

TRAUMATOLOGY

1. GENERAL ASPECTS OF SURGERY RESIDENCIES

1.1. Purpose of residency

Surgery residencies are a learning and educational process, wherein the students gain suitable theoretic and practical knowledge from a particular field of surgery, to be able to independently provide complete care for most patients with acute and chronic surgical illnesses and conditions, as well as injuries in the field, covered by a particular surgical residency. By complete care, we mean diagnostics and curing of illness (injury) and rehabilitation of the patient or injured individual.

1.2. Types of surgical residencies

Surgical residencies are as follows:

- general surgery,
- abdominal surgery,
- traumatology,
- cardiovascular surgery,
- thoracic surgery
- urology,
- orthopaedic surgery,
- plastic reconstruction and aesthetic surgery,
- neurosurgery

Surgery residencies last 6 (six) years. All but neurosurgery consist of:

- **the initial part** (common trunk), which lasts 2 years,
- **the continuation**, which lasts 4 years.

Neurosurgery is a surgical residency with an entirely independent, separate 6 year programme of residency.

1.3. Residency completion

The main mentor finds, that the residency is complete, when they verify if the duration was suitable, the proscribed conditions fulfilled in terms of acquired knowledge, number and quality of procedures carried out and if the proscribed examinations have been successfully passed. Residency ends with a specialist's exam.

2. KNOWLEDGE REVIEW

Every resident has a student's paper (booklet) and a separate log, which they use to enter completed surgery procedures and first assistances in procedures as well as their professional, pedagogic and research articles.

2.1. Intermediate examination

After the completed two year part, the resident must complete a finishing colloquium in an oral and / or written form, based on the matter from the beginning part of the residency, it having to be done in front of a 3 – member commission (two teachers and the main mentor).

In continuation of the residency, the resident has to

take written and / or oral colloquiums of an individual cycle or module. The knowledge is examined through presentations of patients, preparation of seminars, review of literature, writing of articles and cooperation in researches.

The resident must, at least once per year, display acquired knowledge in public, in a way always individually defined by the direct or head mentor:

- ♦ presentation of analysis of a group of patient or interesting individual clinical case at a professional meeting of a group of experts in a teaching institution or outside it;
- ♦ preparation and leading of a clinical or clinically – pathological conference with a theme which includes the subject of the residency;
- ♦ publishing of an article in a reviewed domestic or foreign magazine with a subject from the programme of the residency.

The conditions for the continuation of residency are successfully completed colloquiums and a suitable yearly grade by the head mentor.

2.2. Board exam

After the completed proscribed programme of the continuation part of the residency, the resident takes a board exam.

The commission verifies the practical and theoretic knowledge of the candidate. The exam is taken in one or two parts, the latter done on separate times. This is decided upon by the president of the commission in agreement with the candidate.

The practical part includes:

- medical history and physical examination of one or several patients, the setting of a working diagnosis and differential diagnosis, ordering of special examinations according to the principle of rationality, an evaluation of resulting findings and the generation of a plan of therapy,
- the carrying out of the surgery procedure (with residencies that demand it).

The theoretical part may be written or oral..

1.1. THE INITIAL PART OF SURGERY RESIDENCIES

1.2. Time plan:

• surgical infections	2 months
• abdominal surgery	7 months
• traumatology	9 months
• anaesthesia with resuscitation	2 months
• surgical intense therapy	2 months
• burns	1 month
• pathology or forensic medicine	1 month
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	24 months

A candidate takes a course in transfusiology during their abdominal surgery internship or during traumatology (possibly in the afternoon time).

