-biliary diseases (benign and malignant) as well as counsel patients and relatives about various decisions during management.

Learning objectives

At the end of the M.Ch.(Surgical Gastroenterology) training, the candidate should be:

a. Able to diagnose, investigate, manage and follow up patients with gastrointestinal, and hepato-pancreatoduodenal diseases (benign and malignant) using relevant current diagnostic and therapeutic methods.

b. Able to interpret data from relevant clinical/laboratory investigations.

c. Able to describe & discuss the indications/contra-indications of common gastrointestinal and hepato-pancreatoduodenal surgical procedures for benign and malignant diseases and have the skills to perform these operations (including with minimal access techniques).

d. Able to discuss the current literature on relevant aspects of the investigative, clinical and operative and endoscopic management of gastrointestinal and hepato-pancreatoduodenal diseases (benign and malignant).

e. Aware of all sub-specialties of gastrointestinal and hepato-pancreatoduodenal surgery including transplantation.

f. Acquainted with allied and general clinical disciplines.

g. Capable of imparting basic gastrointestinal and hepato-pancreatoduodenal (HPB) surgical training.

h. Able to identify, plan, conduct and communicate research in gastrointestinal and hepato-pancreatoduodenal diseases.

i. Able to discuss and defend the ethical issues involved in the relationship between patients and peers in clinical practice and research.

Competencies

Subject specific competencies

Competencies to be acquired in the cognitive domain (knowledge)

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1. Should be able to establish rapport, obtain a complete and relevant history; and perform a thorough physical examination adapted to the patient's clinical situation to arrive at a tentative diagnosis and list of probable differential diagnosis.
2. Should be able to plan and order relevant sequential investigations and interpret their results to confirm a working diagnosis and initiate a plan of management and communicate the same to other team members and the patient and care givers.
3. Should be able to present oral and written reports that document the complete history, approved management plans, prescriptions, and consultations / referrals.
4. Should be able to communicate effectively with patients and caregivers, demonstrating a shared understanding among the patient, the health care team members, and consultants through oral and written reports.
5. Should be able to ensure continuous and uninterrupted care of the patient by proper taking over handing over of charge.
6. Should be able to obtain a proper informed consent for the planned line of management after explaining available alternatives to the patients and should be prepared to alter the plan of management based on response from the patient.
7. Should have a comprehensive understanding of principles of preparation and optimization of the patient for surgical and other procedures and to manage them in the immediate and late post-operative period as well as communicating a proper follow up plan.
8. Should be able to recognize a patient requiring urgent or emergent care, provide initial management and seek help as required.
9. Should be able to participate in health quality improvement initiatives, like engaging in safe habits including universal precautions, hand washing, participating in morbidity and mortality meetings.

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10. Should be able to collaborate as a member of a multidisciplinary team, recognize the value and contributions of all team members and actively strive to integrate in the team by understanding the principles of working of efficient teams- active listening, efficient communication, seeking help, professional conduct and self-care.
11. Should display honesty, compassion, respect and empathy for patients and relatives.
12. Should be able to recognize medico-legal issues, patient confidentiality and other regulations pertaining to medical practice.
13. Should be able to evaluate published evidence and appropriately apply it to one's clinical practice.
14. Should be able to plan a study, collect records & analyze data and discuss one's findings in comparison to available evidence.
15. Should be able to makes oral and written scientific presentations.
16. Should be able to teach relevant aspects of GI surgery to resident doctors, junior colleagues, nursing, and para-medical staff.
17. Should be able to effectively communicate with and inform the local community about gastrointestinal surgical disorders.
18. Should understand principles of hospital acquired infections and take appropriate universal precautions to prevent hospital infection.

Affective domain (attitudes and values domain)

The trainee in M.Ch. in Surgical Gastroenterology course is expected to acquire following attitudes and values.

1. Should follow ethical standards in managing patients.
2. Should be able to identify, discuss and communicate ethical issues involved in the surgeon–patient relationship.
3. Should be able to undertake self-appraisal and rectify any shortcomings.

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Psychomotor domain (skills domain)

Clinical examination

a. Should be able to take and document a comprehensive and detailed history of onset and progression of symptom/s relating to the entire spectrum of congenital and acquired (including benign and malignant neoplasms) disorders of gastrointestinal tract, liver, pancreas, spleen, peritoneum, mesentery, omentum and retroperitoneum both in the acute and elective setting.

b. Should be able to elicit and document details of all comorbid conditions, previous surgical procedures, past and current medications, and previous hospitalization and treatment.

c. Should be able to elicit and document significant relevant personal and family history.

d. Should be able to conduct a thorough physical examination relating to all major systems and document the findings.

e. Should be able to arrive at a list of differential diagnoses.

f. Should be able to formulate and conduct a plan of investigations to arrive at or confirm the diagnosis.

g. Should be able to formulate and carry out a plan of management, including consultation with clinicians in other specialties who are likely to be involved in patient management.

h. Should be able to resuscitate a patient with hemodynamic instability, respiratory distress, dehydration, dys-electrolytemia and sudden cardiac arrest.

