



# MASTER OF SURGERY (PLASTIC SURGERY)

*Reconstrutive Sciences Unit  
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TRAINING CURRICULUM FOR TRAINEES AND SUPERVISORS  
UNIVERSITI SAINS MALAYSIA

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## MASTER OF SURGERY (PLASTIC SURGERY)

### 1. Aim

A four year post-graduate training program in Plastic Surgery.

### 2. Background

The School of Medical Sciences, USM, was established in 1979 to train undergraduate medical doctors. This evolved into developing post-graduate training in Medicine, which begun in 1987. Presently there are more than fifteen specialty post graduate training programmes being conducted by the School of Medical Sciences, USM.

In the year of 2000, there were only 33 Plastic Surgeons to provide for the Plastic Surgical care and needs of our 22 million Malaysian population. The training of Plastic Surgeons was originally based on an apprenticeship of three years after a general surgical fellowship or Masters in Surgery qualification. There has been an acute shortage and long-term deficit of trained Plastic surgeons in Malaysia. In 2000 there was a deficit of 147 plastic surgeons and by the year 2002 this increased to 340.

The School of Medical Sciences USM, in collaboration of the Ministry of Health of Malaysia, was given the task to start a training program in Plastic Surgery. A structured training programme, Masters of Surgery (Plastic Surgery), was proposed and approved. The M.S. (Plastic Surgery) programme commenced in July 2001.

### 3. Structure of course

(Appendix I) The training is divided into 3 phases.

Phase I (year 1): Basic surgical sciences and basic topics in Plastic

Surgery Phase II (year 2 & 3): Plastic surgical trainee

Phase III (year 4): Specialist in training

### 3.1 Curriculum structure phase I

The curriculum is divided into 2 parts. (Appendix II)

- a. Basic surgical sciences
- b. Basic principles of plastic surgery

<b>Phase</b>	<b>Year</b>	<b>Curriculum and Training Place</b>	<b>Assessment</b>
I	1	<ul style="list-style-type: none"><li>• Basic surgical sciences</li><li>• Basic principles in plastic surgery</li><li>• Clinical responsibility at plastic surgical services</li><li>• Log book</li></ul>	<ul style="list-style-type: none"><li>• Continuous supervisor assessment</li><li>• Professional examination I</li></ul>

3.2 Curriculum structure phase II (specialty trainee in plastic surgery)

Phase	Year	Curriculum and Training Place	Assessment
II	2 & 3	<ul style="list-style-type: none"> <li>• Clinical responsibilities in plastic surgical services</li> <li>• Case reports</li> <li>• Log book</li> <li>•Dissertation (starting in year 2)</li> <li>• Learning of plastic surgical topic in packages. (A series of seminars will be organized twice annually)</li> <li>• Research activities, CPC and attending conferences</li> <li>• Elective posting for 6 months at an external training center</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous supervisor assessment</li> <li>• Annual viva-voce examination</li> </ul>

### 3.3 Curriculum structure phase III (Specialist in Training)

Phase	Year	Curriculum and Training Place	Assessment
III	4	<ul style="list-style-type: none"><li>• Clinical responsibilities in plastic surgical services</li><li>• Learning of plastic surgical topic in packages. (continuation of phase II)</li><li>• Log book</li><li>• Case report</li></ul>	<ul style="list-style-type: none"><li>• Professional examination II</li></ul>

4. Mode of Teaching and Learning

Various modes will be used to achieve effective learning objectives.

- Notes, articles, references and audiovisual material will be prepared together with candidates.
- Lectures and seminar will be given in packages to cover the whole syllabus of plastic surgery.
- Candidate will be actively involved in clinical activities including clinics, ward management, preparation, planning and executing operative procedures, post-operative care and on-call duties in plastic surgery.
- Preparation of case reports, a total of 8 case reports.
- Actively participating in academic and research activities.
- Writing up of dissertation. The title must be specific. The length is about 15,000 words.

5. Supervision and progress reports

The medical school will appoint a qualified plastic surgeon to be a supervisor for each candidate. The supervisor is responsible for the progress report of the candidate.

6. Examination and Assessment

Assessment during the course is divided into 2 parts

- Continuous assessment
- Examination (annual and end-phase examinations)

6.1 Phase I assessment

6.1.1 Continuous assessment

- a. coursework
- b. supervisor report
- c. case reports

6.1.2 Professional examination I.....100%

MCQ.....	30%
MEQ.....	30%
OSCE.....	40%

6.2 Phase II and III (year 2, 3 & 4)

- 6.2.1 Continuous Assessment
  - a. log book
  - b. supervisor report
  - c. annual viva-voce examination in year 2 and 3

Passing this component of phase II assessment is a prerequisite for admission to Phase III.

