# GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR M.Ch. IN VASCULAR SURGERY

## Preamble

Incidence of vascular diseases - disorders of blood vessels and blood circulation in our body - is found to be increasing in India over the past decade. Atherosclerosis and allied causes like arteriopathies lead to involvement of aorta and arteries resulting in aneurismal or occlusive diseases with potential risk to limb, organ and or life. Advanced age, smoking habit, consumption of alcohol, over eating, obesity, physical inactivity coupled with diabetes and hypertension are found to enhance the disease process. Varicose veins and deep vein thrombosis with serious potential complications involving veins are also on the rise. Accidents with injury involving major vessel are rapidly increasing with socioeconomic changes in the community.

Beyond the current schedules for teaching and managing patients in select centres, the speciality needs to be revamped by Structured Programmes at national level to train super specialists for optimal healthcare delivery to scores of patients affected with vascular illnesses. Vascular surgery, an established speciality abroad, is still evolving and yet to come of age in our country. Vascular afflictions lead to enormous morbidity and mortality currently because of increased prevalence of risk factors along with demographic transition in our society. In addition, management of vascular trauma is attaining critical attention in view of the escalating accidents and injuries resulting in loss of young lives and man power. In a large country like ours, a concerted approach to train vascular surgeons at several centres is mandatory to meet the growing needs of our patients in future in order to provide quality of life and ability to pursue their profession.

## Goal

The aim of Post graduate Medical Education shall be to produce competent specialists and Medical teachers who shall:

1. recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy

2. have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;

3. be aware of the contemporary advances and developments in the discipline concerned;

4. have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and

5. have acquired the basic skills in teaching of the medical and paramedical professionals.

## SCOPE OF VASCULAR SURGERY

Diseases concerning arteries, veins and lymphatics in the human body except those **inside calvarium (brain) and pericardium (heart).**

# *SUBJECT SPECIFIC OBJECTIVES*

The objectives are:

1. To have scientific approach to vascular illness to be able to decide on optimal therapeutic strategy ranging from the risk factor modifications, medical interventional and surgical options appropriately.

2. To train to perform elective and emergent vascular surgery procedures – e.g embolectomy, peripheral vascular reconstructions, repair of abdominal aortic aneurysm, Carotid revascularization, surgery for venous insufficiency, endovascular therapies for occlusive, aneurismal diseases and AV malformations.

3. To be able to develop interdisciplinary partnership with Neurologist, Cardiologist, Radiologist and Nephrologist.

4. To have a broad background regarding vascular medical conditions e.g. Venous thromboembolic disorder and rationale of antiplatelet and anticoagulant therapy.

5. To train specialists to handle common vascular illnesses, emergencies including vascular trauma, at respective institutions.
6. To update recent knowledge and to keep pace with rapid advances in the progress of Vascular Surgery and endovascular techniques.

7. To sensitize the trainee to newer learning methods and research tools and to encourage clinical research.

8. To plan and execute mass screening programmes and organise preventive methodology.

9. To publish papers in indexed journals during the training period.

# *SUBJECT SPECIFIC COMPETENCIES*

## a) Cognitive domain (Knowledge)

The trainee should already possess knowledge of basic sciences and the training in general surgical skills. He /She will learn further the anatomy and physiology of arteries, the pathological changes in these and the effects on the end organs. The spectrum of pathologies to be mastered during the course are degenerative arterial disease arteriosclerosis, aneurysms, embolism and thrombosis, inflammatory arteriopathies, atheriovenous malformations (congenital and acquired), vasospastic disorders, diabetic angiopathy, sympathetic dystonia, extracranial cerebrovascular disease, splanchnic vascular disorders, thoracic outlet syndrome, varicose veins, venous thrombosis, post-thrombotic syndrome and lymphedema.

### b) Clinical Diagnosis

The mainstay of **vascular diagnosis is clinical examination** and most of the time the symptoms dictate the therapy rather than the diagnostic tests. The art of clinical examination of vascular patients is simple and brisk, and should be rapidly learned by the students.