1.3. Content programme

1.3.1. Surgical infections

1.3.1.1. Contents:

The resident acquires theoretical and thorough practical knowledge on the mechanisms of biological defence of the human body and avoidance of risk factors, on immunisation and preventive use of antibiotics and chemotherapeutic medicine. They also acquire knowledge on procedures for proper identification of surgical infections and their treatment with various surgical procedures, antimicrobial medicine, immunizing and supportive medication. Furthermore, they learn about the measures for the acceleration of the healing of chronic wounds, achieve knowledge of diagnostics and preoperative, surgical and postoperative medication of the following infections:

- staphylococcal infections,
- streptococcal infections,
- erysipeloid,
- anthrax,
- infections with gram negative bacteria,
- infections by clostridia,
- other anaerobic infections,
- actinomycosis,
- mixed bacterial infections,
- fungal infections,
- viral infections.

1.3.1.2. The resident carries out the following surgical procedures:

treatment of purulent inflammation:

- | | |
|---------------------|----|
| • of soft tissue | 10 |
| • panaritium | 6 |
| • diabetic gangrene | 2 |

1.3.2. Abdominal surgery

1.3.2.1. Contents:

The resident acquires theoretical and thorough practical knowledge on:

- acute abdominal illnesses and other most common surgical illnesses of abdominal organs, abdominal wall and inguinal and femoral areas,
- diagnostic procedures in the cases of acute abdominal illnesses and other most frequent surgical abdominal illnesses
- differential diagnosis and treatment methods of acute abdominal illnesses
- preoperative preparation of acute patients with joint heart, respiratory, kidney disease, diabetes, etc.,
- most common postoperative complications and methods of prevention and treatment thereof,
- orally administered nutrition for operated patients with the most common abdominal illnesses.

1.3.2.2. The resident carries out the following surgical procedures:

- | | |
|------------------------------|----|
| • appendectomy | 5 |
| • hernia treatment | 10 |
| • laparotomy dehiscence care | 2 |
| • ulcer stitching | 2 |
| • intestine anastomosis | 6 |
| • other procedures | 10 |

1.3.3. Traumatology

1.3.3.1. Contents:

The resident acquires theoretical and thorough practical knowledge on:

- functional anatomy of the locomotory apparatus,
- general terms regarding injuries (aetiology and mechanisms of injuries, classification of injuries, theoretical knowledge of injuries of all body parts, fractures and dislocations),
- diagnostic procedures in traumatology,
- basics of ultrasound diagnostics of injuries of the abdomen, thorax and the locomotory apparatus,
- surgical approaches to typical procedures on the locomotory apparatus
- conservative care for fractures and complications.
- a series of post – traumatic complications (traumatic, haemorrhagic shock) and their consequences for various organs,
- other post – traumatic complications (thromboembolism, lipid embolism, respiratory complications, digestive disorder, electrolyte disorder, post – traumatic psychoses and delirium states)
- typical accesses for surgical procedures on the limbs and other body parts
- preparation of patients for surgery (diabetes, cardiac, pulmonary and other disease)
- postoperative care
- care for light and heavy injuries and polytrauma,

- surgical procedures on bones (various kinds of osteosynthesis),
- indication for urgent surgical procedures,
- complications in fracture healing (pseudoarthroses, osteitis),
- infections accompanying injury
- shock therapy and resuscitation

1.3.3.2. The resident carries out the following surgical procedures:

- | | |
|--|----|
| • extension on lower extremities | 15 |
| • repositioning of fractures and plaster casting | 15 |
| • joint puncture | 10 |
| • large body cavity puncture | 10 |
| • diagnostic arthroscopy | 5 |
| • soft tissue care (large wounds, defects, injuries to tendons, muscles) | 20 |
| • thoracic drainage (Bülau drainage) | 5 |
| • osteosynthesis (simple), removal of osteosynthetic materials | 10 |

1.3.4. Anaesthesiology with resuscitation

1.3.4.1. Contents:

The resident acquires theoretical and thorough practical knowledge on:

- modern types of general, regional and combined anaesthesia for surgical procedures
- evaluation of the state of the patient and preparation of the patient for surgical procedures
- basic and additional procedures of resuscitation in the cases of respiratory arrest and / or circulatory arrest and post resuscitation syndrome,
- various ways of treating postoperative pain
- regional anaesthesia and some techniques of conductive anaesthesia