2. Minor surgery

a. Should be able to perform minor surgical procedures after careful consideration of indications, contraindications, pre-operative preparation and operative steps.

3. Major surgery

a. Should be able to assist and perform under supervision as well as independently, commensurate with the level of training, major surgical procedures pertaining to the

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entire spectrum of congenital and acquired (including benign and malignant neoplasms) disorders of gastrointestinal tract, liver, pancreas, spleen, peritoneum, mesentery, omentum and retroperitoneum after careful consideration of indications, contraindications, pre-operative preparation and operative steps, in a graded and supervised manner and manage these patients postoperatively.

4. Intensive care

a. Should be able to recognize the need for and carry out endotracheal intubation and mechanical ventilation as well as non-invasive ventilation.

5. Endoscopic procedures

a. Should have adequate exposure to endoscopic procedures:

i. Upper GI- diagnostic endoscopy, endoscopic variceal ligation and sclerotherapy, endoscopic procedures for bleeding gastric and duodenal ulcers, dilatation of caustic strictures, placement of nasogastric and nasojejunal feeding tubes.

ii. Endoscopic ultrasound (EUS)- diagnostic, EUS guided FNAC and drainage procedures.

iii. Endoscopic retrograde cholangiopancreatography (ERCP), endoscopic stenting, endoscopic sphincterotomy, endoscopic sphincteroplasty, endoscopic stone clearance, cholangioscopy.

iv. Enteroscopy including double balloon enteroscopy.

v. Colonoscopy – diagnostic and therapeutic.

6. Radiological procedures

a. Should be able to correctly identify normal structures, variations in anatomy and pathological findings on all the routinely used imaging modalities like ultrasound, computed tomography, magnetic resonance imaging, and nuclear medicine imaging.

b. Should be able to understand the relative merits and constraints of different imaging modalities and thereby choose wisely to investigate patients presenting with disorders

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of the entire spectrum of congenital and acquired (including benign and malignant neoplasms) disorders of gastrointestinal tract, liver, pancreas, spleen, peritoneum, mesentery, omentum and retroperitoneum.

c. Should be able to correlate and integrate radiologic findings with the clinical context.

d. Should be well conversant with intervention radiological procedures like diagnostic aspiration, PCD, PTBD, diagnostic and therapeutic angiography to be able to choose and use timely.

Psychomotor domain (skills domain) will overlap with the cognitive and affective domains, as the performance of any skill will require proficiency in all three domains.

Syllabus

Basic Sciences- general topics with special reference to their application in the discipline of Surgical Gastroenterology

1. **Fluid-electrolyte and acid base disturbance:**
   a. General aspects
   b. Imbalance in GI surgical patient's physiological responses to volume and osmolality abnormalities
   c. Interpretation of blood gas analysis,
   d. Maintenance and replacement therapy, transfusion of blood and blood products
   e. Perioperative management during liver transplant
   f. Deceased donor maintenance
2. **Nutritional considerations in GI surgical patients:**
   a. Nutrient stores and body compositions
   b. Nutrient requirements
   c. Malnutrition
   d. Evaluation of nutritional status
   e. Nutritional therapy- enteral and parenteral therapy and complications of these.
3. **Wound healing**:
   a. Principles, Phases, Types of healing
   b. Factors influencing wound healing
   c. Wound dehiscence and management.
4. **Principles and disorders of hemostasis**:
   a. Normal coagulation and disorders of coagulation - investigations, diagnosis and management
   b. Principles of transfusion of blood and blood products
5. **Immunology in GI surgery**: Especially in relation to organ transplantation and GI oncology

