

Guidelines
For
Competency Based Training Programme
DrNB- Surgical Gastroentrology
2021



NATIONAL BOARD OF EXAMINATIONS IN MEDICAL SCIENCES
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I. INTRODUCTION

Surgical Gastroenterology is a sub-specialty dealing with the management of benign and malignant diseases related to the human gastrointestinal tract involving the organs namely esophagus, stomach, pancreas, liver, gall bladder and biliary tract, small and large intestine, rectum and anus.

It is a well-recognized specialty today. Diseases of the GI system are among the most common disorders in India. The National Board of Examinations, recognizing the need and the importance of GI surgery (including GI Surgical Oncology), has established a DrNB examination in Surgical Gastroenterology (including GI oncology).

This DrNB programme will fulfill the 3 objectives of good surgical training, namely, patient care, teaching and research.



II. PROGRAMME GOAL

The goal of the training program in the Surgical Gastroenterology (Including GI Oncology) is to produce a surgeon who can provide tertiary care for patients with complicated problems related to the gastrointestinal tract and related organs. At the end of the training, the trainee should be:

- i. A competent and caring surgeon who follows high standards of ethical practice.
- ii. A thinking surgeon who applies his knowledge based on best current evidence, to the problems of gastrointestinal surgery (Benign and Malignant).
- iii. A competent surgeon who performs complicated major surgery
- iv. A good teacher who shares his skills and knowledge with his colleagues
- v. One who constantly updates his knowledge and skill



III. PROGRAMME OBJECTIVES

In order to achieve the above goals, the following objectives are laid down

- i. Knowledge (cognitive)
- ii. Skills (psychomotor)
- iii. Attitudes, Ethical principles, Communication and Rational thought (affective)

At the end of the training programme the trainee should be able to:

1. Knowledge

- i. Understand etiology, pathophysiology and diagnose gastrointestinal surgical problems (including GI Oncology) on the basis of history and clinical examination.
- ii. Interpret laboratory investigations, endoscopic and radiological findings in a logical manner and arrive at a reasonable diagnosis.
- iii. Advise the patient appropriate treatment on the basis of (a) and (b) above
- iv. Be proficient in the proper selection of patients for surgery, the timing of surgery and preoperative work up and post-operative care.
- v. Manage emergency situations related to the gastrointestinal system, such as gastrointestinal bleeding, acute abdomen, abdominal trauma, etc.
- vi. Be proficient in monitoring and management of the critically ill patient.
- vii. Continuously update knowledge and skills, and keep abreast of the latest advances
- viii. Teach undergraduate and postgraduate students.
- ix. Carryout medical research i.e. plans clinical trials and laboratory research.

2. Skills

- i. Perform diagnostic and therapeutic endoscopic procedures.
- ii. Perform elective complex gastrointestinal surgery such as porta-systemic shunts, pancreato-duodenectomies, esophageal resections, etc., and have exposure to laparoscopic and minimally invasive surgery
- iii. Proficient and preoperative work up and post-operative care of the surgical patient, including invasive monitoring.



3. Ethical Principles

- i. Follow-up high standards of ethical practice
- ii. Respect patient's right and privileges, his/her right to information and
- iii. Right to seek second opinion
- iv. Be able to work as member of a team and also provide leadership where necessary



IV. TEACHING AND TRAINING ACTIVITIES:

The fundamental components of the teaching programme should include:

- i. Case presentations & discussion- once a week
- ii. Seminar/ Webinars – Once a week
- iii. Journal club- Once a week
- iv. Grand round presentation (by rotation departments and subspecialties)- once a week
- v. Faculty lecture teaching- once a month
- vi. Clinical Audit-Once a Month
- vii. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) interesting and difficult case unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

1. **Theoretical:** The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and webinar/seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the
2. **Symposia:** Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.
3. **Clinical:** The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.
4. **Bedside:** The trainee would work up cases, learn management of cases by discussion with faculty of the department.