### c) Non-invasive Vascular Laboratory

It is an indispensable part of vascular diagnosis and many times, supersedes the more invasive and sophisticated techniques. The use of duplex scan (Combination of B mode and Doppler Ultrasound) is an essential part of training of vascular surgeons. The trainee should be taught the use of hand held Doppler, principles of physiological testing and ABI.

### d) Specific Imaging Modalities

1. Computed Tomography (CT) is the commonest and useful special investigation for delineation of nearly all vascular diseases.
2. Magnetic Resonance Imaging (MRI) is an alternative investigatory method in vascular practice.
3. Digital Subtraction Angiography (DSA) is mostly performed prior to

endovascular procedures and as complimentary treatment modality with or following open surgical procedures.

**e) Prevention of vascular diseases**

Vascular surgeons should be actively involved in risk factor modification of their patients, to prevent progression or recurrence of the diseases namely cessation of smoking, control of diabetes and modifications of food habits. Appropriate footwear has not only been preventive but also of therapeutic value.

**f) Vascular Surgical Techniques/Open vascular Procedures**

The spectrum involves repair of all blood vessels of the body with the exception of intracranial vessels, the heart and the aorta up to the arch. The student should learn the exposure of all vessels, the basic vascular suturing techniques and use of various types of grafts in elective and emergency situations. He should be adept in handling of vascular trauma, techniques of thrombectomy, embolectomy, 'bypass' to small infrapopliteal/ pedal arteries, treatment of venous disorders from simple varicose veins to deep vein reconstruction. He should be familiar in the management of extracranial vascular diseases, vascular access procedures in renal failure patients and non-vascular procedures like sympathectomy, thoracic outlet syndromes and amputation. With increasing prevalence of diabetes in society he should acquire thorough knowledge of management of diabetic foot.

**g) Endovascular Surgery/Intervention**

Vascular surgeons should learn this rapidly progressive, minimally invasive surgery. Many diseases, which are treated surgically, might be treated by Endovascular procedures in future and vascular judgement is essential in performing these procedures. Every trainee should be conversant with basic procedures like iliac/ femoral angioplasties and stenting, placement of IVC filters etc. They should also possess at least theoretical knowledge of advanced procedures like stent grafting of aneurysm, use of rotablator, IVUS and other emerging modalities of Endovascular therapies.

**h) Vascular Medicine & General Management**

Vascular surgery is unique in that there is no medical counterpart (like Cardiology - Cardiac Surgery, Neurology - Neurosurgery). Hence, vascular surgeons should be trained in the use of pharmacotherapeutic agents like anticoagulants, thrombolytic and haemorrheologic agents, anti-platelet drugs, use of drugs in inflammatory vasculopathies, evaluation and therapy of thrombophilic states, use of lipid lowering and anti- atherogenic drugs etc. Vascular surgeons should also learn to supervise physical therapy exercise programmes and possess knowledge of various available prosthesis.

## II. Affective Domain

The student:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

## III. Psychomotor domain - Subject specific practical competencies

The post graduate student should acquire the following practical competencies:

1. To diagnose and work-up outpatients cases.
2. To plan and prepare inpatients for major surgical procedures.
3. To conduct interactive ward rounds and to assess the trainee with regard to clinical skills
4. Objective in the operating room is to infuse confidence and impart surgical skills in a graded manner.
5. The first year post graduate student would be trained to operate on minor surgical procedures.

6. The second and third year post graduate students would be trained to assist critical procedures and finally to independently operate major procedures under supervision of Senior Professor/faculty.
7. To recognize early signs of untoward events in clinical practice and operating room in particular.
8. Writing research articles
9. Training in research methodology, medical ethics and medico-legal aspects

Currently vascular therapy includes both open surgical operations and endovascular interventions. Therefore, vascular surgeons/trainees in addition to expertise in open surgery have to learn to perform endovascular procedures often alone as well as along with radiologists as team. This evolution is expected to strengthen in the coming years resulting in the creation of Vascular Specialist.

