

REQUIREMENTS

Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme

Name of the host institution (and any contributing institutions):

Heart and Vascular Center, Department of Surgical Research and Techniques

Name of the subject: Kísérletes és Sebészeti Műtétan

in English: Basic Surgical Techniques

in German: Grundlegende Chirurgische Technik

Credit value: 2

Semester: 6th

(as defined in the curriculum)

Total number of classes per week: 3 practices bi-weekly	lectures: 7	practical lessons: 21	seminars:
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Type of subject: compulsory optional elective

(PLEASE UNDERLINE AS APPLICABLE)

Academic year: 2024/2025

Language of instruction, for optional or elective subjects: English

Course code: AOKKMI020_1A

(In the case of a new subject, this cell is filled in by the Dean's Office, following approval)

Course coordinator: Prof. Dr. Tamás Radovits

Place of work, phone number: 06-20-825-8895

Position: Head of Department, Professor

Date and number of habilitation: Semmelweis University 2020,07/2020

Objectives of the course and its place in the medical curriculum:

Due to the exercises on surgical training models, students will learn about asepsis, operating room rules (scrubbing, preparation of the surgical site, etc.), the standards of behaviour in the operating room, basic surgical instruments and equipment, knotting, tying and suturing techniques. In addition to classical surgical techniques, it is important to broaden the students' understanding and knowledge of video-endoscopy. Developing eye-brain-hand coordination, interrelated laparoscopic exercises are practised in a pelvitrainer.

The aim of the course is (1) to provide small group, practice-oriented surgical training (2) All graduated doctors enable to use basic surgical procedures (e.g. wound care, suture removal, etc.). (3) Provide a stable basis for understanding and completing the manual subjects taught in the clinical module. (4) The main aim of the course is to assess the students' manual skills and help them in the specialization.

Place of instruction (address of lecture hall or seminar room etc.):

Lectures: 1089 Budapest, Nagyvárad square 4., Green Lecture Hall
Practices: 1089 Budapest, Nagyvárad square 4., Operating Lab
1122 Budapest, Városmajor street 68. (Heart and Vascular Center) Central Operating Room, Research Operating Room

Competencies acquired through the completion of the course:

knowledge of the operating room rules for asepsis (scrubbing, dressing, the preparation of the surgical site), knowledge of basic surgical instruments, hand-tied and instrumental knots, suturing and suture removal techniques, laparoscopic eye-brain-hand coordinating FLS task

Prerequisites for course registration and completion:

anatomy and physiology

Conditions for concurrent course registration and permission thereof in the case of a multi-semester subject: -

Student headcount conditions for starting the course (minimum, maximum) and method of student selection:

minimum 15, maximum 400 students, Registration in Neptun

Detailed course description:

(Theoretical and practical instruction must be broken down into lessons (weeks), numbered separately. Please provide the names of lecturers in both types of lessons, indicating guest lecturers. This information is not to be attached separately. CVs of guest lecturers, however, must be attached.)

Lectures

Dr. Andrea Ferencz: The structure and equipments of the operating room. Asepsis and antisepsis,

Dr. Daniella Fehér: Basic surgical tools and suture materials.

Prof. Dr. József Sándor: Basic and special suturing techniques in surgery.

Dr. Györgyi Szabó: Classification and management of wounds, principle of wound-healing.

Haemorrhage and bleeding control.

Masashi Yoshida MD, PhD: Surgical procedures: acute, elective. Preoperative patient management.

Surgical approaches.

Prof. Dr. József Sándor: Basics of laparoscopic surgery.

Dr. Kálmán Benke: The role of the experimental surgery in medicine

Practices

1. Introduction to basic surgical instruments and practice of their use. Knotting and basic suturing techniques on ex vivo skill models (simple interrupted suture).

2. Getting acquainted with the operating room, rules and behavior in the operating room, scrubbing-in and preparation of the surgical field. 3. Basic suturing techniques on ex-vivo animal model (interrupted sutures).

4. Basic suturing techniques on ex-vivo animal model (continuous sutures).

5. Demonstration of the laparoscopic tower and instruments.

6. Practicing eye-brain-hand coordination and fine hand movements using a laparoscopic pelvitrainer.

7. Practical examination.

Practical teachers: Dr. Andrea Ferencz, Dr. Györgyi Szabó, Dr. Domokos Csukás, Dr.