1.3.4.2. The resident carries out the following procedures:

- participation in and carrying out of procedures for 50 anaesthesias (introduction, intubation, maintenance, waking up, postoperative recovery),
- evaluation and preparation of 15 patients of groups ASA 2 and 3 (evaluation, preparation, premedication)
- cooperation in 5 hospital resuscitations, being performed by a resuscitation team,
- cooperation and carrying out of procedures on 10 gravely injured individuals,
- participation in 15 different ways of treating pain
- 25 area and conductive anaesthesias

1.3.5. Surgical intense therapy

1.3.5.1. Contents:

The resident acquires theoretical and thorough practical knowledge on:

- intensive care for a patient or injured person after all operative procedures and surgical illnesses, which belong in the field of intensive therapy,
 - basic urgent therapeutical procedures for the needs of intensive medical care.

1.3.6. Burns

1.3.6.1. Contents:

The resident acquires theoretical and thorough practical knowledge on:

- professional first aid in the case of burns,
- transport of the individual with burns,
- primary care of a large scale burn in a burn centre,
- evaluation of depth and surface of burn injuries,
- pathophysiology of burns,
- treatment process for extensive burns,
- liquid therapy of burn shock,
- urgent surgical procedures in burn cases,
- early excision of burn injuries,
- excision to fascia,
- covering of skin gap with patient's own skin transplants,
- skin collection and storage of homologous skin transplants,
- indications for the use of homologous skin transplants,
- theory and indications of cultivating own skin transplants in a tissue culture,
- acute tubular necrose and indications for dialysis,
- burns of the respiratory pathways, acute respiratory insufficiency and indications for intubation,
- negative energy balance and nutrition of the burn victim,
- immunological perspective of burns (immunosuppression),
- chemical burns and antidotes,
- electrical burns, burns and polytrauma, burns in wars

1.3.6.2. The resident carries out the following procedures::

- | | |
|--|----|
| • primary care of a major burn | 1 |
| • necrotomy with a primary tangential excision | 5 |
| • necrotomy with excision to fascia | 2 |
| • acquisition of autotransplant skin with a Watson knife or electric dermatome | 10 |
| • escharotomy | 1 |
| • fasciotomy | 1 |

1.3.7. Pathology or forensic medicine

1.3.7.1. Content:

The resident acquires theoretical and thorough practical knowledge on regular autopsy and biopsy activities. They take part in all clinical pathological meetings and

the preparation of clinical pathological demonstrations of chosen surgical case from current casuistry.

1.3. Knowledge testing

After a completed two year initial part of residency, the resident must take a final colloquium in oral and / or written form, based on the subjects of the initial part of the residency. It is taken in front of a 3 – member commission (two teachers and the head mentor).

A completed 2-year initial part of the surgery residency and a passed colloquium are both conditions for the continuation of surgery residency.

2.0. CONTINUATION OF RESIDENCY

Residency in traumatology lasts 6 years and consists of the general initial part (2 years) and the continuation (4 years).

2.1. Time plan

The surgical internship list and duration (48 months):

• thoracic surgery	2 months
• urology	2 months
• abdominal urgent surgery	5 months
• cardiovascular surgery emphasising vascular surgery	2 months
• plastic, reconstructive and aesthetic surgery	3 months
• neurosurgery	3 months
• orthopaedia	6 months
• traumatology	23 months
• maxillofacial surgery	2 months
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	48 months

2.2. Content programme

2.2.1 Thoracic surgery

2.2.1.1. Content:

The resident acquires theoretical and thorough practical knowledge on diagnostics, differentiated diagnosis, therapy and prognosis of diseases from the field of thoracic surgery.

- thoracotomy,
- typical resections of ribs,
- typical urgent intrathoracic procedures in thoracic injuries (evacuation of haemothorax, haemostasis in intrathoracic haemorrhaging)..