## *Syllabus*

**Course contents:**

### I. Cognitive domain

1. To impart training in theory and practices in Vascular Surgery.
2. To conduct monthly symposia in a chosen topic
3. To take part in weekly journal clubs and to have interactive sessions

Post graduate Trainee pursuing M.Ch. Vascular Surgery course is expected to have in-depth knowledge of following subject topics under Cognitive Domain.

#### A. Applied Basic Sciences

1. Embryology of the Vascular System
2. Molecular Biology
3. Physiology and pathophysiology of blood vessels
4. Hemodynamics and Atherosclerosis
5. Peptide growth factors
6. Endothelial cells
7. Vascular smooth muscle cells

8. Macrophages
9. Platelets
10. Response of the arterial wall to injury and Intimal Hyperplasia
11. Atherosclerosis: Theories of etiology and pathogenesis
12. Histopathologic features of non-arteriosclerotic diseases of the Aorta and arteries
13. Regulation of Vasomotor tone and Vasospasm
14. Venous system of the Lower extremities: Physiology and pathophysiology
15. Structure and function of the Lymphatic system
16. Diabetic vascular disease
17. Plasma Lipoproteins and Vascular disease
18. Cigarette smoking and Vascular diseases
19. Coagulation and disorders of Hemostasis
20. Blood rheology and the microcirculation
21. Drugs in Vascular disease
22. Scientific basis for Balloon Angioplasty
23. Basic principles underlying the function of Endovascular devices
24. Vascular grafts
25. Statistics for the Vascular Surgeon

**B. Clinical Competencies- Knowledge in subject**

1. Aneurysmal disease
    a. Aneurysm involving aortic arch
    b. Descending thoracic and thoraco-abdominal aorta
    c. Abdominal aorta
    d. Peripheral arterial
2. Peripheral vascular occlusive disease
3. Renal artery disease
4. Visceral ischemia
5. Carotid artery disease
6. Innominate, subclavian and vertebrobasilar arterial disease
7. Thoracic outlet syndrome
8. Acute arterial occlusion

9. Complications of vascular therapy
10. Management of vascular trauma
11. Venous thrombo-embolic disease, chronic venous insufficiency
12. Diagnostic techniques
13. Vascular grafts
14. Endovascular therapy in management of peripheral vascular disease
15. Endovascular therapy for aneurismal disease
    a. Basic evaluation and concepts of Endovascular Aneurysm Repair
    b. Techniques and specifications at various aortic avenues
    c. Complications, long term surveillance of Endovascular repair of Aneurysms
16. Risk stratification and risk factors
17. Coagulation disorders, anticoagulants, anti platelets
18. Miscellaneous vasculogenic problems
19. Diagnosis and management of Non- atherosclerotic vasculogenic problems
20. Arteriovenous malformations and arteriovenous fistulae
21. Varicose vein

    Endovenous laser /RF ablation for varicose veins – concepts & Techniques
21. Vascular access
22. Diabetic foot problems
23. Lymphodema
24. Sympathectomy
25. Amputation
26. Tissue engineering - current status

**For example,**

Aneurysmal disease of Aorta exemplifies a classic prototype disease entity in vascular surgery.

A. Aetiopathogenesis

1. To describe aortic architecture and functions.
2. To describe hemodynamic changes at major bifurcation and Laplaces law
3. To describe the role of aging and atherosclerosis in aortic enlargement
4. To describe the role of inflammation and proteases in aneurysm formation

5. To describe the differences in Marfans disease and Ehlers Danlo syndrome

B. Diagnostic evaluation

1. To understand incidence and prevalence of aneurysmal disease according to age
2. To understand the natural history of abdominal aortic aneurysm
3. To understand the genetic distribution of the disease
4. To understand the role of ultrasound, angiography, CT and MRI in screening and planning surgery

