

In the Name of God

Islamic Republic of Iran Ministry of Health and Medical Education Deputy for Education

Vascular Surgery Degree:Fellowship

Introduction:

The progress of medical sciences, particularly in the field of surgery, and advances in technology has realized the possibility of greater surgical procedures in trauma patients with extensive damage. Since vascular diseases are mainly caused at older ages and the number of older people gradually increases due to increased life expectancy, the need for this course is felt more than ever. During the Iran-Iraq war, a great number of people were wounded in action or elsewhere, so the trauma and vascular surgery fellowship, as an important issue both at that time and today, was adopted in a two-year course in 1986. Through the implementation of this course in some major universities, such as Tehran, Shahid Beheshti, Isfahan, Mashhad, Baqiyatallah, Gilan, Kermanshah, Mazandaran, Kerman, Shahed, and Iran universities of medical sciences, the required specialists have been trained.

Today, some trauma patients have to have limbs amputated due to the unavailability of these specialists or lose their lives due to the rupture of the liver, abdominal aorta and major blood vessels. Therefore, the necessity of this course is increasingly felt in the world. The compilation committee of Vascular Surgery Fellowship developed this curriculum and issued it to the executive universities. The committee welcomes the experts' valuable comments for revising the curriculum.

The compilation committee of Vascular Surgery fellowship curriculum

Definition:

Vascular surgery fellowship is a clinical course originating from general surgery. The graduates should gain enough knowledge, insight, and skills in diagnosis, care, and treatment of congenital, acquired, and traumatic diseases of the arterial, venous, and lymphatic circulatory system (except the coronary arteries and intracranial vessels) and primary treatment and management of vascular abnormalities and injuries in soft tissues and internal organs and the relevant blood vessels and nerves (except the brain and spinal cord injuries). By understanding and analyzing the causes of physiological and pathological changes, they will be able to perform all diagnostic, laboratory, imaging, and therapeutic measures for patients using invasive, minimally invasive, and non-invasive procedures.

Course Duration:

Duration of this course is 30 months.

Mission:

The mission of this course is to train specialists who are informed of updated scientific information, competent, responsive, and sensitive to the health of individuals and society in the specialized field of vascular surgery and will provide the society with their expertise in terms of prevention, diagnosis, treatment, education, and research.

Expected Competencies at the End of the Program

General Competencies*

Specific Competencies and Skills

At the end of the program learners will be competent in the following Procedural Skills (Diagnostic-Therapeutic Procedures) skills:

Important Notes:

1. The graduates should also learn the following skills and employ them in their profession, in addition to the skills they are allowed to do during the general surgery course, except for the cases which independent performance is not permitted.
2. The frequencies listed below are the minimum number required for learning and there is no limitation for it.
3. The frequency of performing each group of procedures will be determined by the curriculum manager.
4. In cases which independent performance is not allowed, the procedure will be performed jointly.

Procedures:

I. Great vessel surgeries: 30 to 40 cases (the minimum number required for learning)

- Grafting of descending thoracic aorta (with or without cardiopulmonary bypass through open or TVAR techniques)
- Repair of aortic arch and thoracic-abdominal aortic aneurysms through grafting (with or without cardiopulmonary bypass through open, hybrid, or EVAR techniques)
- Long-term use of external circulatory system due to cardiopulmonary failure
- Repair of abdominal aortic aneurysm through open or EVAR procedures
- Repair of ruptured abdominal aortic aneurysm using open, EVAR, and laparoscopic techniques
- Repair of ruptured abdominal aortic aneurysm involving the visceral arteries using open, EVAR, and Hybrid techniques
- Repair of ruptured thoracoabdominal aortic aneurysm involving the iliac arteries using open or EVAR techniques
- Iliac artery aneurysm through open or endovascular techniques
- Repair of innominate or subclavian artery aneurysm
- Subclavian-brachial artery bypass graft
- Subclavian artery bypass graft
- Subclavian-innominate artery thromboendarterectomy
- Abdominal aortic thromboendarterectomy
- Mesenteric and renal- iliac artery thromboendarterectomy
- Angioplasty during the aortoiliac transluminal operation
- Angioplasty during the subclavian-axillary transcubital operation
- Aortoiliac thrombectomy by abdominal incision
- Iliac and vena cava vein thrombectomy by abdominal incision
- Subclavian artery thrombectomy by neck incision
- Subclavian artery thrombectomy by thoracic incision
- Subclavian –innominate artery embolectomy by neck incision
- Subclavian aortic bypass grafting
- Iliofemoral aortic bypass grafting
- Ilio-iliac bypass grafting
- Iliofemoral bypass grafting
- Repair of aortoenteric fistula
- Infectious abdominal graft excision

- Placement of percutaneous IVC filters
- Ligation of the vena cava through clips or umbrellas
- Ligation of the common iliac artery
- Great artery and vessel endovascular thrombectomy
- Pulmonary artery endovascular embolectomy