Daniella Fehér, Dr. Damenija Givi and other invited teachers

Related subjects due to interdisciplinary fields (both compulsory and elective) and potential overlaps between subjects: -

Attendance requirements; conditions under which students can make up for absences and the

<p>method of absence justification: Participation in the exercises is compulsory. Students is allowed to miss one practice, In case of two missed practices, if the student does not made up one of them, the semester will not be signed. The missed practice can be made up in the two-week teaching periods by joining another group. For retaking registration is necessary on the website. In the case of two missed practices we offer a retaking class on the 6th practice be-week period. The student must declare this wish by sending an e-mail to mutettan@gmail.com (indicating his/her group number and the number of missed practice). Missed more than two practices may be retaking by special permission of the Head of Department.</p>
<p>Form of assessment in the study period: (including the number, topics and scheduling of oral and written tests, their share in the overall evaluation, make-up tests and improvement tests) -</p>
<p>Number and type of assignments for individual work and the deadline for submission: -</p>
<p>Requirements to obtain the teacher's signature: The number of missed practices may not exceed more than 25%. That means only one absence is acceptable during the Semester</p>
<p>Type of assessment (<i>comprehensive examination, end-term examination, term-grade, term-grade on a three-grade rating scale, no examination</i>): <i>end-term examination</i></p>
<p>Examination requirements: (<i>list of examination topics, subject areas of tests / examinations, lists of mandatory parameters, figures, concepts and calculations, practical skills</i>)</p> <p>Practical part: All students will take a practical exam during the 7th practice. Stages are (1) scrub in, gowning, gloving, (2) recognising instruments, their correct use, (3) hand-tye knots, (4) ex vivo suturing on animal tissue, (5) recognising laparoscopic instruments, their correct use, (6) timing in the pelvitrainer task. Priority to scrub in, gowning, gloving and suturing stations. If the student gets zero point here, the examination will be discontinued and a fail will be given.</p> <p>Theoretical part The theoretical part of the examination consists of a test, which will be taken in person at the specified examination times during the examination period. 60 questions in 45 minutes should be solved. The minimum requirement for the written test is 40 points of 60. If this is less, only the written test must be repeated. Students who attend the classroom lectures get 3 test questions at the end of the lecture. If he/she answers correctly the 3 test questions and collect minimum 14 points of 21 in 7 lectures he/she gets an additional 10 points, which will be added to their score in the theoretical test. The test includes single choice, multiple choice, true-false question types and also pictures, tables, lists, groupings from the textbook <i>Basic Surgical Techniques</i>. e.g. What is in the picture? Write the name of the device in the picture and its parts marked with letters. Put the procedure in chronological order, etc. Latin terms and author names that are part of basic medical literacy are regularly asked and the proper spelling is required.</p> <p>The practical and theoretical exam results are summarized to determine the grade.</p>

Topics for the theoretical exam:

1. ASEPSIS, ANTISEPSIS

Historical background of asepsis (Semmelweis)

The definition of asepsis

Asepsis in practice: dressing up, wearing a cap and mask

Preparing the hands and fingers for surgery

Surgical scrubbing

Scrubbing and skin protection

Sterile surgical gown

The rubber gloves

Preparation of the surgical site: cleaning, shaving, scrubbing, isolation

Behaviour in the operating room

Historical background of antiseptics (Lister)

Definition of antiseptics

Antiseptic wound management

Antibiotic administration as an antiseptic procedure

Sterilisation and expectations of sterilisation procedures

General aspects of surgical sterilisation

Sterilisation by heat

Cold sterilisation

Sterilisation by gas

Plasma sterilization

Sterilisation by irradiation

Disinfection

Definition, mechanism and effectiveness of disinfection

Disinfection in surgical practice

2. THE OPERATING ROOM

Historical development of the operating theatre/room

Location of the operating room

The zones and movement in the operating site block

Rooms of the operating site block

Design and equipment of the operating room. The operating table

Forms of patient positioning

Lighting of the operating room

Furniture in the operating room

Technical equipment of the operating room

Textiles and dressings used in the operating room

The operating room staff, their duties and responsibilities: the operating surgeon and assistants, the operating nurse and assistant, the anaesthetist and assistant

Position in the operating room

Rules and work discipline in the operating room

Disinfection and ventilation of the operating room

3. SURGICAL INSTRUMENTS

The history of the surgical instruments

Disposable surgical instruments

Reusable surgical instruments

Groups of surgical instruments

Role and groups of cutting and dissecting instruments

Cutting and dissecting instruments: scalpels, scissors, haemostatic clamps, dissectors, amputation knives, saws, raspatories

Cutting and dissecting instruments: the operation of an electric knife (diathermy)

Biological effects of electric knife (diathermy)

Cutting mode

Coagulation mode

Monopolar diathermy

Dangers of monopolar diathermy

Bipolar diathermy

Functions and groups of grasping instruments

Grasping instruments: forceps, towel clamps, haemostatic clamps, needle holders, organ clamps, dressing forceps

Function and groups of haemostatic instruments

Haemostatic instruments: ultrasonic knife, clips

Function and groups of retracting instruments

Retracting instruments. Hand-held retractors: spatula, hook, hook

Self-retaining retractors

Functions and groups of tissue-unifying tools and materials

Tissue-unifying tools and materials: sewing machines, staples and wound closure strips, tissue adhesives

Functions and groups of special instruments (bone surgery, thoracic surgery, abdominal surgery, gynaecology, cardiovascular surgery, burns and plastic surgery, microsurgery instruments).