C. Treatment

1. To understand the indications for surgical repair and factors which contribute to surgical decision making
2. To understand the technical aspects of aortic aneurysm repair and surgical options and alternatives
3. To describe the surgical management of complex aortic aneurysms (including horseshoe kidneys, aortocaval and aortoduodenal fistula)
4. To have knowledge of both the immediate and long term outcomes of surgery for aortic aneurismal disease (including the symptomatic, asymptomatic, thoracoabdominal, juxtrarenal, and infrarenal)
5. To describe the management and prevention of surgical complications including spinal cord ischemia, distal embolisation, myocardial infarction, graft infection.
6. To understand endovascular repair-its indications, techniques and limitations

**The student should acquire the following skills:**

**Exposure to vascular and endovascular procedures:**

The trainees shall be familiarized in the indexed and complex open as well as endovascular procedures performed in their parent institutions or at centers of excellence for a period of two months during the period of their training (LATTER OPTIONAL).

Following procedures are mentioned, although from center to center, clinical practice and case volume would vary.

1. Embolectomy
2. Femoro-popliteal bypass
3. Aorto-femoral bypass
4. Femoro-distal bypass
5. Aorto-renal bypass
6. Aorto-visceral bypass
7. Repair of abdominal aortic aneurysm & thoraco-abdominal aortic aneurysm
8. Repair of popliteal artery aneurysm
9. Carotid endarterectomy and surgery for Carotid diseases
10. Decompression of thoracic outlet syndrome
11. AV access surgery/transplant surgery
12. Repair of arteries and veins (Trauma)
13. Extra-anatomic bypass
14. Thrombectomy/ Re-do procedures.
15. Surgical and non-surgical management of Varicose veins
16. Angioplasty with or without stenting of FP, Iliac, aortic stenosis
17. Carotid artery stenting
18. Iliac vein stenting
19. Endovascular repair of AAA (abdominal aortic aneurysm**)**, thoracic aortic aneurysm, peripheral aneurysms
20. Catheter Directed Thrombolysis (CDT)

**Minimum number of procedures to be performed/assisted by post graduate students in 3 years**

(The numbers given below are optional and variable. Concerned teachers need to make sure that their residents perform adequate number of procedures taking into account patient safety and complexity of procedure)

1. AV Fistula: 30
2. Exposure of peripheral arteries: 30
3. Embolectomy: 03
4. Femoro-Popliteal / Aorto-Femoral graft: 05

5. Abdominal Aortic aneurysm: 03
6. Carotid Endarterectomy: 03
7. Peripheral arterial aneurysms: 02
8. Hybrid / Endovascular Aortic Aneurysm Repair: 02
9. Vascular graft anastomosis: 05
10. Thoracotomy (to facilitate exposure of Descending Thoracic Aorta) 05
11. Saphenous vein harvest 20
12. Femoral /Aortic Cannulation 05

# *TEACHING LEARNING METHODS*

## A. FORMAL TEACHING

All the post graduate trainees pursuing M.Ch. in Vascular Surgery will undergo formal teaching at the departmental and institutional level.

Teaching programs held on all working days 8.30 AM to 9.30 AM

| **Day** | **Duration** | **Activity** |
|---|---|---|
| Monday | 1 hour | Journal Club |
| Tuesday | 1 hour | Didactic Lecture |
| Wednesday | 1 hour | Subject Seminar |
| Thursday | 1 hour | Hospital (Grand Rounds/Clinical meeting) |
| Friday | 1 hour | Clinical Case Presentation |
| Saturday | 3 hours | Presentations on exposure of blood vessels, operative surgery & discussion on operated/to be operated cases |

**Journal Club:** The trainee will present a journal article, either an original article (RCT/Systematic review) or a short study along with a review article. The trainee is expected to present the article citing the relevance, background/context, study methods and statistical analysis, interpret results and discussion, summarize, present limitation and critically analyze the study methods and outcomes.

**Didactic Lecture:** Invited lectures on basic sciences, biostatistics, research methodology, teaching methodology, from external faculty of specialties related to the subject, medical ethics and legal issues related to Vascular Surgery practice etc. are conducted once a week.

