MINIMAL INVASIVE SURGERY (MIS)

SYLLABUS - KNOWLEDGE

The Minimal Invasive Surgery (MIS) syllabus comprehensively describes "**Knowledge**" and "**Knowledge and Skills**" (= basis for an individual "Log-book") mandatory for the qualification **as F.E.B.S./MIS**.

The syllabus is at this time not a complete curriculum that gives a structured educational plan but provides a crude orientation and a framework around which preparation for the qualification as F.E.B.S./MIS can be structured.

The syllabus should not be viewed as static but will be continuously revised and updated by the members of the committee. It is noted, that research and changes in medicine may lead to significant changes in theory and clinical practice and by that will influence the content of the syllabus. New topics will be introduced and obsolete topics may be deleted. The candidates are expected to update their level according to the recent surgical practice and scientific literature.

To achieve the qualification as F.E.B.S./MIS "**Knowledge**" have to be documented and provided for **Eligibility** and are assessed by **Examination**.

"Knowledge and Skills" have to be documented and proved in the log-book for Eligibility and may be additionally assessed by examination. For pragmatical reasons the individual log-books are scrutinized in the Eligibility process taking into consideration the various national requirements and local situations.

By that provisional arrangements are provided: if e.g. "flexible endoscopy" is not part of MIS in a distinct country, the candidate may omit this section in "Knowledge and Skills" without consequences for the Eligibility process, but approval of "Knowledge" in e.g. "flexible endoscopy" will be mandatory for the Examination. This procedure is also valid for e.g. "bariatric surgery" or "pancreatic surgery" and others.

The MIS surgeon is an expert in performing various surgical interventions in the abdominal and thoracic cavity through minimal access. Due to the wide range of indications and procedures encompassed in this field, it is essential for the MIS specialist to undergo continuing medical education and technological training. Besides preoperative work-up and selection of patients the successful MIS procedure strongly depends on safely and optimally placed entry trocars to access the operative field.

In the major field of hernia surgery it is important to have knowledge in mesh types and structures as well as fixation devices.

Gallbladder removal in chronic and acute stages is a domain of MIS and should be safely achieved in >90% of unselected cases. Intraoperative access to radiologic examinations (cholangiography) must be provided by the surgical team also in the acute situation.

The MIS surgeon and the team have to be trained in managing intraoperative bleeding situations and in rapid conversions to open surgery. Basic training facilities (black box, pelvi- trainer) have to be accessible in spezialized MIS units/departments.

Videodocumentation of MIS procedures is an essential prerequisite for training, certification and quality control in surgical units performing MIS operations.

(Video) Endoscopy is another integral part of planning and performing laparoscopic/thoracoscopic interventions, increasingly more often done synchronously as combined access procedures.

Eligibility for "MIS centers" is ususally defined by national surgical societies referring to number of procedures/endoscopies per year, number of specialized surgeons, adequate documentation, education and quality control.

If malignant diseases are treated by MIS it is essential for the MIS surgeon to cooperate with a multi-disciplinal team ("Onco-Board") in order to guarantee optimal oncological outcome.

Knowledge

The specialty of Minimal Invasive Surgery requires documented and assessed **knowledge** in:

Preoperative Management

- Physical examination
- Exact information on previous operations including mesh or other implants
- Tests of respiratory, cardiac, renal and endocrine function
- Patient information and documentation of informed consent
- Prophylaxis of thromboembolic disease
- Assessment of fitness for anaesthesia and surgery
- Premedication and sedation

Intraoperative Care

- Patient positioning (including extreme anti-Trendelenburg and other positions)
- Prevention of nerve and other injuries in the anaesthetised patient
- Principles of general and regional anaesthesia

Postoperative Management

- Pain control
- Post-operative monitoring
- Post-operative complications
- Prevention, recognition and management of complications
- Respiratory failure-recognition and treatment
- Nutritional support-indications, techniques, total parenteral nutrition

Basic Minimal Invasive Surgical Technique and Technology

- Patients' positioning
- Surgical instruments and technical OR equipment for open access
- Instruments and technical equipment for MIS (especially cameras, light sources, insufflators, energy devices)
- Patient selection and indications for MIS
- Techniques of establishing access for MIS (e.g. laparoscopy, SILS, NOTES, thoracoscopy)
- Detection and treatment of MIS complications
- Trocar placement and closure techniques
- Suturing and stapling in MIS
- Mechanical stapling devices and techniques of stapled anastomoses
- Surgical meshes
- Diathermy-principles and precautions
- Explosion hazards relating to general anaesthesia and endoscopic surgery

