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**GUIDELINES FOR COMPETENCY
BASED
POSTGRADUATE TRAINING
PROGRAMME FOR M.Ch IN
PLASTIC & RECONSTRUCTIVE
SURGERY**

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR M.Ch. IN PLASTIC AND RECONSTRUCTIVE SURGERY

1. PREAMBLE

Plastic and Reconstructive Surgery is a unique specialty that defies definition, has no organ system of its own, is based on principles rather than specific procedures. It pertains to restoring form and functions and, in many situations, enhancing it. The scope ranges from the top of the Calvarium to the bottom of the sole. It has also been defined as a 'Problem solving specialty' - solving problems related to many other specialties. The range of Plastic and Reconstructive Surgery has expanded by leaps and bounds in the past few decades.

Thus, a structured program for a comprehensive training in the wide range of Plastic and Reconstructive surgery is the need of the hour as it would lay down the gold standard for training across all the platforms in the country. Moreover, it will also help in standardizing the training of future plastic surgeons. This comprehensive document has been prepared keeping this need in mind. The core idea all through has been to prepare a curriculum that is inclusive of theoretical knowledge, practical aspects, and the desired operative capabilities of the trainee. The document will help the teachers micromanage the nitty gritty of the daily training and teaching assignments. At the end of the 3-year training, the candidate would be equipped with vast knowledge, skills, the right aptitude to function as an independent, knowledgeable consultant, teacher and researcher.

SUBJECT SPECIFIC LEARNING OBJECTIVES

(Complete details in annexure II available with Expert Group members)

The aim of course is to produce plastic surgeons capable of setting standards and demonstrate commensurate expertise in the field. The training should aim to facilitate the candidate's acquisition of a judicious mix of the three domains of learning that will be practiced ethically: -

- Cognitive (knowledge) domain,
- Affective (communication) domain, and

- Psychomotor (practice) domain.

i. COGNITIVE DOMAIN (KNOWLEDGE DOMAIN)

- Understand the basic sciences (embryology, anatomy, physiology, biochemistry, pharmaco-therapeutics etc.) and principles of plastic surgical care as applicable to practice in plastic surgery.
 - Be conversant with the embryology, aetiology, pathophysiology, diagnosis and management of common (elective or emergency) conditions requiring plastic surgical intervention.
 - Be conversant with principles guiding care with reference to plastic surgery, aesthetic medicine and surgery and burn management.
 - **Group approach:** Recognize the role of multidisciplinary and interdisciplinary approach in the management of various conditions requiring plastic surgery so as to obtain relevant specialist consultation, where appropriate.
 - **Research Methodology:** Basic knowledge of research methodology and bio-statistics; familiarity and participation in clinical and experimental research studies; involvement in scientific presentation and publication.
- Recognize the importance of family, society and socio-cultural environment in the treatment and rehabilitation of the individual needing plastic surgery care.

ii. AFFECTIVE DOMAIN

The trainee should imbibe the following:

- **Group /Team approach:** function as a part of a team, co-operate with colleagues, and interact with the patient to provide the optimal medical care.
- **Ethical practice:** Abide by ethical principles in medical practice, maintain proper etiquette in dealings with patients, caretakers and other health personnel including due attention to the patient's right to information, consent and second opinion. Maintain professional integrity while dealing with patients, colleagues, seniors, pharmaceutical companies and equipment manufacturers.
- **Teaching and Communication:** Preparation of oral presentation, medical documents, professional opinion in interaction with patients, caretakers, peers and paramedical staff – both for clinical care and medical teaching. Effective communication with the patient/caretakers regarding the nature and extent of

disease, treatment options available and realistic outcome following optimal management is essential.

- Provide counselling to the patient and caretakers for the smooth dispensation of medical care.
- During the course of three years, the post graduate student is expected to attend instructive courses that facilitate proficiency relevant to this domain, for example, communication skills, biomedical ethics, patient counselling, teaching, etc.

iii. PSYCHOMOTOR SKILLS

- Evaluate a patient thoroughly (history, clinical examination), order relevant investigations and interpret them to reach a diagnosis and plan of management.
- Plan and carry out routine investigations/ procedures (bedside, laboratory, radiology) independently.
- Provide Basic and Advanced Life Support services in emergency according to ATLS guidelines.
- Acquire Skills to provide critical care of individuals requiring airway support, ventilation, central vascular access etc. during the course of treatment.
- Prepare a patient for an elective/emergency surgery and provide specific post-operative care.
- Acquire skills in routine ward procedures (wound dressings and peripheral vascular access).
- Acquire proficiency in prescribed minor and major operative procedures, and provide these, initially under supervision and later independently.
- Acquire proficiency in managing emergency and elective referrals and provide adequate support under supervision and later independently.
- Monitor the post-operative patient in the routine post-op ward / high dependency unit / and in the intensive care setting.
- Provide specific and relevant advice to the patient and family at discharge time for proper domiciliary care, reporting to hospital in an emergency and routine follow up.
- Acquire proficiency in teaching undergraduate students, nursing and other health care personnel.

SUBJECT SPECIFIC COMPETENCIES

(Complete details in annexure II available with Expert Group members)

At the end of the course, the student should be able to acquire the following competencies under the three domains, knowledge/skills/ expertise::

1. Cognitive domain (Knowledge domain)

A. THEORETICAL KNOWLEDGE:

Should be able to describe & discuss and synthesize knowledge of different conditions needing plastic surgical care and their diagnosis and management.