**Subject Seminar:** The trainee will present a subject topic allocated after doing a comprehensive preparation, relevant literature search and presents the topic in detail covering all the relevant aspects, clinical applications and engages audience and answers questions.

**Hospital Grand Rounds:** The trainee will attend the Hospital Grand Rounds weekly, which involves presentations from various specialties, related to Vascular Surgery.

**Clinical Case Presentation:** The post graduate student will present a clinical case after performing thorough history and physical examination. The post graduate students will elicit physical and non-physical aspects in history, all physical signs, formulate diagnosis/differential diagnosis and plan a comprehensive care plan for the patient.

## B. BED SIDE TEACHING

All the post graduate trainees will carry out their clinical work under supervision of faculty. This involves around 2 hours of dedicated teaching ward rounds in the morning, and on the run teaching in outpatients, consultation liaison, home care, and hospice.

## C. ADDITIONAL TEACHING/TRAINING

All the post graduate trainees pursing M.Ch. Vascular Surgery are expected to attend regular CMEs, Conferences, Workshops; Small group teaching organized by local/national/international institutes and required to be abreast with the current knowledge and recent advances in the field of Vascular Surgery.

**Core Training:**

Education - Both learning and teaching should be integral part of the programme. The chain of learning from peers and teaching the juniors should never be broken.

- Ward rounds and hands-on teaching in the operating theatre should be the main stay of the teaching programme, rather than didactic lectures.
- Journal Club Meetings should be held at least once a month.
- A mortality/morbidity review and departmental audit should be held at least bimonthly to review all deaths and complications.
- Subject seminars to be held bimonthly to review selected topics.
- The unscheduled and informal discussions to be held as often as possible depending upon the variety and the number of diseases/procedures seen. This method could be an excellent teaching tool rather than totally regimented scheduling at this level of education.
- The post graduate students should be encouraged to undertake epidemiological and clinical research programme on selected topics. They should be taught the basic methods of research and reporting.
- A post graduate student of a post graduate degree course in broad specialities/super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his post graduate studies so as to make him eligible to appear at the post graduate degree examination.
- The post graduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- The Department should encourage e-learning activities.

**LOGBOOK**

Logbook serves as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/ operations performed during the training period right from the point of entry and its authenticity shall be got periodically verified by the faculty and certified by the concerned postgraduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the final Examination. The logbook should record details of clinical cases, details of surgical operations assisted or done independently, procedures or tests performed, and Seminars and journal clubs attended. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and

recent advances in the area and must include short review of recent literature relevant to the entry. It should also contain detailed documentation of relevant photographs of interesting clinical and operative procedures. The Log books shall be checked and assessed periodically by the faculty members imparting the training.

**RESEARCH**

The post graduate student shall present at least two papers/posters at conferences of national or international levels. He/she should be encouraged to undertake retrospective/prospective study of clinical paradigm**.** Each post graduate student should be exposed to Modern principles of Clinical epidemiology, Biostatistics and Research methodology by Medical epidemiology Unit of the Institution.

**Posting in Allied Departments**

The post graduate student should be posted by rotation to various allied departments/units of Radiology, Cardiology and Cardio-Vascular Thoracic Surgery to acquire related knowledge (Table 1).

## Training timeline during three years of residency

**Table 1**

| | | |
|---|---|---|
| **First year** | 9 months | Vascular Surgery |
| | 3 months | Radiology |
| **Second year** | 9 months | Vascular Surgery |
| | 3 months | Radiology |
| **Third year** | 10 months | Vascular Surgery |
| | 1 month | CVTS & Cardiology |
| | 1 month | Radiology |

1. **Radiology** - To learn the basic and advanced skills in imaging techniques.

    a) Principles of duplex imaging and technical skills.

    b) Contrast imaging of Vascular System - Arteriography, Venography, Lymphangiography

    • 'Tools' used in contrast imaging and interventions.
    • Basics in other imaging modalities, such as CT angio and MR angiography.

c) Endovascular Surgery/ Interventions: For this essential part of the training candidate should be allowed to rotate through Departments of Radiology and Cardiology.