5. **Journal Clubs:** This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.
6. **Research:** The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research. Students should attend workshops organized by national board of examinations.
7. **Simulation and Skill acquisition.** The student should be encouraged to work in skill/ simulation labs for surgical skills like basic and advanced laparoscopic skills, intestinal anastomosis skills, arterial anastomosis skills and stapling skills. subject in the undergraduate curriculum.



V. SYLLABUS

Each candidate is expected to acquire a thorough knowledge of the organs of the GI tract as regards anatomy, physiology, pathology of various diseases congenital/ acquired/ traumatic vascular/ neoplastic and their detailed principles of management both medical and surgical. For the management of malignant diseases, the candidates are supposed to be acquainted with general oncological principles, various investigative approaches and different modalities of adjuvant treatment employed (e.g. chemotherapy, radiotherapy, immunotherapy etc.).

- i. Approach to a Patient of Digestive Disease
- ii. Gastrointestinal Imaging
- iii. Infections and Antibiotics in Gastrointestinal Surgery
- iv. Nuclear Medicine Imaging in Gastrointestinal Diseases and GI Oncology
- v. Radiation Therapy
- vi. Minimal Access Surgery in GI Surgery and GI Oncology
- vii. Chemotherapy Principles and Techniques for Gastrointestinal Cancers
- viii. Nutritional Support to Hospitalized Patients
- ix. Research Methodology, Data Science Management and Statistics for Surgeons
- x. Interventional Radiology of the Gastrointestinal Tract and Hepatobiliary System

1. BASIC SCIENCES AND PRINCIPLES OF SURGICAL GASTROENTEROLOGY and GI ONCOLOGY

- i. Anatomy - Gross and histological anatomy of the abdomen and its contents including entire GI tract, Liver (including segmental anatomy), Biliary tract, Pancreas, spleen, portal and Hepatic venous system.
- ii. Physiology - Normal function of GI tract and related organs including endocrine functions of gut and pancreas. Physiological basis of various tests to study these functions
- iii. Pharmacology of drugs used in GI surgical disorders e.g. to control acid secretion in the management of ulcerative colitis and immunosuppressive drugs.
- iv. Fluid -electrolyte and acid base disturbance- general aspects, imbalance in GI surgical patient's physiological responses to volume and osmolality abnormalities, interpretation of blood gas analysis, maintenance and replacement therapy.
- v. Nutritional considerations in GI surgical patients. - nutrient stores and body compositions, nutrient requirements, malnutrition, evaluation of nutritional status., nutritional therapy, enteral and parenteral therapy and complications of these.
- vi. Wound healing- Principles, Phases, types of healing, influencing factors on wound healing, wound dehiscence and management. • Principles and disorders



of hemostasis.

- vii. Immunology in GI surgery. Especially in relation to organ transplantation and GI Oncology

2. Esophagus

- i. Anatomical detail, physiology of swallowing, esophageal manometry, pH monitoring, endoscopic ultrasound and other diagnostic techniques, brush cytology, vital staining, contrast imaging and CT scan,
- ii. Congenital lesions (TOF), Zenker's diverticulum, epiphrenic diverticulum, esophageal trauma, rupture-spontaneous or iatrogenic, corrosive burns-detection, evaluation and management, esophageal motility disorders
- iii. Gastroesophageal reflux disease, achalasia. Barrett's esophagus, esophageal cancer- adeno & squamous, various esophageal operations- diverticulectomy, excision of leiomyoma, esophagostomy, myotomy, fundoplication, esophageal resection (Ivor-Lewis, McKeown, Trans-hiatal, thoracoscopic)
- iv. Cervical exploration, oesophagogastronomy, gastric pull-up, gastric and colonic bypass, complications of oesophagectomy, management of chylothorax.