B. CLINICAL/PRACTICAL SKILLS:

Should be able to diagnose, investigate, perform surgery, manage and follow-up patients with conditions needing plastic surgical care using modern therapeutic methods.

C. TEACHING SKILLS:

Should be able to teach relevant aspects of conditions needing plastic surgical care to resident doctors, junior colleagues, nursing and para-medical staff.

D. RESEARCH METHODOLOGY:

Should be able to identify and investigate a research problem in conditions needing plastic surgical care using appropriate methodology.

E. GROUP APPROACH:

Should participate in multi-disciplinary meetings with radiologists, paediatricians, pathologists, orthopedic surgeons, rehabilitation specialists, oncologists and experts from allied clinical disciplines.

2. Affective domain (Attitudes including Communication and Professionalism)

The M.Ch. candidate, at the end of training should demonstrate the ability to:

- communicate in a professional manner the treatment plan with patients, their family and care givers,

- function as a part of a team in collaboration with other geriatric mental health care team members including those from related clinical disciplines, psychiatric nursing/occupational therapy staff and nutrition unit.
- Adopt ethical principles and maintain proper etiquette in dealing with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
- Develop communication skills to word reports and professional opinion and to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

Leadership skills

- Organize team activities in the department and community on Plastic Surgery-related conditions including prevention and public awareness.
- Plan and implement group activities with health staff in the hospital and community.

Professionalism

- Accept personal responsibility for care of patients with mental health problems, consistent with good work ethics and empathy.
- Demonstrate appropriate truthfulness and honesty with colleagues.
- Recognize personal beliefs, prejudices, and limitations, which should not come in the way of providing service.
- Respect patient confidentiality at all times in verbal and written communication.

Attitude

- Respect patients' religious, moral, and ethical beliefs and biases, even if they differ from the student's own beliefs.
- Present all available options accurately to the patient and relatives.
- Be aware of the advantages and potential hazards of referring patients and families to community or to national resources.
- Recognize the limitations of their own skills and seeks consultation when necessary.
- Understand and develop sensitivity to end-of-life care and issues regarding provision of care.

Interpersonal and Communication Skills

Human Relationships

- Acquire an effective system for identifying and addressing ethical, cultural, and spiritual issues associated with health care delivery to geriatric mental health patients.
- Acquire knowledge or applies an understanding of psychological, social, and economic factors which are pertinent to the delivery of health care to geriatric mental health patients.
- Effectively engages the patient and/or family in communications which are non-judgmental and non-coercive.

3. Psychomotor domain

The list of procedures which a trainee needs to perform independently, perform under supervision, assist, and observe are given below. In addition, trainees are encouraged to improve skills by doing procedures on cadavers, surgical simulators and the surgical skills laboratory.

Sl. No	Competencies in Psychomotor Domain. At the end of the course, the trainee should be able to:
	A. Perform Independently
1.	GENERAL PRINCIPLES <ul style="list-style-type: none">• Create a consent document appropriate to the clinical care sought by a patient• Perform steps of WHO safety protocol: surgical patient safety checklist• Obtain standard views of photographs for different conditions and create a photograph logbook• Select and use appropriate dressing materials for wounds• Demonstrate wound debridement• Demonstrate application of Negative pressure wound therapy• Demonstrate the use of external tissue expansion on simulation models• Demonstrate the harvest of split skin grafts in patients• Harvest and use a full thickness skin graft• Demonstrate use of the skin graft Mesher• Identify cutaneous vascular perforators using a vascular doppler

- Demonstrate with appropriate planning, local skin flaps, pedicled skin flaps, muscle flaps, osseous flaps, free flaps, perforator flaps
- Demonstrate delay procedures
- Demonstrate secondary flap modification (eg; flap debulking)
- Demonstrate harvest of tendon, bone, cartilage for grafts
- Demonstrate the administration of local anaesthetics, Tumescant anaesthesia, nerve blocks in patients
- Demonstrate Endotracheal intubation on a patient or Simulator

MICROVASCULAR SURGERY, BRACHIAL PLEXUS, PERIPHERAL NERVE SURGERY

- Set up the microscope in the operation theatre or Laboratory.
- Clean and store the Micro instruments after use.
- Use magnifying loupes and operating microscope during surgery.
- Make a pattern of the reconstructive plan with its various components for a given defect.
- Examine, decide the management, implement, operate and rehabilitate cases of brachial plexus injuries.
- Diagnose, investigate, exploration and repair of peripheral nerves under magnification.

BURNS

- Perform escharotomy, escharectomy and fasciotomy on the limbs and trunk
- Place central venous lines in the Subclavian, Internal Jugular and Femoral veins in Paediatric and adult patients
- Should manage acute burn patients in intensive care unit including respiratory and critical burn patients.
- Set-up Central Venous pressure measuring systems
- Perform burn wound dressings
- Harvest, apply, manage split skin grafts used to resurface burn wounds
- Procure and apply allograft skin on wounds
- Perform a burn wound biopsy
- Perform dressings for hand burns
- Perform a Z-plasty to lengthen a post burn contracture band
- Release and resurface post burn contractures of various joints

- Make appropriate splints to immobilize hand burns in the functional position.
- Prescribe appropriate splint, pressure garments and exercises for acute burns and post burn deformities.

CRANIOFACIAL, CLEFT AND PEDIATRIC PLASTIC SURGERY

- Place a Nasopharyngeal Airway to maintain the upper airway
- Demonstrate the various incisions and the anatomy to approach the Craniofacial skeleton
- Demonstrate the markings for a Unilateral and Bilateral Cleft lip repair
- Apply arch bars and Intermaxillary fixation for fractures of the maxilla and mandible.