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6. **Antibiotics:** Classes, Choice of antibiotics, Antibiotic resistance, antibiotics in transplantation.
7. **Common drugs used in GI surgery- analgesics, anti-secretory drugs, laxatives, etc.).** Drug interactions in the face of polypharmacy.
8. **Principles of infection control**
9. **Venous thromboembolism**:
    a. Etiopathogenesis
    b. Diagnosis
    c. Management
    d. Prophylaxis
10. **Pre-operative risk assessment and preparation of patient for major GI surgical procedures including a thorough understanding of performance status scales and ASA stratification.**
11. **Chemotherapeutic agents**:
    a. Overview, classes, mechanisms of action, interactions.
    b. Choice and regimens in GI surgical malignancies.
    c. Toxicity of chemotherapeutic drugs.
    d. Timing of surgery with reference to chemotherapy schedules.
12. **Transplantation**
    a. History and medico-legal issues.
    b. Brain death and donor management.
    c. Organ procurement.
    d. Classical cold preservation versus machine perfusion.
    e. THOA.
    f. Transplant immunology
    g. Principles of immunosuppression.
13. **Biostatistics, data management and research methodology**
14. **Radiodiagnosis-** basic principles relating to underlying physics and clinical application of radio-diagnostic and nuclear medicine imaging modalities including
    a. Ultrasound including intra-operative ultrasound
    b. Computerized tomography (CT)
    c. Magnetic resonance imaging (MRI)
    d. Positron emission tomography (PET)
15. **Communication-**
    a. Basic principles of effective oral and written communication with patients, colleagues and nursing and paramedical staff.
    b. Informed consent-principles
    c. Oral and written scientific presentations
16. **Medical ethics-**
    a. Basic principles.
    b. Copyright, Plagiarism, E learning and legal aspects
17. **Disease management groups or multi-disciplinary teams in GI oncology and chronic GI disorders.**
18. **Health policy issues relevant to the discipline of surgical gastroenterology.**

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Surgical Gastroenterology: Anatomy, physiology, pathology; diagnosis, investigations required, and management of congenital and acquired disorders, including benign and malignant neoplasms, relating to the entire gastrointestinal tract (esophagus, stomach and duodenum, small intestine, colon, appendix, rectum and anal canal), liver, biliary tract, pancreas, spleen, mesenteric vasculature, abdominal wall, mesentery, diaphragm, peritoneum and retroperitoneum.

Esophagus

Embryology: Developmental anatomy informing the structure and function of esophagus, Developmental defects

Anatomy: structure, relations, arterial supply and venous drainage, lymphatic drainage and lymph node stations, nerve supply and microscopic anatomy

Physiology: Normal function, normal and disordered swallowing, mechanism of gastro-esophageal reflux

Special investigative modalities: Esophageal manometry, pH metery, endoscopic ultrasound, brush cytology, vital staining

Congenital disorders: Trachea-esophageal fistulae, diverticula, cysts, webs, and rings

Acquired conditions: GERD, Barret's esophagus, caustic injuries and strictures, esophageal perforations, esophageal trauma, acquired tracheoesophageal fistula, foreign bodies

Neuromuscular disorders: diverticula, achalasia, hypertensive LES, diffuse esophageal spasm, nutcracker esophagus, ineffectual esophageal motility

Benign tumors and cysts: Leiomyomas, fibromas, schwannomas, retention and duplication cysts

Carcinoma of the esophagus: Epidemiology, symptoms, diagnosis, staging, multimodality treatment and follow up

Operative exposure, procedures: Indications, contraindications, preparation, conduct and post-operative care for

a. Cervical, thoracic and abdominal incisions for esophageal exposure
b. Thoracoscopic (VATS), laparoscopic and robotic access
c. Esophagostomy
d. Heller's myotomy
e. Fundoplication
f. Trans-hiatal esophagectomy
g. Esophagectomy with or without lymphadenectomy
h. Esophageal replacement- conduits- colon, stomach, small bowel
i. Enucleation of leiomyomas

Post-operative complications and management: Especially chylothorax, conduit necrosis, delayed conduit emptying, anastomotic leak, RLN palsy

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Stomach and duodenum

Embryology: Developmental anatomy informing the structure and function of stomach and duodenum.

Anatomy: Structure, relations, arterial supply and venous drainage, lymphatic drainage and lymph node stations, nerve supply, microscopic anatomy.

Physiology: Normal function, gastric secretions, pharmacologic regulation of acid secretion, gastric peptides, gastric barrier function, gastro-duodenal motility.

Congenital disorders: Pyloric stenosis, congenital diaphragmatic hernias, diverticulum.

Acquired conditions: Peptic ulcer disease and complications, stress gastritis, gastric hemorrhage and perforation, gastric outlet obstruction, Zollinger Ellison syndrome, H. Pylori in gastric diseases, non-ulcer dyspepsia, caustic injuries and strictures, gastric volvulus, diaphragmatic hernias, gastric trauma, foreign bodies and bezoars.

Benign tumors and cysts: Leiomyomas, fibromas, schwannomas, retention and duplication cysts.