Procedures

- Diagnostic Laparoscopy (including biopsy of peritoneal pathologies)
- Thoracoscopy (including biopsy and drainage)

Thoracic

- The role of surgery in the treatment of cardiac, lung and oesophageal disease
- Thoracocentesis, chest drainage
- Techniques of thoracotomy
- thoracoscopy
- Empyema thoracis
- Pneumothorax

Conditions

- Pneumothorax
- Hemothorax
- Pleural effusion/empyema
- Focal hyperhidrosis

Procedures

- Chest tube placement
- Thoracoscopy with or without biopsy
- Thoracoscopic pleurodesis
- Sympathetic nerve surgery
- Thoracoscopic lung wedge resection

Abdomen - General

Conditions

- Acute abdominal pain
- Intra-abdominal abscess
- Mesenteric cyst
- Chronic abdominal pain
- Carcinomatosis
- Pseudomyxoma peritonei
- Spontaneous bacterial peritonitis
- Desmoid tumors
- Chylous ascites
- Retroperitoneal fibrosis

Procedures

- Laparoscopic exploratory laparotomy
- laparoscopic drainage abdominal abscess
- Laparoscopic retroperitoneal lymph node dissection

Abdominal Wall and Alimentary Tract

The surgical anatomy of the abdomen and its viscera and the applied physiology of the alimentary system, relevant to clinical examination, to the interpretation of special investigations, to the understanding of disorders of function and to the treatment of abdominal disease.

Hernia

- Principles of standard and tension-free hernia repair
- Principles of hernia repair with/without surgical meshes

Conditions

- Inguinal hernia
- Femoral hernia
- Ventral hernia
- Incisional hernia
- Miscellaneous hernias

Procedures

- laparoscopic repair of inguinal and femoral hernia
- laparoscopic repair of ventral/incisional hernia
- Repair of miscellaneous hernias
- Component separation and abdominal wall reconstruction

Biliary Tract

Conditions

- Cholecystitis
- Gallbladder stones
- Cancer of the bile ducts
- Gallstone ileus
- Iatrogenic bile duct injury
- Biliary pancreatitis

Procedures

- laparoscopic cholecystectomy
- laparoscopic cholangiography
- Laparoscopic common bile duct exploration
- Laparoscopic and open revisional surgery (e.g for bile leak, bleeding)

Liver

Conditions

- Liver mass – evaluation
- Hepatic abscess
- Hepatic adenoma
- Focal nodular hyperplasia
- Hemangioma
- Hepatocellular carcinoma
- Cholangiocarcinoma
- Metastatic tumors
- Benign Liver cysts

Procedures

- Laparoscopic liver biopsy
- Laparoscopic unroofing of liver cyst
- Drainage of liver abscess
- Laparoscopic segmentectomy/lobectomy (in specialized centers)
- Intraoperative ultrasound of liver (in specialized centers)

Endocrine

The surgical anatomy, applied physiology and pathology of the endocrine glands relevant to clinical examination, to the interpretation of special investigations, to the understanding of disordered function and to the principles of surgical treatment of common endocrine disorders.

Conditions

- Incidental adrenal mass
- Pheochromocytoma
- Primary hyperaldosteronism
- Cushing's syndrome
- Cushing's disease
- Adrenocortical carcinoma

Procedures

- laparoscopic adrenalectomy

Metabolic and Bariatric Surgery

- Principles of metabolic and bariatric surgery
- Patient selction and indication for bariatric surgery
- Surgical techniques in bariatric surgery
- Detection and treatment of complications
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Procedures

- laparoscopic gastric banding
- sleeve gastrectomy
- gastric bypass
- others

Pancreas

Conditions

- Pancreatic abscess and infected necrosis
- Pancreatic pseudocyst
- Cystic neoplasms
- Intraductal papillary mucinous neoplasms
- Gastrinoma and Zollinger-Ellison syndrome
- Insulinoma, VIPoma, Glucagonoma and Somatostatinoma
- Nonfunctional endocrine tumors
- Lymphoma of pancreas

Procedures

- Laparoscopic/endoscopic pancreatic debridement for necrosis
- Distal pancreatectomy
- Intraoperative pancreatic ultrasound
- Drainage pancreatic pseudocyst

Spleen

Conditions

- Hemolytic anemias
- Idiopathic thrombocytopenic purpura
- Secondary hypersplenism and splenomegaly
- Neoplasms of spleen
- Splenic cysts