HEAD AND NECK

- Obtain biopsies from benign and malignant lesions of the head and neck
 - Incision biopsy
 - Excision biopsy
 - Core biopsy
- Perform excision biopsy of Benign lesions of the Head and neck
- Make patterns and plans for partial auricular defects
- Demonstrate the carving and shaping of a cartilage framework to reconstruct microtia.

BREAST

- Demonstrate the pre-operative markings of any one technique of reduction mammoplasty
- Perform subcutaneous excision of Gynecomastia.

HAND AND UPPER EXTREMITY

- Administer the following blocks:
 - i. Axillary
 - ii. Wrist,
 - iii. Digital
- Demonstrate the various local and cross finger flaps used in the management of Fingertip injuries
- Perform Flexor tendon repair

- Demonstrate Extensor tendon repair
- Set up the Controlled dynamic mobilization following Flexor tendon repair
- Set up the Controlled dynamic mobilization following Extensor tendon repair
- Perform amputations of the:
 - i. Thumb
 - ii. Digits
 - iii. Below elbow and Above elbow
- Drain apical space infections, Paronychia
- Perform drainage and irrigation in a case of Tenosynovitis.

TRUNK, GENITALIA, LOWER EXTREMITY

- Demonstrate the debridement of a pressure sore.
- Evaluate cases of genital abnormalities.
- Assess and manage congenital and acquired defects in the trunk.

AESTHETIC SURGERY

- Illustrate the design of a small Aesthetic surgery clinic
- Mark the important facial Anthropometric points on a given patient
- Measure the important distances and angles used for facial deformity analysis
- Write a consent format for common aesthetic surgical procedures
- Record photographs of the face, nose, ears, peri-orbital region, malar region, breasts, trunk, arms, thighs, and calves in standard views for documentation
- Administer regional and local anaesthesia to patients undergoing Aesthetic surgery
- Measure the vertical height of the skull, forehead, midface, and lower face
- Measure the Intercanthal distance, Palpebral fissure length, Inter-alar distance, Commissure length
- Measure the width of the skull, forehead, face at the zygoma and mandibular angle
- Measure the nasofrontal & nasolabial angles
- Calculate the Cephalic index
- Draw RSTLs on the Face and other areas

	<ul style="list-style-type: none"> • Demonstrate the pinch test to identify RSTLs • Plan incisions on the face and other parts based on the RSTLs • Perform a Z-plasty and scar revision using the Z-plasty principle • Prepare tumescent fluid to be used to infiltrate the abdomen, thighs and arms • Perform ear lobe repair for partial and complete tears.
<p align="center">B. Perform under supervision</p>	
	<p>GENERAL PRINCIPLES</p> <ul style="list-style-type: none"> • Demonstrate placement of suitable tissue expanders in clinical cases. <p>MICROVASCULAR SURGERY, BRACHIAL PLEXUS, PERIPHERAL NERVE SURGERY</p> <ul style="list-style-type: none"> • Demonstrate dissection of recipient and donor vessel for microvascular anastomosis • Demonstrate the steps of a microvascular anastomosis and choose the appropriate instruments • Demonstrate tests to assess arterial and venous patency after microvascular transfer • Demonstrate perforator-based flap elevation in a cadaver: • Perform Neuroorrhaphy • Harvest a Sural/ Superficial peroneal/ forearm cutaneous nerve graft • Demonstrate the anatomy of common sites for Compression of the Ulnar, Median, Radial, Sciatic, common Peroneal and Posterior Tibial nerves. <p>BURNS</p> <ul style="list-style-type: none"> • Plan and participate in a mock drill to manage mass casualties from a major burn accident • Participate in the early excision and resurfacing of burn wounds • Perform various limb and digit amputations in deep electric burns • Plan and perform flexion, extension, first web contracture release, syndactyly release and resurfacing in chronic hand burns

- Perform release, resurfacing of a post burn neck contracture and make a post-operative splint for immobilization
- Perform contracture release and resurfacing of post burn contractures over various joints
- Resurface Facial burns according to the Aesthetic units of the face.

CRANIOFACIAL, CLEFT AND PEDIATRIC PLASTIC SURGERY

- Dissect the parotid gland and the Facial Nerve branches in the face
- Demonstrate the Bicoronal and subciliary incisions used to expose the skull and orbit
- Take a tongue stitch to prevent Glossoptosis
- Perform nasal bone reduction and make an external nasal splint for a patient
- Demonstrate the anatomy of the TMJ
- Mark incision for cleft palate repair and dissect

AESTHETIC SURGERY

- Create a digital archiving system for storing patient data
- Perform liposuction and prepare a sample for micro fat grafting in a patient.

C. AS: Assist, OB: Observe, CAD: Cadaver, LAB: Laboratory, SIM: Surgical Simulator

GENERAL PRINCIPLES

- Perform submental intubation in a patient or cadaver
- Perform tracheostomy in a patient or cadaver
- Demonstrate the use of power tools
- Demonstrate perforator-based flap elevation in a cadaver:
 - i. TDAP and latissimus dorsi
 - ii. Scapular and Parascapular
 - iii. DIEP
 - iv. SGAP and IGAP
 - v. Gracilis
 - vi. Fibula and peroneal perforator flap
 - vii. Posterior tibial perforator flap.