- 6.2.2 Professional examination (end of year 4)
  - Theory:
    - Essay/MEQ.....40%
  - Clinical: .....60%
    - Long case                      20%
    - Short case                     10%
    - Viva                              30%

- 6.2.3 Repeat examination
  - Failing the professional examination, the candidate may appear in the examination after 6 months or 1 year upon approval of the University senate.

7. Entrance Criteria

- 7.1 Candidate must hold a recognized medical degree.
- 7.2 Candidate must have 18 months experience in general surgery and 6 months experience in related surgical based disciplines after completing the housemanship training.
- 7.3 Candidates are required to appear for an entrance interview.

8. Exemption

- 8.1 Exemption from phase I will be given to holder of Master of Surgery from local university or any equivalent degree based on university approval.
- 8.2 Candidate can be exempted from 1 case report for every local paper presentation and 2 case reports for every international presentation. Candidate can also be exempted from 2 case reports for every publication in national journal and 3 case reports for each publication in an international journal.

9. Duration of Training

The minimum duration of training is four (4) years with a maximum of seven (7) years.

10. Curriculum and syllabus

Syllabus that will be used is attached (appendix II & III). However, the syllabus will be updated from time to time in view of the progress in this field of specialty.

11. Academic and Teaching Staffs

- 11.1 All academic staffs at the School of Medical Sciences will be involved in teaching activities. This is particularly in the phase I where the major input of basic sciences and principle of surgery.
- 11.2 Phase II and III will be particularly involved plastic and reconstructive surgeons. A

minimum of 2 trainer (surgeons) / lecturer will be required at each training center.

11.3 Visiting professor and visiting lecturer will be appointed in running the teaching packages in form of seminars.

12. Administrative committee

The Reconstructive Sciences Unit will be responsible in organizing and monitoring the program, preparing teaching schedule and organizing seminars pertaining to the program.

13. Administration of Examination

The Medical School will coordinate and execute all examination. The result will be discussed at the Examination Board before approval by the Medical School Board and the Post-graduate University Board.



## Appendix I

### Programme Structure

Phase	Year	Curriculum
I	1	* Basic Surgical Sciences * Basic principles in plastic surgery
<b>Professional Examination I</b>		
II	2 & 3	* Case reports * Log book * Dissertation * Elective posting * Annual Viva-voce
III	4	* Case report * Log book
<b>Professional Examination II</b>		

## **Appendix II**

### **SYLLABUS FOR PHASE I (YEAR 1)**

#### 1. COMMON TOPIC BASIC SURGICAL SCIENCES

##### *ANATOMY*

Candidates will be required to have knowledge of the structure and functions of all systems of the body where applicable to common clinical conditions. A basic knowledge of histology will be required in order to understand the function of tissue and organs as well as growth, degeneration and repair, without a detailed knowledge of cellular structures. Details of embryology will not be required other than an understanding of the embryology basis of those congenital anomalies which are compatible with life, but which require surgical correction either in the neonatal period or later in life.

##### Nervous system : Head and Neck

The anatomy of the scalp and cranial cavity in relation to head injuries and raised intracranial pressure.

CFS formation and circulation

Origin, course, distribution and testing of cranial and peripheral nerves.

General organisation and function of the autonomic nervous system.

Anatomy relevant to common operations in the neck, such as biopsy of cervical nodes and neck dissection.

##### Respiratory System

Anatomical basis of maintenance of the airway, tracheostomy, laryngotomy and the management of crushing and penetrating wounds of the chest. Thoracic walls, intercostal spaces, diaphragm and surgical approaches to thoracic viscera. Surface marking of pleura, lungs and heart. Anatomy of thoracic viscera. Anatomical aspects of paracentesis, thoracic and chest drainage.

##### Cardiovascular System

Heart, pericardium, coronary circulation.

Major arteries and veins; course and distribution where relevant to injury, disease,

Investigations and surgical procedures.

##### Gastro-intestinal System

Anatomy relevant to the function, pathology and surgery of the gastro-intestinal tract and related structures.

The general configuration of the peritoneal cavity

Anterior and posterior abdominal walls and relationships or viscera

Anatomical aspects of abdominal incisions, paracentesis abdominal, inguinal and femoral hernia.