2.2.1.2. The resident carries out the following procedures:

• thoracotomy	10
• pleural cavity drainage	10
• ruptured diaphragm treatment	1-2

2.2.2. Urology

2.2.2.1. Content:

The resident acquires theoretical and thorough practical knowledge on:

- diagnostics and x-ray image reading, related to the examination methods,
- differential diagnostics of the diseases of the urinary tract, acute scrotal condition, testicular torsion, acute epididimitis
- haematuria evaluation,
- acute urine retention treatment (catheterisation with various catheters, principles of suprapubic puncture),

- surgeries, which are less demanding, such as e.g. orchidopexia, hydrochela,
- various surgical accesses to kidneys, ureters, the pathology and principles of surgery on the bladder, urethra and genital,
- basics of neurogenous bladder and urodynamics.

2.2.2.2. The resident carries out the following procedures:

• orchidopexy	2
• funikulocele treatment	2
• hydrocele treatment	2
• fimose treatment	3
• lumbotomy	3
• bladder suture	2

2.2.3. Abdominal urgent surgery

2.2.3.1. Content:

The resident acquires theoretical and thorough practical knowledge on:

- surgical procedures on the digestive tract and other organs in the abdominal cavity
- technique of endoscopic minimally invasive surgery,
- liver surgery (technique, topography and anatomy of liver),
- diagnostics and surgical technique from the field of proctology,
- transplantation of abdominal organs.

2.2.3.2. The resident carries out the following procedures:

• laparotomy	10
• splenectomy	5
• treatment of torn parenchymal organs	3
• stoma	3
• resection of the intestine and anastomosis	6
• torn liver treatment	3
• laparoscopy of the abdomen	3
• inguinal hernia	10
• appendectomy	10

2.2.4. Cardiovascular surgery emphasising vascular surgery

2.2.4.1. Content:

The resident acquires theoretical and thorough practical knowledge on:

- pathology and physiology of the cardiovascular system
- indications for surgery on veins and the heart
- diagnostic and technical accessories which enable the surgery
- technique of surgical treatment of vein suture and anastomosis

2.2.4.2. The resident carries out the following procedures:

- vascular suture and anastomosis 3-5
- thrombolectomy 2
- varicose vein surgery 2
- extremity amputation due to vascular embolus 2

2.2.5. Plastic, reconstructive and aesthetic surgery

2.2.5.1 Content:

The resident acquires theoretical and thorough practical knowledge on:

- diagnostics and treatment of soft tissue of acutely damaged hand (primary tendon suture, soft tissue injury treatment, osteosynthesis of the skeleton of the hand and microsurgical technique of nerve – vein bundles,
- surgical treatment of late consequences of hand injury (tenolysis, arthrolysis, corrective osteotomy, tendoplastics, nerve transplants),
- technique of soft tissue gap covering
- indications and basic surgical techniques for reimplantation.

2.2.5.2. The resident carries out the following procedures:

- osteosynthesis of small hand bones 3
- primary flexor tendon suture 5
- primary extensor tendon suture 5
- corrective osteotomy on small hand bones 2
- tenolysis of hand tendons 2
- covering of soft tissue gaps after injury with skin autotransplant 5

2.2.6. Neurosurgery

2.2.6.1 Content:

The resident acquires theoretical and thorough practical knowledge on:

- diagnostics, differential diagnosis, treatment and prognosis of injuries from field of the neurosurgical trauma
- independent monitoring of the injured with an increased intracranial pressure

2.2.6.2. The resident carries out the following procedures:

- laminectomy 10-15
- trepanation 5
- evacuation of intracranial haemorrhage (subdural, epidural haematoma) 5

2.2.7. Orthopaedics

2.2.7.2. Content:

The resident acquires theoretical and thorough practical knowledge on:

Look at point 2.2.8., which is valid both for traumatology and orthopaedia.