Carcinoma of the stomach: Epidemiology, genetics, symptoms, diagnosis, staging, multimodality treatment and follow up

Gastric lymphoma: Epidemiology, symptoms, diagnosis, staging, multimodality treatment

Gastrointestinal stromal tumors: Epidemiology, symptoms, diagnosis, staging, multimodality treatment

Gastric carcinoids: Epidemiology, symptoms, diagnosis, staging, multimodality treatment

Operative procedures: Both open and Minimal access; indications, contraindications, preparation, conduct and post-operative care for

a. vagotomy
b. antrectomy
c. gastrojejunostomy
d. emergency procedures for peptic duodenal and gastric perforations
e. emergency procedures for post-endoscopic/ERCP perforations
f. partial and total gastric resections with or without lymphadenectomy
g. reconstruction after gastric resection
h. sleeve gastrectomy for morbid obesity
i. Bypass surgery for morbid obesity

Post-operative complications and management: especially post-gastrectomy syndromes-dumping, afferent loop syndrome, efferent loop obstruction, metabolic disturbances, alkaline reflux gastritis, gastroparesis, anastomotic leak

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Small intestine

Embryology- Especially embryological basis of malrotation, embryological basis of vascular supply and drainage.

Anatomy: Structure, relations, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy.

Physiology: Normal function, intestinal secretions, digestion and absorption, intestinal motility, endocrine function, immune function

Congenital disorders: Duodenal webs, stenoses, intestinal malrotation, hernias, diverticulae, Meckel's diverticulum and its complications.

Acquired conditions: intestinal obstruction and strangulation, inflammatory diseases (Crohn's disease, intestinal tuberculosis, typhoid enteritis), diverticular disease, foreign bodies, entero-cutaneous fistula, radiation enteritis, blind loop syndrome, Short bowel syndrome, pneumatosis intestinalis, short bowel syndrome, acute and chronic mesenteric ischemia.

Benign tumors and cysts: leiomyomas, adenomas, lipomas, hemangiomas, Peutz-Jeghers syndrome, retention and duplication cysts.

Malignant tumors: carcinoids, adenocarcinoma, metastatic neoplasms- symptoms, diagnosis, staging, multimodality treatment and follow up

Intestinal lymphoma: epidemiology, symptoms, diagnosis, staging, multimodality treatment

Gastrointestinal stromal tumors: epidemiology, symptoms, diagnosis, staging, multimodality treatment and follow up

Small bowel transplant: history, current status, indications, contraindications, conduct and post-operative management

Operative procedures: both open and minimal access; indications, contraindications, preparation, conduct and post-operative care for

a. resection and anastomosis- stapled and hand-sewn
b. creation of ileostomy/jejunostomy
c. reversal of ileostomy/colostomy
d. Restoration of bowel continuity.
e. Ladd's procedure for intestinal malrotation
f. Feeding jejunostomy

Post-operative complications and management: care of ileostomy/jejunostomy, stomal dysfunction, management of high output from stoma, management of short bowel syndrome

Large intestine (colon, appendix, rectum and anal canal)

Embryology- developmental anatomy informing the structure and function of large intestine

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Anatomy: anatomy of the colon, appendix, rectum (including the mesorectum), anal canal and pelvic floor -structure, relations, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy. Vascular basis of colo-rectal resections.

Physiology: normal function, recycling of nutrients and the role of colonic flora, pre and probiotics; absorptive function, colonic motility, physiology of defecation and mechanism of continence

Congenital disorders: Hirschsprung disease, duplication cysts

Acquired conditions: obstruction, volvulus and strangulation, inflammatory diseases (ulcerative colitis, Crohn's colitis, infective colitis), acute appendicitis, diverticular disease, foreign bodies, entero-cutaneous fistula, radiation enteritis, blind loop syndrome, colonic ischemia. Perianal abscess and fistula, acute and chronic anal fissure; pilonidal disease, pelvic floor disorders and chronic constipation. Fecal incontinence, recto-vaginal fistula, rectal prolapse, internal prolapse and solitary rectal ulcer syndrome (SRUS), rectocele

Special investigations: colon transit studies, anal manometry, balloon expulsion, defecography, pudendal nerve latency

Benign tumors and cysts: leiomyomas, adenomas, lipomas, hemangiomas, duplication cysts

Polyposis syndromes: Familial Adenomatous Polyposis, HNPCC, Turcot's syndrome, Cowden's disease, familial juvenile polyposis etc.- screening, diagnosis, management including counselling of family members

Colo-rectal cancer- epidemiology, genetics, inheritance, symptoms, diagnosis, staging, multimodality treatment, including the management of metastatic disease and follow up

Large Intestinal lymphoma: epidemiology, symptoms, diagnosis, staging, multimodality treatment

Gastrointestinal stromal tumors: epidemiology, symptoms, diagnosis, staging, multimodality treatment

Operative procedures: both open and laparoscopic (MIS), in the elective and emergency setting; indications, contraindications, preparation, conduct and post-operative care for

a. Colectomy -segmental, total, subtotal
b. Appendectomy
c. creation of colostomy
d. reversal of colostomy
e. anterior resection, low anterior resection, ultra-low anterior resection
f. inter-sphincteric resections
g. abdominoperineal resection
h. pelvic exenteration
i. sphincter reconstructions
j. pelvic floor repair
k. restorative proctocolectomy with pouch-anal anastomosis for ulcerative colitis and polyposis coli
l. rectopexy
m. perineal procedures for rectal prolapse