2. **Cardiology:** As the major cause of mortality in all vascular procedures is cardiac related, a short rotation of one month through cardiology would be helpful.

Current minimally invasive surgery popularized as endovascular intervention is also addressed along the changing trends world over. Medical (pharmacological) management including control of risk factors and graded exercises forms the first line treatment followed by endovascular interventions and lastly the open surgical reconstruction for most vascular disorders. The recently popularized endovascular stent graft repair also will be introduced to the resident, procedure primarily being Radiological intervention.

During the training period, the post graduate student shall work full time under the head of the Division of Vascular Surgery, take part in all activities of the department including participation in seminars, conferences, teaching assignments, operating sessions, experimental surgery and other duties that may be assigned to him by the Head of the Department of Vascular Surgery.

## 2. Schedule of postings

The training programme shall aim to provide sound knowledge in the diagnostic and investigative aspects of vascular surgery for the candidate. It will provide practical training in clinical and operative vascular surgery.

The programme of training shall be divided as follows:

**FIRST YEAR**

a) 09 months (Vascular Surgery):

During this period, the post graduate student shall act as first assistant to the head of the department, and other senior surgeons in major/minor open vascular reconstructions. She/He will receive progressively greater responsibility for assisting in performance of major surgical procedures and will be responsible for

preparation of operation notes and postoperative intensive care, Clinical work in inpatient and outpatient section: Methods of workup and follow up in vascular surgery.

b) 03 months (Radiology)

In the department of Radiology, the post graduate student will learn basis of vascular imaging including Duplex scan, CT scan, Magnetic resonance and digital subtraction angiogram, to observe minimal access endovascular intervention like angioplasty, stenting and thrombolysis.

**SECOND YEAR**

c) 09 months (Vascular Surgery)

In the Department of Vascular Surgery, training will focus more in operation room maneuvers including suturing technique, control of aorta, blood vessels and graft /Vein anastomosis to bypass diseased artery/repair of aneurysm.

d) 03 months (Radiology)

In the Department of Radiology, the post graduate student will familiarise with indications, endovascular techniques, and post-procedural management and also to enhance imaging techniques and their interpretation and state of art advances in technology.

**THIRD YEAR**

e) 10 months in Vascular surgery

The post graduate student will obtain sufficient exposure to open procedures like lower limb revascularisation, carotid, renal endarterectomy and bypass procedures and repair of thoracic, abdominal aortic and peripheral arterial aneurysms. She/he will take up increasing responsibility in selection and postoperative management.

f) 1 month (Radiology)

The post graduate student will assist in endovascular procedures, perform angioplasties and provide access for major aortic endovascular procedures.

g) 1 month (CTVS and Cardiology-two weeks each)

The post graduate student will be posted in CTVS and cardiology respectively to learn principles of cardiology and open-heart surgery strategies in order to be acquainted with cannulation and bypass techniques.

**Note:** The exact duration of postings for a particular activity will be decided by the division of academic affairs in consultation with the Head of the Department at the commencement of each year.

A copy of the report of all the procedures performed shall be submitted by the candidate to the Head of the Department in the form of a periodically certified log book at least six weeks before the part 2 Examination. The Head of the Department will certify the completion of the minimum number of procedures specified. He will point out deficiency, if any and give his recommendations with reasons as to whether the candidate should be allowed to sit in the examination or not. The Head of the Department will forward the Log book within a week of receipt, to the division of Academic affairs. Towards the conclusion of this period, the post graduate student shall have carried out a minimum 50 vascular procedures.