MICROVASCULAR SURGERY, BRACHIAL PLEXUS, PERIPHERAL NERVE SURGERY

- Demonstrate the anatomy of the digit
- Demonstrate the macro anatomy of the upper limb at the arm, forearm and hand
- Demonstrate the anatomy of the lower limb at the level of the thigh, leg, and foot
- Demonstrate the neurovascular anatomy of the scalp
- Demonstrate use of anastomotic coupler devices in the Laboratory
- Demonstrate the topographic anatomy of the Ulnar, Median, Radial nerves in the mid arm, upper, mid and lower forearm
- Demonstrate the anatomy of the Brachial Plexus
- Demonstrate the Spinal accessory to Suprascapular, Triceps branch to axillary, Ulnar fascicle to Biceps nerve, Median fascicle to Brachialis nerve, and Intercostal to Musculocutaneous nerve
- Demonstrate the anatomy of the Fallopian tubes
- Demonstrate the anatomy of the Vas Deferens
- Perform superficialization of the Brachial artery prior to performing an AV fistula.

BURNS

- Place naso-gastric and naso-jejunal feeding tubes
- Participate in the respiratory and nursing care of a patient with MODS, on the ventilator
- Participate in the post-operative monitoring and care of a patient with burns after General anaesthesia
- Demonstrate Subclavian and Femoral artery ligation an electrical burn.
- Participate in primary excision and tangential excision of burns.
- Harvest split thickness skin graft.

CRANIOFACIAL, CLEFT AND PEDIATRIC PLASTIC SURGERY

- Dissect the various fat compartments of the face
- Harvest cancellous bone from the Iliac bone for alveolar bone grafting

- Perform frontal craniotomy, orbito-frontal advancement, and occipital advancement
- Draw the Facial midline in the 3 Coronal planes from the Cephalometric tracing, to depict the asymmetry, as described by Grayson
- Assist and perform the key steps of surgery for unilateral cleft lip, anterior palate
- Assist and perform the key steps of surgery for bilateral cleft lip, anterior palate
- Assist and perform the key steps of cleft palate surgery
- Assist in the bone grafting for alveolar clefts
- Demonstrate the Abbe flap for philtral reconstruction
- Demonstrate the open septo-rhinoplasty to correct nasal deformities of the cleft nose
- Demonstrate the LeForte 1 advancement of the maxilla
- Demonstrate the Bilateral Sagittal Split of the Mandible
- Demonstrate arch bar and Ivy loop application in a patient or typhodont
- Perform intermaxillary fixation in patients with fractures of the mandible
- Perform open reduction and Miniplate fixation in fractures of the Frontal bones, Orbit, Zygoma, Maxilla, and Mandible
- Perform intercanthal wiring in a patient
- Demonstrate the vascularized auricular cartilage transfer to the Glenoid fossa
- Excise a bony block and perform Costochondral reconstruction of the mandible for Temporomandibular ankylosis
- Plan alloplastic reconstruction of Temporomandibular joint.
- Set-up an external and internal distractor on a Stereolithographic model of a skull in a child with Brachycephaly
- Perform a Box osteotomy and Facial Bipartition on a model of a patient with Hypertelorism
- Set-up an external and internal distractor on a Stereolithographic model of a mandible in a child.
- Demonstrate a maxillary swing procedure on a model.

HEAD AND NECK

- Demonstrate tongue reconstruction with the following flaps:
 - i. Pectoralis major myocutaneous
 - ii. Anterolateral thigh

iii. Radial forearm microvascular flaps

- Demonstrate the Glabella, Paramedian forehead and Nasolabial flaps for nasal reconstruction
- Demonstrate the Radial forearm microvascular flap for total nasal reconstruction
- Demonstrate the following flaps for lip reconstruction:
 - i. Abbe
 - ii. Estlander
 - iii. Fan
 - iv. McGregor
 - v. Kerapandzic
- Demonstrate the lateral canthotomy and Temporal flap for upper and lower eyelid repair
- Demonstrate the Glabella and Lateral supra-brow flap for reconstruction of the Medial and Lateral canthus
- Demonstrate the harvest of the nasal chondromucosal graft
- Demonstrate the lid switch procedure to reconstruct the upper eyelid
- Demonstrate the elevation of the Temporalis fascia flap
- Demonstrate the use of the Pectoralis major myocutaneous flap for pharyngeal and oesophageal reconstruction
- Demonstrate the Radial forearm free flap for oesophageal reconstruction
- Demonstrate the anterior rhinotomy approach to the anterior cranial fossa
- Demonstrate the LeForte I and the maxillary swing approaches to the skull base
- Demonstrate the mandibular swing and condylotomy to approach the skull base and infra-temporal fossa
- Demonstrate the sublingual, submandibular, retropharyngeal, buccopharyngeal and prevertebral spaces of the neck.

BREAST

- Display the anatomy of the breast and draining lymph nodes
- Demonstrate the steps of a Simple mastectomy and axillary node clearance
- Demonstrate the flaps that can be used for Oncoplastic reconstructions:
 - i. Thoracodorsal Artery Perforator
 - ii. Lateral Intercostal artery Perforator
 - iii. Anterior Intercostal artery Perforator and Superior epigastric artery Perforator based flaps

- Demonstrate, in the Breast glandular flaps that can be used in the redistribution of glandular tissue
- Demonstrate the Pectoral fascial flap and the lower pole dermal apron flap
- Demonstrate the Latissimus dorsi muscle transfer to replace the missing Pectoralis major in Poland's syndrome
- Demonstrate any one technique of mastopexy
- Demonstrate augmentation mammoplasty using implants.