Anatomy relevant to common problems of the pelvic floor, anal canal, sphincters and ischio-rectal fossa

### Genito-urinary System

Anatomy relevant to function, pathology and surgery of the urinary tract and male and female genital organs.

### Endocrine System and Breast

Anatomy relevant to function, pathology and surgery of the endocrine organs and the breast.

### Musculo- Skeletal System

Anatomy relevant to the function, pathology and surgery of bones and joints and of the main muscle groups. The anatomical basis of investigations assessment and initial management of common soft tissue injuries, articular, vascular and peripheral nerve injuries and head infections. The emphasis will be on anatomy relevant to acute trauma.

### *APPLIED PHYSIOLOGY*

There will be emphasis on the pathophysiology and treatment of fundamental surgical situations, such as organ failure, increased intracranial pressure and shock. Detailed knowledge related to the surgical specialities such as bone metabolism or the detailed biochemistry of secretion and control of hormones will not be required.

### Blood and Reticulo-endothelial Systems

Functions of the haemopoietic and reticulo-endothelial systems.

Blood groups and transfusion of blood products; hazards of transfusion.

Haemostasis and fibrinolysis; control of haemorrhage.

Function of the plasma proteins.

### Nervous System

General principles of excitable tissues; synaptic transmission in somatic and autonomic nervous system.

Drugs affecting neurotransmitters.

Pain and its control

Management of the unconscious patient and spinal injuries.

### Respiratory System

Mechanism of respiration and the general principles of respiratory control; factors which affect them, e.g. drugs, trauma and shock lung.

Transport of oxygen and carbon dioxide

Assessment of pulmonary function; respiratory failure and other common derangements of respiratory function

Oxygen therapy and ventilatory support

### Cardiovascular System

Assessment of cardiac and vascular functions and monitoring techniques,

Control of heart, ECG

Cardiac failure, inotropic and chronotropic drugs

Blood flow and its measurement

Blood flow and its measurement

Capillary function and fluid exchange

Pathophysiology and management of shock

Control of body fluid compartments

### Gastro-intestinal System

Physiology and assessment of abnormalities of secretion, absorption and motility,

Endocrine function of the gastro-intestinal tract.

Functions of the hepato-biliary system and the pancreas and their assessment.

Jaundice and hepatic failure.

### Urinary System

Functions of the urinary tract and its assessment

Control of water balance and osmo-regulation.

Management of oliguria and renal failure.

### Endocrine System

Function, secretion and control of hormones and assessment (detailed biochemistry not required).

Testicular and ovarian function.

### Musculo-skeletal system

Principles of physiology of muscle, joints and bone.

Calcium metabolism.

### General

Acid base balance its disturbance.

Fluid and electrolyte balance its disturbance.

Normal nutritional requirements, enteral and parenteral nutrition.

Pathophysiology and management of burns.

## *GENERAL PATHOLOGY*

The candidate will be expected to have a sound knowledge of the principles of pathology and microbiology (including virology) in a surgical context, including inflammation, infection and neoplasia, the response of the tissues to injury, disturbances of growth (metaplasia, atrophy, hypertrophy and hyperplasia) degenerative processes, and repair and regeneration. With regard to common the candidate will be expected to have a broad knowledge of the pathology and principles of management.

### General

#### Immunology

Immune response (humoral and cellular), immunodeficiency, immuno-suppression, organ transplantation and pathophysiology of rejection.

#### Genetic

Genetics as applied surgical practice.

#### Neoplastic Disease

Pathology, surgery, radiotherapy, chemotherapy, immunology.

Management of Multiple trauma (including war injuries)

Rehabilitation

Principles of management following amputations, gastro-intestinal resections stomata, cardio-pulmonary disease and major trauma.

#### Pathology Specimens

Biopsy techniques, frozen sections, handling fixation and transport of specimens.

Aspiration cytology.

Quality Assurance

Surgical audit, computing in medicine, clinical research techniques and statistical methods in surgery.

## *PRINCIPLES OF SURGERY*

The candidate will be tested on this knowledge of the general principles of practice surgery.

The stress is more towards the understanding of basic processes and the applications to surgery.

Principles

Diagnostic Methods

Imaging techniques

Endoscopy

Interventional Radiology

Pre-operative Assessment and Management

Surgery at the Extremes of Life.

Theatre Techniques

Aseptic techniques and sterilization.