Procedures

- laparoscopic splenectomy
- Partial splenectomy/splenorrhaphy

Esophagus

Conditions

- Zenker's diverticulum
- Epiphrenic diverticulum
- Hiatal hernia
- Gastroesophageal reflux and Barrett's esophagus
- Dysphagia
- Schatzki's ring
- Achalasia
- Nutcracker esophagus
- Spontaneous esophageal perforation
- Iatrogenic esophageal perforation
- Scleroderma connective tissue disorders
- Benign neoplasms
- Adenocarcinoma
- Squamous cell carcinoma

Procedures

- Diagnosis of gastroesophageal reflux (e.g. pH-metry)
- Diagnosis of esophageal and gastric motility disorders (e.g. manometry)
- laparoscopic antireflux procedure
- laparoscopic repair of paraesophageal hernia

- Repair/resection of perforated esophagus
- Total esophagectomy (in specialized centers)
- Esophagogastrectomy (in specialized centers)
- Enoral stapling-myotomy of Zenker's diverticulum
- Laparoscopic Heller myotomy
- Collis gastroplasty

Stomach

Conditions

- Upside down stomach
- Upper gastrointestinal bleeding
- Gastric carcinoma
- Duodenal ulcer
- Gastric ulcer
- Peptic ulcer disease with bleeding, perforation or obstruction
- Gastric polyps
- Gastric lymphoma
- Gastric carcinoid tumor
- Morbid obesity

Procedures

- laparoscopic gastric resection
- Repair of duodenal perforation
- Truncal and selective proximal vagotomy
- Pyloroplasty

Jejunum & Ileum

Conditions

- Small bowel obstruction and ileus
- management of Crohn's disease of small intestine
- Meckel's diverticulum
- Small intestinal polyps
- Small intestinal adenocarcinoma
- Small intestinal lymphoma
- Small intestinal carcinoid tumor
- Small intestinal GISTs

Procedures

- laparoscopic small bowel resection

- laparoscopic adhesiolysis
- laparoscopic feeding jejunostomy
- Resection and stricturoplasty for Crohn's disease

Colon & Rectum

Conditions

- Acute and chronic appendicitis
- Diverticulitis
- Colonic polyps
- Colonic and rectal cancer
- Miscellaneous colonic neoplasms
- Appendiceal neoplasms
- Crohn's disease
- Ulcerative colitis
- Endometriosis
- Functional constipation
- Rectal prolapse and intussusception

Procedures

- laparoscopic appendectomy
- laparoscopic colon and rectum resection
- anastomosis (extra- and intracorporeal)
- diverting colostomy
- laparoscopic (resection) rectopexy (suture, mesh)

Anorectal

Conditions

- Rectal polyps/neoplasms
- Rectal prolapse
- Fecal incontinence and fecal outlet obstruction

Procedures

- Transanal endoscopic microsurgery (TEM)
- laparoscopic transabdominal operation for rectal prolapse

Flexible Endoscopy

- Handling of endoscopes and hygienic measures

Procedures

- Flexible diagnostic esophago-gastroduodenoscopy
- Rigid and flexible diagnostic procto-colonoscopy
- Interventional endoscopy (e.g. stenting, dilatation, polypectomy, mucosectomy)

Trauma

Conditions

- Hypovolemic shock
- Septic, cardiogenic, anaphylactic and neurogenic shock
- Coagulopathy
- Neurologic dysfunction
- Endocrine dysfunction
- Pneumonia – hospital acquired
- Single organ failure (heart, liver, kidney)
- Multiple system organ failure (pathopysiology and treatment)
- Respiratory failure-pulmonary oedema “shock lung”, adult respiratory distress syndrome, lobar and pulmonary collapse
- Pulmonary embolism
- Peritonitis
- Acute necrotizing pancreatitis
- Septic inflammatory response syndrome
- Common acute abdominal emergencies (ileus, perforation, bleeding)
- Acute gastrointestinal haemorrhage
- Acute renal failure in surgical patients

Procedures

- Focused assessment with sonography and CT (FAST scan)
- Explorative laparoscopy
- Management of esophageal and gastrointestinal trauma
- Splenectomy/splenorrhaphy
- Repair of hepatic lacerations and hepatic resection for trauma
- Repair of intestinal lacerations

Evaluation & Quality

- **Control** Decision-making
- in surgery Clinical audit
- Statistics and computing in surgery
- Documentation
- Principles of research and design and analysis of clinical
- trials Critical evaluation of innovations-technical and
- pharmaceutical Principles and pharmacology of
- intravenous drug delivery Quality control and quality management
- CIRS (Critical Incident Reporting
- System) Implementation of clinical studies
- Legal aspects
- Communication with patients, relatives and colleagues

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