HAND AND UPPER EXTREMITY

- Demonstrate the anatomy of the Flexor and Extensor compartments of the Upper limb
- Demonstrate the Vascular anatomy of the Upper limb
- Demonstrate the anatomy of the hand
- Demonstrate the Nerve supply to the upper limb
- Demonstrate various local and regional flaps that can be used to resurface the thumb
- Demonstrate the anatomy of the Nail bed
- Manage fractures of the Hand with:
 - i. K-wiring
 - ii. Open reduction and internal fixation
 - iii. External fixation
- Demonstrate the Groin and Abdominal flaps for Hand resurfacing
 - i. Thumb
 - ii. Digits
 - iii. Below elbow and
 - iv. Above elbow
- Perform the Great and second toe dissections in preparation for a toe to the thumb transfer in a cadaver
- Perform Pollicization of the Index finger
- Demonstrate the Flexor muscle slide
- Demonstrate the following tendon transfers
 - i. Biceps to Triceps
 - ii. Deltoid to Triceps
 - iii. Brachioradialis to Flexor Pollicis Longus
 - iv. Split FPL to EPL
 - v. FPL tenodesis
 - vi. FDS Lasso procedure
 - vii. House intrinsic balancing procedure
 - viii. EDC and EPL tenodesis
 - ix. ECRL to FDP

x. Pronator teres to FPL.

TRUNK, GENITALIA, LOWER EXTREMITY

- Demonstrate the anatomy of the chest wall, abdominal wall and back
- Demonstrate the anatomy of the:
 - i. Latissimus dorsi
 - ii. Trapezius
 - iii. Omentum and
 - iv. Gluteal flaps
- Demonstrate reconstruction of the Chest wall using:
 - i. Pectoralis Major
 - ii. Latissimus Dorsi
 - iii. Serratus Anterior
 - iv. Rectus Abdominis
 - v. Omentum
- Demonstrate the anatomy of the anterior abdominal wall and the component separation techniques
- Demonstrate the anatomy and vascularity of the Penis, scrotum, and perineum
- Dissect and prepare a Radial forearm flap for phallic reconstruction
- Demonstrate vaginal reconstruction using:
 - i. Pudendal artery-based flaps
 - ii. Gracilis myocutaneous
 - iii. Rectus abdominis and
 - iv. Colon
- Demonstrate the surgical steps involved in excision of the penis and testis along with creation of flaps for the neo vagina and vulva in a male to female gender reassignment surgery
- Demonstrate the surgical steps in obliteration of the vagina, phalloplasty and scrotoplasty in a patient for female to male gender reassignment
- Demonstrate the commonly used flaps in the treatment of pressure sores:
 - I. Superior and inferior Gluteal flap
 - II. Gluteal rotation flap
 - III. Posterior thigh flap
 - IV. Tensor Fascia Lata flap
 - V. Vastus lateralis flap
 - VI. Hamstring flap
- Demonstrate the anatomy of the perineum

- Demonstrate the anatomy of the lower limb at the level of the thigh, leg, and foot.
- Demonstrate the following Flap anatomy
 - i). Anterolateral thigh
 - ii). Anteromedial thigh
 - iii). Superior and Inferior Gluteal Artery
 - iv). Gracilis
 - v). Posterior leg Fasciocutaneous
 - vi). Fibula and fibula perforator
 - vii). Gastrocnemius
 - viii). Soleus
 - ix). Reverse sural artery
 - x). Dorsalis pedis
 - xi). Medial plantar artery
 - xii). Perforator and propellor flaps.

AESTHETIC SURGERY

- Assist in the cleaning, packing and sterilization of commonly used surgical instruments
- Dissect the superficial muscles, the Facial nerve and the blood vessels of the face
- Demonstrate the Superficial Muscular Aponeurotic System (SMAS)
- Identify the retaining ligaments of the face
- Identify the Supra-orbital, Infra-orbital and Mental nerves
- Demonstrate/ observe a Glycolic acid face peel
- Demonstrate the forehead lift and expose the Supra-orbital neurovascular bundle
- Demonstrate the anatomy of the Upper and Lower eyelid
- Dissect to demonstrate the subcutaneous and Sub-SMAS lifts
- Demonstrate the harvest of rib, iliac crest and cranial bone grafts in a cadaver or patient
- Plan a simple W-plasty scar revision on a patient
- Design a small Geometric Broken Line scar revision
- Display the Open approach to the nose and septum
- Demonstrate the Open reduction rhinoplasty
- Demonstrate Costochondral graft for nasal augmentation
- Demonstrate high and low septal preservation rhinoplasty
- Demonstrate the various procedures to modify the nasal tip
- Demonstrate the use of septal and costal cartilage as spreader and septal extension grafts
- Demonstrate the anatomy of the nasal septum

	<ul style="list-style-type: none"> • Demonstrate the muscular and neurovascular anatomy of the Rectus abdominis, External oblique Internal oblique, Transversus abdominis and Peritoneum • Demonstrate the perforator anatomy of the anterior abdominal wall • Demonstrate any one technique of creating a neo-umbilicus • Demonstrate the posterior and anterior component separation procedure for repair of the anterior abdominal wall • Harvest a strip of skin and hair from the Occipital region and prepare Follicular units for Transplant • Perform follicular unit extraction and hair restoration • Perform hair restoration procedures over scalp and face • Demonstrate the anatomy of the Buccal fat pad • Use different types of LASERs for aesthetic procedures • Should use LASER for the management of scars, pigmented lesions, hair removal, vascular lesion etc. • Use threads, Botox and Fillers for aesthetic surgery.