Anaesthesia in general, maintenance of homeostasis

Basic surgical techniques: suturing and suture materials, dressing, plasters.

Diathermy

Tourniquet.

Wound Healing

Wound dehiscence.

Scars and contractures

Haemorrhage shock, burns

Fluids electrolyte Balance

Surgical Oncology, Radiotherapy & Chemotherapy

Post-operative Complications

Sepsis in Surgery

Acute and chronic inflammation

Wound infections, Septicaemia

Special infections: Viral (hepatitis, AIDS) Bacteria (tetanus, gas gangrene)

Tuberculosis

Antiseptics

Antibiotic policies

Intensive Care

Surgical nutrition

Surgical Haematology and transfusion practice.

## 2. SPECIFIC TOPICS FOR PLASTIC SURGERY

### GENERAL AND BASIC PLASTIC SURGICAL SCIENCES

Introduction to plastic surgery (including and its scope)

Basic surgical skills

Basic principle of Plastic Surgery

Wound healing and scar

Anatomical basis of flaps

Tissue transplantation and biomaterial

**Appendix III**

**SYLLABUS FOR PHASE II & III (Year 2, 3 and 4)**

**1. BASIC PRINCIPLES AND FUNDAMENTAL TECHNIQUES**

- 1.1 Biology of Tissue Injury and Repair
- 1.2 Normal and Pathological Wound Healing
- 1.3 Basic Principles of Surgical Techniques
- 1.4 Skin Grafting
- 1.5 Dermal Grafting
- 1.6 Basic Principles of Skin Flaps
- 1.7 Types of Flaps and Their Design
- 1.8 Composite Grafts
- 1.9 Principles of Bone Transplantation
- 1.10 Basic Principles of Tendon Grafting
- 1.11 Principles of Cartilage Grafting
- 1.12 Basic Principles of Nerve Grafting
- 1.13 Skin Expansion
- 1.14 Biomaterials in Plastic Surgery
- 1.15 Scar Revision
- 1.16 Psychological Understanding and Management of the Plastic surgery patient.
- 1.17 Basic Medico-legal Principles In Plastic Surgery
- 1.18 Commonly used Drugs and Their Interactions

**2 SKIN AND SOFT TISSUES**

- 2.1 Cutaneous Carcinoma
- 2.2 Benign Skin Tumours
- 2.3 Melanoma
- 2.4 Soft Tissue Sarcoma
- 2.5 Vascular Anomalies
- 2.6 Laser therapy

**3 HEAD AND NECK CANCER**

- 3.1 Benign and Malignant Primary Salivary Gland Tumours
- 3.2 Benign and Malignant Tumours of the Oral Cavities



- 3.3 Solid and Cystic Tumours of the Jaws
- 3.4 Craniofacial Tumours
- 3.5 Basic Principles of Reconstruction of the Lip, Oral Commissure and Cheek
- 3.6 Reconstruction of the Nose
- 3.7 Reconstruction of Eyelid Deformities
- 3.8 Cervical Masses
- 3.9 Neck Dissection
- 3.10 Head and Neck Reconstruction
- 3.11 Chemotherapy
- 3.12 Basic Principle of Radiation Therapy (including its complications)

#### **4 FACIAL AESTHETIC SURGERY** **(Including rhinoplasty and blepharoplasty)**

- 4.1 Basic Principles of Aesthetic Surgery of the Face, Neck and Brow
- 4.2 Blepharoplasties
- 4.3 Rhytidectomy
- 4.4 Ancillary Procedures for Facial Rejuvenation
- 4.5 Complications and Its Management
- 4.6 Dermabrasion, Chemical Peel and Collagen Injection
- 4.7 Rhinoplasty
- 4.8 Aesthetic Surgery of the Ears
- 4.9 Hair Transplantation
- 4.10 Laser surgery

#### **5 HAND SURGERY** **(Trauma/Peripheral Nerve/ Congenital/ Dupuytren/ Rheumatoid)**

- 5.1 Embryology of the Upper Extremity
- 5.2 Congenital Defect of the Hand
- 5.3 Management of Injuries to Upper Extremity (Hands/Digits)
- 5.4 Tendons Injuries of the Hand
- 5.5 Peripheral Nerve Injuries
- 5.6 Rheumatoid Hand
- 5.7 Dupuytren