2.2.7.3. The resident carries out the following procedures:

- corrective surgery after injuries and degenerative illnesses on large bones in adults 2
- arthroplastic of large joints 5
- discus hernia treatment 5
- diagnostic and surgical arthroscopy 20
- transitory fixations for the correction of the axis of long tubular bones in children 3
- corrective osteotomy in children 2

2.2.8. Traumatology

2.2.8.2. Content:

The resident carries out diagnostics procedures until a diagnose is set, these procedures are recorded, and procedures of treatment of the injured are planned.

The specialist student masters the setting of indications and evaluating of test results of the following diagnostic procedures:

- native x-ray,
- stress and functional radiography of the locomotory apparatus,
- contrast radiography of joints,
- US of large body cavities and locomotory apparatus,
- Doppler examination of peripheral blood vessels.

In cooperation with suitable specialists, the student sets indications and evaluates examination results of the following diagnostic examinations:

- magnetic resonance,
- magnetic resonance with contrast substances,
- computer tomography,
- computer tomography with contrast substances,
- scintigraphy of the skeleton,
- x-ray of vascular diagnostics.

The resident performs invasive diagnostic procedures from the field of traumatology such as joint punctions and large body cavity punctions, as well as procedures of intensive therapy, such as introductions of phlebocatheters, central vein catheters and resuscitation procedures.

They know basic anaesthesia forms and perform some regional and conductive anaesthesia.

They work on a heavily injured patient (burns, polytrauma) and a post operation

patient.

They set indications for minimally invasive procedures :

- arthroscopies,
- x-ray guided methods of minimally invasive surgery.

They know computer guided minimally invasive surgery in theory.

They know classic methods of conservative and surgical fracture healing and their complications, basic principles of treating the injured with injury areas otherwise covered by other disciplines of surgery (cardiovascular, urology, neurosurgery, abdominal surgery, plastics, etc.)

They know the principles and theory for corrective procedures on the locomotory apparatus. They lead the postoperative rehabilitation of the injured individual until rehabilitation is complete..

2.2.8.3. The resident carries out the following procedures:

- diagnostic and surgical arthroscopy of large joints 30
- impalement osteosynthesis in children (supracondilar humerus fracture, distal radius, hand and feet bones) 25
- amputation of extremities at all levels 5
- fracture osteosynthesis in the trochanteric area 30
- femur neck fracture osteosynthesis 15
- intramedular nailing of long tubular bones 10
- osteosynthesis of simple fractures of acetabulum 5
- insertion of outer fixater on all levels 5
- acquisition of bone transplant 5
- reconstruction of the ligament apparatus of joints 10
- reconstruction of tendon and muscle injury 15
- osteosynthesis of fractures by joints 30
- osteosynthesis of diaphyses of long tubular bones 30
- skeletal traction in cervical spine injuries 20
- injured spine osteosynthesis 3
- artroplastics of large joints after injuries 5
- corrective procedures after large bone injuries in adults 2
- removal of osteosynthetic material 30

2.2.9. Maxillofacial surgery

2.2.9.2. Content:

The resident acquires theoretical and thorough practical knowledge on:

- diagnostic, differential diagnostic, treatment and prognosis of maxillofacial trauma,

- x-ray diagnostics, RT (CT), MR of facial bone injuries,
- typical projections used for head skeleton imaging,
- surgical treatment of broken teeth, jaws, cheek bones and orbits or frontoetemedial injuries,
- surgical access in urgent maxillofacial surgery.

2.2.9.3. The resident carries out the following procedures:

- repositioning of broken cheekbone with or without osteosynthesis 5
- repositioning of the bottom of the eye through antrum 2
- surgical access in urgent maxillofacial surgery 5

2.3. Board exam

The board exam consists of the practical and theoretic part. The practical part consists of analysis of a clinical case and surgery. The theoretical part is oral.

2.4. Title

After completing the prescribed residency and successfully passing the residency exam, the candidate obtains the title Specialist of Traumatology.