SYLLABUS

COURSE CONTENT:

The M.Ch. Plastic and Reconstructive Surgery course will include Aesthetic, Hand Surgery and Burn Care in its syllabus.

- 1. General Plastic Surgery***
- 2. Microvascular surgery, Brachial plexus and Peripheral nerve surgery***
- 3. Burns and postburn deformity***
- 4. Craniofacial, Cleft and Paediatric Plastic Surgery***
- 5. Head and Neck Surgery***
- 6. Breast***
- 7. Hand and Upper Extremity***
- 8. Trunk and Lower Extremity***
- 9. Aesthetic Surgery and medicine***
- 10. Reconstructive Surgery of External Genitalia and intersex disorders***

11. Sex reassignment

12. Peripheral vascular surgery

13. Maxillofacial surgery, trauma and reconstruction

1. General Plastic Surgery

A. General Principles

1.1 History and development of plastic surgery in India and across the world

1.2 The scope of plastic surgery

1.3 Evidence Based Medicine and research in plastic surgery

1.4 Medico legal issues in plastic surgery practice

1.5 Liability issues in plastic surgery, legal & insurance perspective

1.6 Documentation, Record keeping and consent.

1.7 Patient safety issues in plastic surgery

1.8 Psychological aspects of plastic surgery

1.9 Ethics in plastic surgery

1.10 Photography in plastic surgery.

1.11 Information technology relevant to plastic surgery.

B. Basic principles and techniques

2.1 Wound: Definition, classification and implications

2.2 Wound healing-normal and abnormal.

2.3 Wound management - Mechanical and pharmacological dressing techniques. Negative pressure wound therapy & other techniques.

2.4 Scar biology and management

2.5 Keloid, hypertrophic scars- prevention and management

2.6 Unstable scar and scar contracture.

2.7 Anatomy and functions of skin

2.8 Viscoelastic Properties of Skin

- 2.9 Infective conditions of skin
- 2.10 Benign and malignant skin and soft tissue tumours
- 2.11 Radiation and Radiation Injuries
- 2.12 Principles of tissue reconstruction
- 2.13 Skin grafts
- 2.14 Blood supply to skin, cutaneous circulation and vascular basis of flaps.
- 2.15 Flaps: Classification, variations and applications
- 2.16 Flap pathophysiology and pharmacology
- 2.15 Grafts – fat, fascia, tendon, nerve, cartilage, bone, composite tissue
- 2.16 Principles of Cancer Management
- 2.17 Lymphedema: Pathophysiology and management
- 2.18 Principles of microvascular surgery and technique
- 2.19 Nosocomial infections
- 2.20 Principles of genetics and general approach to the management of congenital malformations.
- 2.21 Vascular anomalies: Pathophysiology and management
- 2.22 Foetal surgery
- 2.23 Local anaesthesia, nerve blocks, regional anaesthesia
- 2.24 Principles of anaesthesia for infants, adults, hypothermia, hypotensive anaesthesia.
- 2.25 Pain management
- 2.26 Plastic Surgical instrumentation: General principles.

C. Technology applications

- 3.1 Technological innovations
- 3.2 Laser and energy device applications
- 3.3 Tissue expansion- principles and application
- 3.4 Distraction Histogenesis
- 3.5 Endoscopy in Plastic Surgery

- 3.6 Robotics
- 3.7 Simulations
- 3.8. 3.D printing technology & applications
- 3.9 Suture materials, Implants and Biomaterials in plastic surgery
- 3.10 Transplantation biology, techniques and applications
- 3.11 Regenerative medicine, cell therapy & stem cells
- 3.12 Tissue Engineering applications in plastic surgery
- 3.13 Telemedicine in plastic surgery
- 3.14 Information and Digital Technology for Plastic surgeon
- 3.15 Teaching tools and methods in plastic surgery
- 3.16. Training modules for plastic surgery trainees.

2. *Microvascular surgery, Brachial plexus and Peripheral nerve surgery*

A. **Microvascular surgery**

- 1. Instrumentation in Microsurgery
- 2. Basic Principles of free-flap surgery
- 3. Fundamental principles
 - 3.1 Fundamental Principles of microvascular surgery
 - 3.2. Pre-operative planning for microsurgery
 - 3.3. Factors affecting outcome of microvascular flap surgery
 - 3.4. Anatomy of angiosomes and perforators
- 4. Replantation and revascularization
- 5. Recent advances in microsurgery
- 6. Terminologies in Microsurgery.

B. **Peripheral Nerve surgery**

- 1. Types of Nerve injury
- 2. Diagnosis and management of peripheral nerve lesions/injuries
- 3. Compression neuropathies- upper and lower limb
- 4. Topographic anatomy of various peripheral nerves.

C. Brachial plexus Surgery

1. Anatomy of the Brachial Plexus
2. Mechanism of Brachial Plexus Injury
3. Examination, Investigations and Diagnosis of Brachial Plexus Injury
4. Management of neonatal brachial plexus injury
5. Management of adult Brachial Plexus injury
6. Management of Chronic Brachial Plexus injury.

D. Microlymphatic surgery

1. Lymphedema pathophysiology
2. Assessment of lymphedema
3. Medical Management of Lymphedema
4. Surgical management of Lymphedema
5. Microlymphatic surgery.

E. Composite Tissue Allotransplantation

1. Principles and regulations of Composite Tissue Allotransplant
2. Recent developments in Hand transplant
3. Face transplant.