3. Stomach and Duodenum

- i. Anatomical details, physiology of gastric secretions, gastroduodenal motility, diaphragmatic hernia (congenital and acquired), volvulus, pyloric stenosis in children and adults, foreign bodies (bezoars), stomach trauma,
- ii. H.Pylori in gastric diseases, peptic ulcer, Zollinger-Ellison syndrome, NUD
- iii. Gastric tumours benign and malignant, gastric surgery-vagotomy pyloric drainage gastrojejunostomy
- iv. Bariatric gastric tube creation, Roux-en-Y oesophagojejunal anastomosis, post gastrectomy syndromes and complications

4. Biliary System

- i. Detailed anatomy, bile physiology, enterohepatic circulation, acute cholecystitis, chronic cholecystitis, acalculus cholecystitis, gall stones- pathogenesis and presentation
- ii. CBD stones CBD stricture, cholangitis, sphincter of Oddi (SOD) dysfunction and biliary dyskinesia, cholecystopathies, post cholecystectomy syndromes, choledochal cyst, polyps of GB, carcinoma of gall bladder, cholangiocarcinoma, parasitic infestations of biliary tree, cholecystectomy-open and laparoscopic
- iii. CBD exploration and drainage, biliary bypass radical cholecystectomy, choledochal cyst excision, primary sclerosing cholangitis endoscopic biliary interventions and stenting hemobilia.

5. Liver Segmental

- i. Anatomy in detail, liver function and tests, liver regeneration, liver failure-diagnosis and management, liver abscess cysts, benign and malignant tumours (HOC, intrahepatic cholangiocarcinoma, hemangioma, FNH adenoma), cirrhosis,



PBC, viral hepatitis, radiological imaging modalities (US, CECT, Lipiodol CT, Dynamic CT, MR imaging and radionuclide scanning), percutaneous trans hepatic biliary drainage and cholangiography.

- ii. Liver biopsy, portal hypertension (cirrhotic and non-cirrhotic causes), hepatic venous outflow obstruction, Shunt surgery (Proximal lienorenal shunt, cavoatrial, mesocaval, portocaval-side to side), splenectomy and devascularisation, liver resecting-anatomic and non-anatomic, liver trauma, hepaticojejunostomy, seg III bypass, Orthotopic liver transplantation, liver related transplantation, Caroli's disease, hemobilia.

6. Liver Transplantation

- i. History of Liver Transplantation
- ii. Liver Transplantation in India
- iii. Indications and Contraindications for Liver Transplantation
- iv. Organ Preservation in Liver Transplant
- v. Anesthetic Management in Liver Transplantation
- vi. Immunology of Liver Transplantation
- vii. Pediatric Liver Transplant
- viii. Liver Transplantation in Acute Liver Failure
- ix. Deceased Donor Liver Transplantation
- x. Living Related Liver Transplantation
- xi. Complications in Living Donor Liver Transplantation

7. Pancreas

- i. Anatomy, physiology, pancreatic ductal anomalies, acute pancreatitis, chronic pancreatitis calcific, tropical and alcoholic; endocrine tumours, exocrine tumours of pancreas, pancreatic malignancies, cystic neoplasms; pseudocysts of pancreas, haemosuccus pancreaticus.
- ii. Pancreatic operations: Pancreatic neresectomy, pseudocysto gastrostomy/jejunostomy, pylorus preserving pancreatoduodenectomy, duodenum preserving pancreatic head resections (Frey's, Beger's), distal pancreatectomy, regional pancreatectomy, total pancreatectomy, lateral pancreaticojejunostomy, Whipple's, pancreatic transplantation.

8. Peritoneum

- i. Omentum, Retroperitoneum Recesses, reflections, subdiaphragmatic spaces, peritonitis
- ii. Primary secondary and tertiary, tuberculosis, mesenteric cyst, pseudomyxoma peritonei, ascites (diagnosis, investigation and management), retroperitoneal tumors, inguinal hernia, ventral hernias, peritoneoscopy



9. Spleen

- i. Anatomy, splenic function, haemolytic anaemias, splenomegaly hypersplenism, splenic trauma, cysts and granulomas, physiological effects of splenectomy, OPSI, splenic vein thrombosis, splenic artery aneurysms, splenectomy, splenic preservation.