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n. hemorrhoidectomy- stapled and classical
o. lateral anal sphincterotomy
p. fistulotomy, fistulectomy, seton placement, LIFT,
q. repair of rectovaginal fistula
r. basic principles and conduct of related urologic and gynecological issues like ovarian and uterine malignancies, internal fistula, neobladder formation, tumors of the kidney, adrenal and IVC

Post-operative complications and management: care of ileostomy/colostomy; LAR syndrome, pouchitis, incontinence

Liver

Embryology- developmental anatomy informing the structure and function of the liver

Anatomy: functional segmental anatomy of the liver, various nomenclatures, relations, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy including hepatic microcirculation. Anatomical basis of liver resections. Important variations in biliary and vascular anatomy

Physiology: normal function in carbohydrate, lipid and protein metabolism; bile formation and enterohepatic circulation; bilirubin metabolism; vitamin metabolism, role of liver in normal coagulation; metabolism of drugs and toxins; liver regeneration;

Investigations : assessment of liver function- liver function tests, ICG, Scoring systems- Child-Pugh's, MELD, PELD etc

Congenital disorders: biliary atresia, Caroli's disease, inborn errors of metabolism

Infective conditions: pyogenic abscess, amoebic abscess, hydatid cyst, tubercular abscess, fungal abscess, recurrent pyogenic cholangitis; viral hepatitis and acute liver failure

Benign tumors and cysts: liver cell adenomas, focal nodular hyperplasia, hemangiomas; simple liver cyst, polycystic liver disease

Primary malignant tumors- (hepatocellular carcinoma including variants and intra hepatic cholangiocarcinoma), intra-ductal papillary mucinous neoplasm (IPMNb) - epidemiology, genetics, inheritance, symptoms, diagnosis, staging, multimodality treatment and follow up

Metastatic tumors: epidemiology, symptoms, diagnosis, and multimodality treatment

Portal hypertension (cirrhotic) : epidemiology, presentation and management of esophageal and gastric variceal bleeding.

Portal hypertension (non-cirrhotic): Extra-hepatic portal venous obstruction (EHPVO), non-cirrhotic portal fibrosis (NCPF); epidemiology, symptomatology, presentation and management.

Hepatic trauma: principles of surgical and non-surgical management

Preoperative optimization of liver function: volume assessment, portal vein embolization, preoperative biliary drainage

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Liver transplantation: history, medico-legal considerations, indications and contra-indications, organ preservation, immunologic considerations, deceased donor and living related liver transplant, anesthetic and transfusion considerations, technical considerations, complications, post-operative complications, immunosuppression and follow up

Operative procedures: both open and MIS (laparoscopic/Robotic); indications, contraindications, preparation, conduct and post-operative care for

a. anatomical and non-anatomical, minor and major hepatic resections using various techniques of vascular control, parenchymal transection
b. open and closed pericystectomy for hydatid disease; partial pericystectomy
c. donor hepatectomy
d. recipient hepatectomy
e. liver transplant
f. techniques of microvascular anastomosis
g. Surgery for portal hypertension
    a. Porto-systemic shunts (porto-caval, meso-caval, proximal splenorenal, distal splenorenal)
    b. Splenectomy and devascularization
    c. Devascularization procedures
    d. Rex shunt

Postoperative complications and management: post-hepatectomy liver failure, bile leak, sepsis, bleed; post-transplant complications- acute and chronic rejection, arterial and venous thrombosis, biliary complications, complications of immunosuppression, GVHD

Gallbladder and biliary tract:

Embryology- developmental anatomy informing the structure and function of gallbladder and bile ducts

Anatomy: anatomy of the gallbladder and extrahepatic bile ducts- relations, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy. Variations in bilio-vascular anatomy and their importance in biliary surgery

Physiology: normal function, role in bile metabolism, gall bladder motility

Special investigations: MRI including MRCP, ERCP, HIDA scans, PTC, endoscopic ultrasound

Congenital disorders: choledochal cysts, biliary atresia, Caroli's disease

Acquired conditions: gallstones and complications (acute cholecystitis, gallbladder perforation, empyema, chronic cholecystitis, XGC, adenomyosis, Mirrizzi's syndrome, gallstone ileus, CBD stones, cholangitis), intra-hepatic stones, sclerosing cholangitis

Post cholecystectomy bile duct injuries and benign biliary stricture- epidemiology, prevention, presentation and management

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Benign tumors: Gall bladder polyps, polyposis

Gallbladder and biliary cancer- epidemiology, genetics, symptoms, diagnosis, staging, multimodality treatment and follow up. Preoperative preparation and optimization of patients with biliary malignancies.