- 5.8 Tumour of the Hand
- 5.9 Thumb Reconstruction
- 5.10 Replantation

## **6. CRANIO FACIAL/FACIAL TRAUMA/FACIAL PALSY**

- 6.1 Repair of Traumatic Injuries Involving Skin and Soft Tissue
- 6.2 Basic Principles and Management of Facial Injuries
- 6.3 Management of Midfacial Fractures
- 6.4 Management of Fractures of the Mandible
- 6.5 Ear Reconstruction
- 6.6 Reanimation of Paralysed Face

## **7. CLEFT LIP AND PALATE AND CRANIOFACIAL ANOMALIES**

- 7.1 Embryology of the Head and Neck
- 7.2 The Unilateral Cleft Lip
- 7.3 Bilateral Cleft Lip
- 7.4 Cleft Palate
- 7.5 Secondary Deformities of Cleft Lip and Palate
- 7.6 Orthodontics and Cephalometrics
- 7.7 Principles of Speech Pathology in the Cleft Lip and Palate Child
- 7.8 The Cleft Palate Team – Its Organization and Function
- 7.9 An Outline of Craniofacial Anomalies and Principles of Their Correction
- 7.10 Facial Osteotomies

## **8 TRUNK /LIMB TRAUMA**

- 8.1 Pressure Sore
- 8.2 Lymphedema of the Extremities
- 8.3 Principles of the Extremities
- 8.4 Principles and Management of Leg Ulcers
- 8.5 Basic Principles Involving the Management if Tissue Loss in the Lower Extremity Including Muscle and Musculocutaneous Flaps

## **9 BREAST AND BODY CONTOURING**

- 9.1 Congenital and Development Breast Anomalies
- 9.2 Augmentation Mammoplasty
- 9.3 Basic Principles in the Management of Complications Following Augmentation Mammoplasty
- 9.4 Hypermastia , Ptosis
- 9.5 Management of Patients with High-Risk Diseases of the Breast
- 9.6 Breasts Reconstruction After Mastectomy
- 9.7 Gynecomastia
- 9.8 Total Body Contouring – the Abdomen and Hips, Buttocks, Thighs
- 9.9 Aspirative Lipoplasty

## **10 BURNS**

- 10.1 Current Concepts and Controversies
- 10.2 Resuscitation
- 10.3 Early and Late Surgery for Burn
- 10.4 Burns Reconstruction
- 10.5 Reconstruction of Special Areas - Eyelid , Ear, Genitalia and Hand
- 10.6 Principles and Management of Injuries from Physical and Chemical Agents

## **11 GENITALIA**

- 11.1 Embryology of Genitalia
- 11.2 Anomalies of the Male Genitalia
- 11.3 Congenital Deformities of the Female Genitalia
- 11.4 Penoscrotal Trauma and Reconstruction
- 11.5 Penoscrotal Lymphedema

## **12 MICROSURGERY (also complementing the Microsurgical Course)**

- 12.1 Basic Principles of Microsurgery
- 12.2 Cutaneous Free Flaps
- 12.3 Free Muscle and Musculocutaneous Flaps
- 12.4 Free Vascularized Bone Grafts and Osteocutaneous Flaps
- 12.5 The Use of Omentum and Jejunum in Head and Neck Reconstruction
- 12.6 Principles of Microneurosurgery
- 12.7 Replantation of Amputated Parts
- 12.8 Microsurgery Complications

### **13 FLAP DISSECTION COURSE**

- **Each year two seminars /intensive courses will be held. A group of two topics will be covered by each seminar/course. Therefore each year four topics will be addressed and all 12 topics will be covered in the phase II and III (3 year period)**

#### **Year 2**

##### **1<sup>st</sup> Group**

- BASIC PRINCIPLES AND FUNDAMENTAL TECHNIQUES
- SKIN AND SOFT TISSUES

##### **2<sup>nd</sup> Group**

- HEAD AND NECK CANCER
- FACIAL AESTHETIC SURGERY ( Including rhinoplasty and blepharoplasty)

#### **Year 3**

##### **3<sup>rd</sup> Group**

- HAND SURGERY (Trauma/Peripheral Nerve/Congenital/ Dupuytren/ Rheumatoid)

##### **4<sup>th</sup> Group**

- CRANIO FACIAL/FACIAL TRAUMA/FACIAL PALSY
- CLEFT LIP AND PALATE AND CRANIOFACIAL ANOMALIES

#### **Year 4**

##### **5<sup>th</sup> Group**

- TRUNK/ LIMB TRAUMA
- BREAST AND BODY CONTOURING

##### **6<sup>th</sup> Group**

- BURNS
- GENITALIA