F. Video microsurgery

G. Robotic microsurgery

H. Tubal recanalization and Vaso-vasostomy

I. Arteriovenous Fistula

3. Burns

- 1 History of acute burns injuries & management
- 2 Multidisciplinary burn team
- 3 Prevention of burns
- 4 Burn management in disasters and humanitarian crisis
- 5 Pathophysiology of acute burns

- 6 Systemic Inflammatory Response Syndrome (SIRS)
- 7 Early burn care
- 8 Fluid management in acute burns
- 9 Inhalation burns
- 10 Management of the burn wound
- 11 Skin and skin substitutes
- 12 Nutrition in Burns
- 13 Burn wound infection and treatment
- 14 Sepsis in burns
- 15 Multiorgan Dysfunction Syndrome (MODS)
- 16 Anaesthesia for a burned patient
- 17 Biomarkers in Burn care
- 18 Electrical burns
- 19 Chemical burns
- 20 Facial burns
- 20 Hand burns
- 21 Feet burns
- 22 Paediatric burns
- 24 Geriatric burns
- 25 Burns in pregnancy
- 26 Management of Pain in burns
- 27 Psychiatric and psychological considerations in burns
- 28 Burn rehabilitation
- 29 Post burns scars
- 29 Post burns contractures
- 30 Post burn facial deformities
- 31 Skin bank
- 32 Role of allografts in burns
33. Skin substitutes

34. Organizing a burn unit.

4. Craniofacial Cleft and Paediatric Plastic Surgery

1 General

- 1.1. Embryology and anatomy of craniofacial complex.
- 1.2. Growth and development changes in face, anatomy of facial skeleton.
- 1.3. Structure and development of teeth and Dentofacial anomalies.
- 1.4 Harvesting of bone grafts (including cranial bone).

2 Craniofacial anomalies

- 2.1. Principles of craniofacial surgery.
- 2.2. Craniofacial clefts. Tessier's clefts classification.
- 2.3. Craniosynostosis - syndromic and non-syndromic
- 2.4. Hypertelorism.
- 2.5. Craniofacial microsomia.
- 2.6. Craniofacial distraction.
- 2.7. Hemifacial atrophy.
- 2.8. Treacher-Collins Syndrome.
- 2.9. Pierre Robin sequence.
- 2.10. Other craniofacial syndromes, e.g.- Binders syndrome etc.
- 2.11 Distraction osteogenesis
- 2.12 Distractors and craniofacial fixation devices.

3 Cleft Lip and Palate

- 3.1. Embryology of head and neck.
- 3.2. Embryogenesis of cleft lip and palate.
- 3.3. History and evolution of techniques in Cleft surgery.
- 3.4. Classification of Clefts
- 3.5. Unilateral Cleft lip
- 3.6. Bilateral Cleft lip
- 3.7. Cleft Palate

- 3.8. Alveolar Clefts
- 3.9. Secondary deformity correction in clefts
- 3.10. Management of palatal fistula
- 3.11. Flaps in clefts- Abbe flap, Tongue flap, buccal flaps, free flaps etc.
- 3.12. Secondary cleft nose correction
- 3.13. Orthodontics in Cleft lip and Palate.
- 3.14. Midface skeletal evaluation and corrections and Orthognathic surgery
- 3.15 Distraction in Clefts.
- 3.16. Velopharyngeal incompetence.
- 3.17. Speech therapy in cleft lip and palate.
- 3.18. Middle ear management in Cleft palate
- 3.19. Antenatal diagnosis and management.

4 Maxillofacial Trauma

- 4.1. Dentofacial anatomy, occlusions, various terminologies.
- 4.2. ATLS protocols.
- 4.3. Management of Airway and acute care.
- 4.4. Evaluation of injuries, imaging, principles of treatment.
- 4.5. General principles of facial soft tissue injury repair.
- 4.6. Management of soft tissue injuries of specific regions of the face.
- 4.7. Facial nerve injuries and management.
- 4.8. Restoration of anatomical subunits of face.
- 4.9. Incisions to access the craniofacial skeleton.
- 4.10. Access osteotomies to the skull base.
- 4.11. Skeletal Fractures –Principles and management
- 4.12. Fracture Mandible and condyle fractures.
- 4.13. Midface fractures: maxilla, nasal bone, NOE complex
- 4.14. Naso-Orbito-Ethmoid injuries.
- 4.15. Nasal bone fractures.

- 4.16. Frontal bone fractures.
- 4.17. Zygomatic complex fractures.
- 4.18. Management of Panfacial injuries.
- 4.19. Management of dento-alveolar injuries.
- 4.20. Fracture reduction and different modalities of skeletal stabilization;
AO principles.
- 4.21. Primary and secondary bone grafting of the facial skeleton.
- 4.22. Avulsion injuries of face.
- 4.23. Gunshot injuries of face.
- 4.24. Paediatric Facial fractures.
- 4.25. Management of facial fractures in elderly and edentulous jaw.

5 Maxillofacial Disorders

- 5.1. Temporomandibular joint: Ankylosis, Hypermobility, dislocation.
- 5.2. Temporomandibular joint pain, dysfunctions.
- 5.3. T. M Joint Reconstruction.
- 5.4. Obstructive sleep apnoea – Evaluation, planning and management.
- 5.5. Principles of osteointegration and Implantology.
- 5.6. Craniofacial and Maxillofacial Prosthetics.
- 5.7. Craniofacial Implants and retained prosthesis.
- 5.8. Radiological imaging

5. Head and Neck Surgery

A Head and Neck Tumors

- 1 Benign and Malignant tumors of Head and Neck.
- 2 Tumors of oral cavity, oropharynx and Mandible.
- 3 Jaw tumours, lesions and cyst.
- 4 Principles of Reconstruction
 - 4.1 Principles of reconstruction of Cancer of upper Aerodigestive system
 - 4.2 Reconstruction of the Mandible and Maxilla

- 6 Tumors of skin
 - 6.1 Benign skin tumors of the Head and neck
 - 6.2 Malignant skin tumors of the Head and Neck
- 7 Paediatric head and neck tumours.