Operative procedures: both open and laparoscopic, in the elective and emergency setting; indications, contraindications, preparation, conduct and post-operative care for

a. cholecystectomy
b. cholecystectomy with CBD exploration and primary closure or T-tube drainage
c. choledochoduodenostomy
d. transduodenal sphincteroplasty
e. hepaticojejunostomy
f. extended cholecystectomy for gallbladder cancer (enbloc cholecystectomy with liver wedge and lymphadenectomy with or without CBD excision)
g. extended resections for gallbladder cancer including hepatic resections, pancreatic resections and colectomy
h. bile duct resection
i. choledochal cyst excision and Roux-en-Y hepaticojejunostomy
j. hepaticojejunostomy for post-cholecystectomy benign biliary stricture
k. hepatic resections with resection of extra-hepatic bile duct for cholangio-carcinoma

Postoperative complications and management: bile leak, sepsis, bleed, post-hepatectomy liver failure

Pancreas

Embryology- developmental anatomy informing the structure and function of pancreas with special reference to pancreas divisum and annular pancreas

Anatomy: anatomy of the pancreas- relations especially to the portal vein and SMA, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy.

Physiology: exocrine and endocrine function and the neurohormonal control of pancreatic secretion

Special investigations: tests of pancreatic function, endoscopic ultrasound, MRCP and ERCP, Octreotide receptor based scans, c-peptide result interpretation

Congenital disorders: pancreas divisum, annular pancreas

Acquired conditions: acute pancreatitis, chronic pancreatitis, autoimmune pancreatitis, groove pancreatitis

Cystic tumors of pancreas: serous cystadenoma, mucinous cystadenoma, intra-ductal papillary mucinous neoplasm (IPMN), solid pseudopapillaryneoplasms, cystic neuroendocrine tumors.

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Neuroendocrine tumors of pancreas

Pancreatic cancer- epidemiology, genetics, symptoms, diagnosis, staging, multimodality treatment and follow up

Pancreatic trauma: principles of surgical and non-surgical management

Pancreatic transplant : indications, contraindications, procedure, post operative complications, and current status

Operative procedures: both open and MIS (laparoscopic/Robotic), in the elective and emergency setting; indications, contraindications, preparation, conduct and post-operative care

a. Necrosectomy – open and VARD
b. Lateral pancreatojejunostomy
c. Frey's procedure
d. Distal pancreatectomy- with or without spleen preservation
e. Pancreatoduodenectomy – classical and pylorus preserving/pylorus resecting
f. Vascular resections and reconstruction in pancreatoduodenectomy
g. RAMPS in pancreatic cancer

Post-operative complications and management: especially post-pancreatectomy hemorrhage, pancreatic leak and fistula, delayed gastric emptying, bile leak and sepeis.

Spleen:

Embryology: developmental anatomy informing the structure and function of spleen

Anatomy: relations, arterial supply and venous drainage, lymphatic drainage, nerve supply, microscopic anatomy.

Physiology: splenic function relating to hematopoiesis, immune functions, defense and cleansing

Benign cysts and tumors: parasitic and non-parasitic cysts, pseudocysts, splenic abscess

Hematologic indications for splenectomy: ITP, hereditary spherocytosis, hemolytic anemias, sickle cell disease and thalassemia; leukemias

Malignant tumors: lymphomas, hemangiosarcomas, lymphangiosarcomas, metastases

Splenic trauma: principles of surgical and non-surgical management

Operative procedures: both open and MIS (laparoscopic and robotic), in the elective and emergency setting; indications, contraindications, preparation, conduct and post-operative care

a. Splenectomy
b. Partial splenectomy

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Post-operative complications and management: hemorrhage, post-splenectomy sepsis, pulmonary complications, pancreatic fistula, gastric fistula.

Abdominal wall, peritoneum, mesentery, retro-peritoneum: management of abdominal wall hernias (umbilical, epigastric, inguinal, incisional, other rare); cysts, benign and malignant tumors; ascites, pseudomyxoma peritonei, and Hyperthermic intraperitoneal chemotherapy (HIPEC).