10. Small Intestine

- i. Mesenteric vascular anatomy, intestinal physiology, Ladd's band, malrotation, volvulus, hernia, intestinal obstruction, ileocaecal TB, lymphoma, Benign and malignant tumors of small intestine,
- ii. Meckel's diverticulum, intussusception, small bowel gangrene, intestinal resections, lengthening and transplantation, mesenteric ischaemia, short gut syndrome, small bowel fistulae,
- iii. Crohn's and other inflammatory bowel diseases enteral feeding, home/parenteral nutrition.

11. Colon, Rectum and Anal Canal

- i. Anatomy, physiology. colonic motility, physiology of defecation and anal continence; Hirschsprung's disease, anorectal malformations, rectal prolapse, SRUS, pseudo-obstruction (Ogilvie syndrome), descending perineum syndrome, anismus and constipation, anal incontinence;
- ii. Haemorrhoids, fissure, fistulae and anal stricture; polyps and other benign tumors hereditary and familial polyposis syndrome, ulcerative colitis and Crohn's amoebic colitis, ischemic colitis, diverticulitis, lower GI hemorrhage, carcinoma of the colon, rectum, anal canal
- iii. Operations- APR, anterior resections, segmental colectomies, pelvic exenterations, colostomy, ureterosigmoidostomy, hemicolectomies, urinary diversions, surgery for anal incontinence, rectal prolapse and complex fistulae, restorative proctocolectomy and ileoanal pouch anastomosis

12. General Topics

- i. Tumour genetics- oncogenes, tumor markers, Systemic Inflammatory Response Syndrome (SIRS), multiple organ dysfunction syndrome (MODS), immunology in relation to transplantation and rejection, intensive care and respiratory support,
- ii. Surgical nutrition- parenteral and enteral, iatrogenic complications of surgery like enterocutaneous fistulae, biliary strictures, intrabdominal sepsis/collections, AIDS, hepatitis and surgeons, renal failure, shock, disorders of coagulation, Surgery for morbid obesity

13. Miscellaneous

- i. Variceal Upper Gastrointestinal Bleeding Management of Nonvariceal Hemorrhage
- ii. Approach to the Management of Lower Gastrointestinal Hemorrhage
- iii. Bariatric and Metabolic Surgery



- iv. Robotics in Gastrointestinal Surgery
- v. Tumor Markers in Gastrointestinal Malignancy Chylous Ascites
- vi. Acute Postoperative Pain and its Management in Major Abdominal Surgeries
- vii. Telemedicine: Principles and the Surgery for Portal Hypertension
- viii. System based approach and
- ix. Role of Disease Management Groups (DMG) or Multi-Disciplinary Teams (MDT) for GI Oncology and Chronic GI disorders

14. Liver Transplant Programme

Each resident is expected to be conversant with the Departmental protocols (viz. recipient selection and workup, pre-transplant evaluation, Indian brain death law, brain dead donor management - before and during retrieval, donor harvesting procedure, recipient management - operative and post-transplant care and follow up).

- i. Biostatistics, Data management, Research Methodology and Clinical Epidemiology
- ii. Ethics
- iii. Medico legal aspects relevant to the discipline
- iv. Health Policy issues as may be applicable to the discipline

15. Competencies

- i. Perform basic endoscopic procedures
- ii. Perform elective and emergency complex gastrointestinal surgery such as porta-systemic shunts, pancreato-duodenectomies, esophageal resections, Gastro Intestinal Cancers etc., and have exposure to laparoscopic and minimally invasive surgery
- iii. Proficient and preoperative work up and post-operative care of the surgical patient, including invasive monitoring

16. Ethical Principles

- i. Follow-up high standards of ethical practice
- ii. Respect patient's right and privileges, his/her right to information and
- iii. right to seek second opinion.
- iv. Be able to work as member of a team and also provide leadership where necessary