Special instruments used by a wide range of surgical specialities: Volkmann curette, round-ended probe, biopsy forceps, suction equipment, implants, Argon Beam Coagulator, Laser

Packaging of instruments, surgical trays

4. SURGICAL SUTURES, NEEDLES, SUTURE TYPES

History of surgical sutures

General properties of suture materials

Classification of suture materials

Natural suture materials

Synthetic suture materials

Monofilament suture materials

Multifil suture materials

Absorbable suture materials

Non-absorbable suture materials

Suture material size, tensile strength, colour, handling, knotting

General characteristics of surgical needles

Traumatic needles

Atraumatic needles

Needle parts, needle shapes

Types of needles (circular needles, cutting needles)

Use of needles

Connection between atraumatic needle and suture material

Sterilisation and packaging of suture material and needles

Antibacterial threads

Wound closure without knotting

Tissue unifying methods: hand-held needles

Simple interrupted suture

Vertical mattress suture

Horizontal mattress sutures, corner stitch

Simple running suture

Running locked suture

Intracutaneous running stitch

Tobacco bag suture

Suture removal

Ligatures

Bowel anastomoses

Vascular anastomoses

Other tissue unifying methods: use of staplers

5. INJURY, WOUND

Definition of injury

Definition of wound

Definition of simple wound

Definition of compound wound

Description of a wound

Questions to clarify in the case of wounds.

Risk of tetanus infection depending on the characteristics of the injury.

Vaccination order for adults suspected of tetanus infection.

Classification of wounds according to their origin

Characteristics of surgical wounds.

Mechanical wounds (abraded wound, puncture wound, incised wound, cut wound, laceration, torn wound, gunshot wound, bite wound)

Thermal wounds

Chemical wounds

Irradiation wounds

Special wounds

Classification of wounds according to the bacterial contamination

Classification of wounds according to the time

Treatment of acute wounds

Chronic wound care

Use of antibiotics in surgery

6. WOUND HEALING

The process of hemostasis

The inflammatory phase

The granulation and proliferation phase

The process of maturation and remodelling

Scarless wound healing in fetal age

Types of wound healing

Local factors disturbing wound healing

Systemic factors disturbing wound healing

Classification of wound healing disorders according to their time of onset

Haematoma

Seroma

Wound disruption

Wound infections

Atrophic scar

Hypertrophic scar

Keloid

Procedures to facilitate wound healing

7. BLEEDING AND HAEMOSTASIS

Local and general symptoms of haemorrhage

Concept of surgical haemostasis

Mechanical haemostasis in the prehospital phase

Intraoperative mechanical haemostasis

Intraoperative prophylactic surgical haemostasis and postoperative haemostasis

Thermal haemostatic procedures

The use of chemical-biological haemostatic materials

8. THE OPERATION

Operative indication

Operative contraindication

The risk of surgical intervention

Preoperative procedures

The operation

Principles of oncological surgical operations

The surgical team and patient's assurance

One-day surgical intervention

Complication of operations

The importance of the surgical safety checklist

Principles of surgical incision lines

Incisions on the face and in the cervical region

Surgical incisions on the thoracic wall

Surgical incisions on the abdominal wall, opening of the abdominal cavity

Longitudinal laparotomies

Transverse and oblique laparotomies

Gridiron incisions

Incisions on the hand

Surgical incisions (trocar positions) in laparoscopic operations

Closure of operating wounds

Complications of wound closure

9. THE BASICS OF VIDEO-ENDOSCOPIC TECHNIQUE

Disadvantages of open surgery and advantages of laparoscopic surgery

Difficulties of the laparoscopic technique

Classification of video-endoscopic procedures

Structure and usage of flexible video-endoscopy

Laparoscopic tools of image creation: optics, video system, monitor, light source, light cable

Trocars

Hand-held laparoscopic instruments: graspers and dissectors, scissors, clip appliers, needle-thread complex,

knotting, electrocoagulation, ultrasonic cutting instruments

Personal requirements of laparoscopic operations

Options for creating a surgical space for laparoscopic operations

Pneumoperitoneum

Hand-assisted laparoscopy

Scarless surgery (NOTES)

Single-port laparoscopic surgery

Comparison of open and endoscopic surgery

Advantages of robotic surgery

The first robotic assistant equipments

Robotic surgical systems, robots nowadays

Telesurgery, surgery in space

Requirements of the examination:

(In case of a theoretical examination, please provide the topic list; in case of a practical exam, specify the topics and the method of the exam)

The method and type of grading

The results of the practical test (60 points) and the written test (60 points) are summed up and the final mark is determined on the basis of a 120-points system.

The scoring limits are the following:

Unsatisfactory (1) 0 -69,99 points

Pass (2) 70 - 89,99 points

Average (3) 90 - 99,99 points

Good (4) 100 - 109,99 points

Excellent (5) 110 - 120 points

Application for the exam: Neptun system

Possibilities of retaking the exam are according to the Study and Examination Regulations

List of course books, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids:

Textbook:

Wéber, Gy., Ferencz, A., Sándor, J. (ed) (2021): Basic Surgical Techniques (e-book) Budapest: Semmelweis Publisher.

Signature of habilitated instructor (course coordinator) announcing the course:



Signature of the director of the host institution:

Date of submission:

28/3/2024