**During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently; for this purpose, provision of surgical skills laboratories in medical colleges is mandatory.**

## *ASSESSMENT*

**FORMATIVE ASSESSMENT, ie., during the training**

**Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.**

**Quarterly assessment during the MCh training should be based on:**

1. Journal based / recent advances learning
2. Patient based /Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and Outreach Activities / CMEs

**The student to be assessed periodically as per categories listed in post graduate student appraisal form (Annexure I).**

## SUMMATIVE ASSESSMENT, at the end of the course

The summative examination would be carried out as per the Rules given in **POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.**

The summative assessment examination shall include two heads:

A. Theory examination.
B. Practical, Clinical examination and Viva-voce.

Theory examination and Practical/Clinical, Viva-voce shall be separate heads of passing.

Theory examination shall comprise of four papers. Passing percentage shall be cumulatively 50% with minimum of 40% marks in each theory paper.

Practical /Clinical examination consisting of at least one long case, three short cases and viva-voce. Passing percentage shall be 50%.

Passing shall be separate for each head and failing shall be common, meaning thereby that clearance at theory and failure at practical / clinical shall amount to failure at Summative examination and vice versa.

The M.Ch. examination shall be in two parts:

**1. Theory**

There shall be 4 theory papers as follows:

Paper I: Basic Sciences applied to Vascular Surgery

Paper II: Vascular Surgery

Paper III: Vascular and Endovascular Surgery

Paper IV: Recent advances in Vascular Surgery

**2. Clinical / Practical and oral examination:**

**(i) Clinical**

The post graduate students shall examine a minimum one long case and 3 short cases including at least one postoperative case.

**(ii) Oral examination**:

Practical examination shall consist of carrying out special investigative techniques for diagnosis and therapy. MCh post graduate students shall also be examined in surgical procedures. Oral examination shall be comprehensive enough to test the candidate's overall knowledge of the subject, investigative procedures, therapeutic techniques and other aspects of the specialty.

## LOG BOOK

**Table 3: Diagnostic and Operative procedures Assisted/Performed**

**Name:** **Admission year:**

**College:**

| Date | Name | I D No. | Procedure | Category O, A, PA, PI* |
|---|---|---|---|---|
| | | | | |
| | | | | |

**Key:**

O – Washed up and observed
A – Assisted a senior surgeon
PA – Performed procedure under the direct supervision
PI - Performed independently

### Recommended reading

### Books (latest edition)


1. Text book of Vascular Surgery: by Robert B. Rutherford.
2. Text book of Vascular Surgery : by Henry Haimovici
3. Text book of Vascular Emergencies: by Henry Haimovici
4. Vascular and Endovascular Surgery: A Comprehensive Review: by Moore, Wesley S. Philadelphia, Saunders Elsevier.
5. Text book of Vascular Surgical Emergencies: by John J. Bergen & James S. I. Yao.

6. Investigation of Vascular Diseases: by Andrew N. Nicolaides & James Yao.
7. Rob & Smith Operative Surgery Text book of Vascular Surgery: by James Deeweese.
8. Comprehensive Vascular Exposures: by Ronald J. Sloney & David J. Effeney
9. Wylie's Atlas of Vascular Surgery& Organ Transplantation: by Wayne Flye
10. Atlas of Vascular Surgery: by Rutherford

**Journals**

3 international and 02 national (all indexed) journals.

**Annexure I**

**Postgraduate Student Appraisal Form**
**Clinical Disciplines**

**Name of the Department/Unit :**
**Name of the PG Student :**
**Period of Training : FROM……TO……**

| Sr. No. | PARTICULARS | Not Satisfactory | Satisfactory | More Than Satisfactory | Remarks |
|---|---|---|---|---|---|
| | | 1 2 3 | 4 5 6 | 7 8 9 | |
| 1. | Journal based / recent advances learning | | | | |
| 2. | Patient based /Laboratory or Skill based learning | | | | |
| 3. | Self directed learning and teaching | | | | |
| 4. | Departmental and interdepartmental learning activity | | | | |
| 5. | External and Outreach Activities / CMEs | | | | |
| 6. | Thesis / Research work | | | | |
| 7. | Log Book Maintenance | | | | |

**Publications** **Yes/ No**

**Remarks*_____**
**_____**
**_____**

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.**

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