Bariatric and metabolic surgery: principles, indications, contraindications, operations and techniques, post-operative complications and management

Teaching program at SGPGIMS

a. Primarily self-directed but supervised and guided
b. Based primarily on clinical and academic work
c. Skills oriented
d. Graded and supervised patient care and management as the keystone of training to enable gradual acquisition of proficiency in
    a. History taking
    b. Clinical examination
    c. Diagnosis and differential diagnosis
    d. Planning of investigations for diagnosis and treatment planning
    e. Formulation of management plan
    f. Communication of details of diagnosis and planned treatment to patient and care givers as well as colleagues and supervising consultants
    g. Resuscitation and stabilization of patients in emergency
    h. Preparation of patient for surgical intervention
    i. Assisting at operations, performing operations under supervision and finally independently
    j. Immediate, early and late post-operative management and follow up
e. **Supplemented with formal sessions**- every day from Monday to Saturday, 8.00AM to 9.00 AM
    a. **Journal club**- once a week
    b. **Seminars** – once a week
    c. **Case presentation**- once a week
    d. **Didactic lectures**- once in one-two months
    e. **Audit sessions**- once a week
    f. Inter-departmental presentations and discussions
        i. **Gastro-radiology** sessions- once a week
        ii. **Gastro-pathology** sessions- once in two months
        iii. **Gastro- radiotherapy** sessions- once in a month
        iv. **Gastro- nuclear medicine** sessions- once in a month

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v. **Invited faculty lectures** from other disciplines- once in one or two months
vi. **Clinical grand rounds**- once a week

g. Preparation of papers and posters for presentation at local, regional, national and international conferences and meetings-mandatory (at least one conference per year)
h. Data collection, analysis and writing a paper on one designated clinical project under supervision of a faculty member-mandatory (at least one paper)
i. Maintaining a **log book** with records of all presentations and operations assisted and performed

f. Foundation course of the institute for all DM/Mch candidates- mandatory introductory, comprehensive, two-weeks long program at the start of the course

a. Introduction to the institute, hospital and residency program
b. Do's and don'ts of residency program
c. Legal aspects of medical practice
d. Collection of specimens for pathology and microbiology
e. Universal precautions and lab safety
f. Needle prick injuries and their management
g. Transfusion practices and transfusion safety
h. Radiation safety
i. Basics of power point presentations
j. Communication in medicine
k. Prevention of hospital infection
l. How to present a journal club/seminar/ mortality
m. Recording information in the death certificate
n. Communication with patients: understanding human behavior and response to illness
o. Case presentation
p. Dos and don'ts of good clinical practice
q. Clinical and surgical record keeping
r. Clinical audit
s. Health economics and pharmacoeconomics: treating patients in resource poor countries
t. Choosing and planning a research project
u. Introduction to clinical studies and study designs
v. Introduction to drug trials
w. Introduction to literature search
x. Using PUBMED, library resources
y. Introduction to medical ethics
z. Institute bio-ethics cell, how to fill IEC forms
aa. Introduction to Patient safety
bb. Relationship with industry
cc. Introduction to laboratory research
dd. Basic laboratory and pathology techniques

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g. **01 courses conducted by the institute regularly in each semester– students require 8 credits to appear in the exit examination**
   a. **Biostatistics-mandatory**
   b. **Bioethics- mandatory**
   c. Scientific communication
   d. Basic immunology for clinicians
   e. Outreach community programs
   f. Academia and industry
   g. Patient safety
   h. Social media in medicine
   i. Principles of genetic testing in clinical practice

Needs: Local : Pink, National : Orange, Regional: light blue, International : green

Issues/diseases/health conditions in Program Course which are the matter of prime focus at local (state), national, regional (South East Asia or Asia), or international levels.

Local level	1. **Gallbladder Cancer** (A very common disease in Uttar Pradesh and the entire Gangetic plain) 2. **Gall stone disease and its complications** (A very common disease in Uttar Pradesh) 3. **Hydatid cysts of the liver** (A very common disease in Uttar Pradesh) 4. **Post-operative enterocutaneous fistula** (referred cases from throughout the state of Uttar Pradesh) **5. Colo-rectal cancer** **6. Pancreatic cancer** **7. Cancer of esophagus and stomach** 8. **Extra-hepatic portal venous obstruction (EHPVO)** leading to portal hypertension and sequelae (the most common cause of portal hypertension in children and young adults) **9. Liver transplantation**
National level	1. **Gallbladder cancer** (India has one of the highest incidences of gallbladder cancer, especially in women) 2. **Gallstone disease and complications** (The most common abdominal operation is cholecystectomy) 3. **Post-cholecystectomy bile duct injuries** (are a very common problem because of the large number of cholecystectomies done in the country) 4. **Surgery for portal hypertension-EHPVO**: (the most common cause of portal hypertension in children and young adults in the entire country) 5.
Regional level	1. Gallbladder carcinoma- epidemiology, registration,

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	investigation into geographical and environmental factors, development of biomarkers for early diagnosis 2. Cholangiocarcinoma (a very common condition in the entire south east Asia)
Global level	1. All the diseases covered in the course of the MCh program (Surgical gastroenterology) are relevant to the global health issues

The M.Ch. examination: shall be in two parts:

1. **Theory:** There shall be four theory papers as follows:

Paper I: Basic Sciences as applied to Surgical Gastroenterology

Paper II: Clinical and operative Surgical Gastroenterology

Paper III: Surgical Gastroenterology including Transplantation and Minimal Access surgery.