VI. TEACHING & LEARNING METHODS

Teaching method and learning methods will include

1. Ward and outpatient management.
2. Learning correct surgical technique
3. Assisting and performing operations.
4. Gastrointestinal surgery teaching rounds
5. Combined surgical gastroenterology and medical gastroenterology teaching rounds, Multi-Disciplinary Teams (MDT) meetings
6. Formal case presentations and discussions
7. Topic discussion in which a topic relating to a problem in management is discussed
8. Journal club (weekly)
9. Research Review (monthly)
10. Guest and in-house lectures
11. Participation in conferences, workshops, CMEs (conducted by NBE, other institutions etc.), seminars
12. Surgical Audit (weekly morbidity and mortality meeting)



VII. CLINICAL PROCEDURES

Surgical procedures, candidates are expected to perform or assist:

1. Esophagus • Heller's Operation • Fundoplication • THE + GPU • TTE + GPU • Colonic pull up
2. Stomach and Duodenum • Billroth I & II gastrectomy • Radical gastrectomy
3. Small Intestine • Resection and anastomosis • Ileostomy closure • Feeding jejunostomy
4. Large Intestine • Rt hemicolectomy • Lt hemicolectomy • APR • Ant. Resection • Restorative Proctocolectomy • Ileal J Pouch and anastomosis
5. Pancreas • Pancreatic Necrosectomy • Cysto-gastrostomy/jejunostomy •
6. Lateral pancreatico-jejunostomy • Whipple's procedure
7. Biliary surgery • Open cholecystectomy • Radical cholecystectomy • CBD Exploration/CDD • Hepatico-jejunostomy Roux-en-y • Segment III HJ
8. Portal Hypertension • Splenectomy+ Revascularization • Proximal Lienorenal shunt • Portocaval / Mesocaval shunt
9. Liver Surgery • Major hepatic resection • Wedge resections • Hydatid cyst excision
10. Others • Diagnostic Laparoscopy • Perianal Procedures Recommended



VIII. LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s)) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

- i. Personal profile of the candidate
- ii. Educational qualification/Professional data
- iii. Record of case histories
- iv. Procedures learnt
- v. Record of case Demonstration/Presentations
- vi. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
- vii. In the absence of production of log book, the result will not be declared.

Portfolio (Optional) Institutions can ask candidates to maintain electronic portfolio for all educational activities with teacher's feedback



IX. RECOMMENDED TEXT BOOKS AND JOURNALS

BOOKS

1. Blumgart L.H.: Surgery of the Liver, Pancreas and Biliary Tract
2. Bockus H.L.: Gastroenterology
3. Cotton and Williams: Practical Gastroenterological Endoscopy
4. Cuschieri and Berci: Laparoscopic Biliary Surgery
5. DeVita, Lawrence, and Rosenberg's Cancer: Principles and Practices of Oncology
6. Goligher J.C.: Surgery of the Anus, Rectum and Colon
7. Haribhakti S: Surgical Gastroenterology 3rd Edition.
8. Keighley M.R.B.: Surgery of the Anus, Rectum and Colon
9. Maingot's Abdominal Operations
10. Michael Trede: Surgery of the Pancreas
11. Mishra PK: Textbook of Surgical Gastroenterology (2 Volumes)
12. Nyhus, Baker and Fischer: Mastery of Surgery
13. Rob and Smith's Operative Surgery
14. Sabiston Textbook of Surgery- The Biological Basis of Modern Surgical Practice
15. Sherlock and Dooley: Diseases of the Liver and Biliary System
16. Zuidema and Shackelford: Shackelford's Surgery of the Alimentary Tract

JOURNALS

1. American Journal of Gastroenterology
2. British Journal of Surgery
3. Current Problems in Surgery
4. Digestive Surgery
5. Disease of Colon and Rectum
6. Gastroenterology



7. GI Surgery Annual
8. Gut
9. Hepatology
10. Journal of Endoscopy
11. Lancet
12. Liver Transplantation in Surgery
13. New England Journal of Medicine
14. Recent Advances in Surgery: UK and Indian Editions
15. Surgery Today
16. Transplantation
17. Tropical Gastroenterology
18. World Journal of Gastrointestinal Surgery
19. World Journal of Surgery