II. Common peripheral vascular surgeries (200 cases)

- Axillary – brachial artery embolectomy
- Radial and ulnar artery embolectomy
- Femoral and aortoiliac embolectomy by groin incision
- Femoral and popliteal iliac vein thrombectomy by groin incision
- Repair of acquired arteriovenous fistula of organs
- Common femoral artery thromboendarterectomy
- Deep femoral artery thromboendarterectomy
- Superficial femoral artery thromboendarterectomy
- Femoropopliteal artery thromboendarterectomy
- Transluminal angioplasty through the femoral artery
- Transluminal angioplasty through the popliteal artery
- Angioplasty with balloons or stents through the skin
- Axillary – brachial bypass graft
- Femoropopliteal bypass graft
- Creation of arteriovenous fistula
- Placement of a jump graft for hemodialysis
- Surgical procedures related to arteriovenous fistula complications, including graft thrombectomy, repair of pseudoaneurysm, DRIL procedure, and other types of arteriovenous fistula repair
- Long or short saphenous vein stripping
- EVLT (Endovenous laser treatment) for the treatment of varicose veins
- Radiofrequency ablation of varices
- Laser treatment of telangiectasia
- Stab avulsion phlebectomy
- Closure of insufficient sub-fascial perforating veins and linton or endoscopic operation
- Excision and sclerotherapy of small varicose veins
- Lumbar sympathectomy through open and minimal invasive surgeries
- Thoracic sympathectomy through open or thoracoscopic surgeries (VATS)

Vascular Access Procedures (200 cases)

- Placement of temporary double-lumen catheters
- Placement of permanent double-lumen catheters
- Placement of implantable catheters
- Placement of central venous catheters
- Placement of Hickman catheters
- Placement of intra-arterial catheters for therapeutic procedures
- Embolization of tumors, AVMs, and vessels bleeding using different materials available, such as PVA, Onyx, glue, etc.
- Coiling the aneurysms using detachable balloon

III. Other peripheral vascular surgeries

IV. Extra-cranial blood vessel surgeries

V. Visceral artery surgeries

VI. Reconstructive surgeries and rehabilitation of different parts of body

VII. Open, laparoscopic, thoracoscopic surgeries for thoracic and abdominal injuries

VIII. Injured organs

Important Note: the following procedures are performed by vascular surgeons when they are accompanied by vascular injuries. Preferably, these procedures should be performed cooperatively.

- Repair of brachial plexus injuries
- Repair of peripheral nerve injuries (sensory, motor)
- Repair of flexor tendon ruptures
- Repair of extensor tendon ruptures
- Tenolysis of flexor and extensor tendons
- Repair of finger lesions
- Repair and reconstruction of finger
- Releasing contractor scars, flexors, and extensors
- Ray amputation
- Repair of finger amputations through V-Y flap
- External fixation of hip fracture
- Treatment of traumatic dislocation of large joints

IX. Organ transplantation and reimplantation

X. Endovascular and minimally invasive surgery according to Rutherford book

XI. Performing a doppler ultrasound

Educational Strategies, Methods and Techniques*

Student Assessment:

Assessment methods:

Written, oral, computer interaction test (PMP), OSCE, DOPS, logbook assessment, paper-based assessment, thesis assessment, structured oral exam

Periods of Assessment:

Periodically

Annually

Final assessment

Important note: the students should be continuously informed of the results of performed assessments and the feedbacks should be given to them. Therefore, filing records for them is necessary.

Ethical Considerations*

*Note: The related document(s) can be found at <http://hcmep.behdasht.gov.ir/>.

The overall structure of the course:

Educational ward, department, or education setting	Syllabus- Measures	Duration (month)
Clinic	Outpatient visit- selecting, filing cases, and hospitalizing patients- following up the expert consultations given to patients, performing outpatient procedures, teaching the lower-level classes, responding to expert consultations requested, and other measures in accordance with the curriculum organized by the ward	20 months, at least two days a week
Inpatients	Visiting hospitalized patients, patient care- stabilizing the patients' vital signs hospitalized in the ward, performing diagnostic-therapeutic procedures at the bedside, teaching the lower-level classes, and other measures in accordance with the curriculum organized by the ward	20 months, every day
Operating room	Participating in open and endovascular surgical procedures by observation- assisting or performing independently according to the curriculum organized by the ward	20 months, at least two days a week
Procedure room	Participating in surgical procedures by observation, assisting or performing independently according to the curriculum organized by the ward	During the course, as a case study
Cardiac Surgery ward		1 month
Thoracic Surgery ward		1 month
Imaging Department		1 month during the course
Animal Lab.		1 month during the course
Vascular Lab.		1 month during the course
Plastic surgery ward		2 months during the course
organ transplant ward		1 month during the course
Elective ward	Each student in vascular surgery fellowship can choose a field of interest or one of the educational needs related to the field for a maximum period of 2 months under the supervision of the ward head or curriculum manager and this period will be considered as a part of his training duration.	2 months

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