Paper IV: Recent advances in Surgical Gastroenterology

The theory examination shall be held in advance before the clinical and practical examination, so that the answer books can be assessed and evaluated before the commencement of the clinical/practical/oral examination.

2. **Practical**: The practical examination should consist of the following and should be spread over two days, if the number of candidates appearing is more than one.

a. Four cases from various sections of Surgical Gastroenterology: History taking, physical examination, interpretation of clinical findings, differential diagnosis, investigations, management plan and prognosis.

b. Ward rounds comprising of discussion of practical problems in the management of patients undergoing Gastroenterology Surgery.

c. Viva-voce examination

- Instruments
- Radiology

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- Surgical Pathology
- Operative surgery
- Videos
- Logbook

3. Theory and Practical examination will be conducted as per University guidelines.

Other recommendations:

1. Systematic and periodic formative assessment done every 6 months and feedback be given to trainee.

Recommended books

1. Blumgart's Surgery of the Liver, Biliary Tract and Pancreas, Seventh Edition. Available from https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20201018470 (accessed 23 April 2023)
2. Hepatobiliary and Pancreatic Surgery: A Companion to Specialist Surgical service. Available from https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20160002632. (Accessed 23 April 2023)
3. Oesophagogastric Surgery: A Companion to Specialist Surgical Practice. Available from https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20160002644. (Accessed 23 April 2023)
4. Sabiston Textbook of Surgery. Available from https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20170043124. (Accessed 23 April 2023)
5. Shackelford's Surgery of the Alimentary Tract. Available from https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20151008547. (Accessed 23 April 2023)
6. Transplantation of Liver. Available from

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https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20100663474. (Accessed 23 April 2023)

1. Atlas of gastrointestinal surgery- Cameron- 2nd edition
2. Zollinger's atlas of surgical operations
3. Clavien – Atlas of Operative Surgery - Upper GI and HPB
4. Atlas of laparoscopic GI Surgery- Palanivelu
5. Gastroenterology – Slesinger and Fordtran- 11th edition
6. Esophagogastric surgery- Peter J Lamb 2023
7. Esophagus –Pearson
8. Surgery of the Esophagus - Jamieson
9. Shakelford's Surgery of the Alimentary tract- 8th edition
10. Blumgart's surgery of the Liver, Biliary Tract and Pancreas- 7th edition
11. Colorectal diseases- Corman; SVE Clark 2023
12. Gastrointestinal pathology
13. Gastrointestinal radiology
14. Sabiston's textbook of Surgery
15. Maingot's Abdominal operations
16. Busuttil RW: Liver Transplantation.
17. Fan ST: Living donor liver transplantation.
18. Bockus H.L. : Gastroenterology
19. Cotton and Williams : Practical Gastroenterological Endoscopy
20. Cuschieri and Berci : Laparoscopic Biliary Surgery
21. DeVita, Lawrence, and Rosenberg's Cancer: Principles and Practices of Oncology
22. Goligher J.C.: Surgery of the Anus, Rectum and Colon
23. Haribhakti S Surgical Gastroenterology 3rd Edition
24. Keighley M.R.B.: Surgery of the Anus, Rectum and Colon
25. Michael Trede : Surgery of the Pancreas
26. Mishra PK Textbook of Surgical Gastroenterology (2 Volumes)
27. Nyhus, Baker and Fischer : Mastery of Surgery
28. Rob and Smith's Operative Surgery
29. Sabiston Textbook of Surgery- The Biological Basis of Modern Surgical Practice
30. Sherlock and Dooley: Diseases of the Liver and Biliary System
31. Zuidema and Shackelford :Shackelford's Surgery of the Alimentary Tract

JOURNALS

- Alimentary Pharmacology and Therapeutics
- American Journal of Gastroenterology
- Annals of Surgery
- BMC Surgery
- British Journal of Surgery

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• Clinical Gastroenterology and Hepatology

Recommended journals

• Current Problems in Surgery

• Current Opinion in Gastroenterology

• Digestive Surgery

• Disease of Oesophagus

• Diseases of Colon and Rectum

• Gastroenterology

• GI Surgery Annual

• Gut

• Hepatology

• JAMA Surgery

• Lancet

• Liver Transplantation

• New England Journal of Medicine

• Recent Advances in Surgery: UK and Indian Editions

• Surgery Today

• Transplantation

• Tropical Gastroenterology

• Journal of Gastrointestinal Surgery

Web resources: These could include UpToDate, Clinical Keys, etc.

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