B Head and Neck reconstruction by region

- 1 Reconstruction of Scalp and Calvarium
- 2 Reconstruction of the Nose
- 3 Reconstruction of the Eyelids and Orbit
- 4 Reconstruction of external ear
- 5 Reconstruction of the Lip and commissure
- 6 Cheek reconstruction
- 7 Tongue reconstruction
- 8 Reconstruction of pharynx and oesophagus

C Principles Skull Base Surgery

D Vascular malformations of head and neck

E Infections of the Head & Neck

- 1 Infection of the Cervical spaces
- 2 Ludwig's angina
- 3 Post Hansen's deformities of the face
- 4 Cancrum oris/ Mucor mycosis

6. Breast

- 1 Diagnosis of Breast Cancer
- 2 Oncoplastic Surgery
- 3 Management of Carcinoma Breast
- 4 Nipple and Areola Reconstruction

- 5 Congenital Anomalies of The Breast
- 6 Tuberos Breast
- 7 Poland's Syndrome
- 8 Fat Grafting in The Breast
- 9 Reduction Mammoplasty
- 10 Mastopexy
- 11 Augmentation Mammoplasty and Breast Implants
- 12 Anaplastic Large Cell Lymphoma and Breast Implants (ALCL)
- 13 Gynaecomastia.

7. Hand and Upper Extremity

1 Regional anatomy and principles

- 1.1 Functional anatomy of hand
- 1.2 Biomechanics of the Hand
- 1.3 Regional anaesthesia in upper limb surgeries
- 1.4 Examination of hand and upper limb
- 1.5 Diagnostic imaging of hand and upper extremity

2 Traumatic disorders of hand

- 2.1 Fingertip and nail injuries
- 2.2 Anatomy of the skeleton of the hand and fractures of the hand and wrist
- 2.3 Flexor tendon injuries of the Upper Limb
- 2.4 Extensor tendon of the Upper Limb
- 2.5 Mutilating injuries of the Upper extremity
- 2.6 Amputation and Prosthesis
- 2.7 Thumb reconstruction
- 2.8 Acute nerve injuries and repair
- 2.9 Compartment syndrome of the Upper limb
- 2.10 Paediatric upper extremity trauma and reconstruction.

3 Non-traumatic disorders of upper extremities

- 3.1 Infections of hand
- 3.2 Dupuytren's disease
- 3.3 Rheumatoid arthritis of the Hand
- 3.4 Compression neuropathies of upper extremity
- 3.5 Hand ischemia and Volkmann's ischemic contracture
- 3.6 Complex Regional Pain Syndrome
- 3.7 Tumors of the upper limb.

4. Congenital disorders of hand and upper extremities

- 4.1 Embryology, classification and principles.
- 4.2 Common congenital hand anomalies.
- 4.3 Vascular anomalies of upper extremity.

5 Miscellaneous

- 5.1 Comprehensive management of burned hand.
- 5.2 Occupational hand disorders
- 5.3 Management of the stiff hand
- 5.4 Management of the Spastic hand
- 5.5 Management of upper extremity in tetraplegia.
- 5.6 Hand therapy.

8. Trunk and Lower Extremity

1 Lower Extremity

- 1.1 Comprehensive Lower Extremity Anatomy
- 1.2 Management of Lower Extremity Trauma
- 1.3 Lower Extremity Sarcoma Reconstruction
- 1.4 Reconstructive Surgery: Lower Extremity Coverage/Composite reconstruction
- 1.5 Diagnosis and Treatment of Painful Neuroma and of nerve compression in the lower extremity

1.6 Lower Extremity Composite Reconstruction

1.7 Foot Reconstruction.

2 Trunk Reconstruction

2.1 Comprehensive Trunk Anatomy

2.2 Reconstruction of chest

2.3 Reconstruction of the soft Tissues of the back

2.4 Abdominal Wall reconstruction.

3 Reconstruction of Genitalia

3.1 Reconstruction of Male Genitalia

3.2 Reconstruction of acquired vaginal defects

3.3 Gender identity disorders and disorders of sex development.

4 Pressure Sores

5 Perineal Reconstruction

9. Aesthetic Surgery

1. Aesthetic surgery practice

1.1. Setting up an aesthetic surgery practice

1.2. Preoperative analysis and surgical Planning in aesthetic surgery

1.3. Psychological assessment & specialist referrals

1.4. Obtaining informed consent and patient counselling

1.5. Clinical photography, documentation and record keeping

1.6. Dealing with complications and unsatisfied patients

1.7. Communication and team building

1.8. Ethics and medico-legal aspects of aesthetic surgery

1.9. Anaesthesia for aesthetic surgery: general and regional nerve blocks

1.10. Care and maintenance of instruments sterilization and infection control practices.

2. Age related changes & rejuvenation

A. Facial ageing

- 2.1. Anatomy of the face relevant to aesthetic surgery and injectables
(soft tissues and skeletal)
- 2.2. Ageing of the face- skin, soft tissues and skeleton.

B. Facial rejuvenation

- 2.3. Non-surgical skin care and rejuvenation topicals and
cosmeceuticals
- 2.4. Cutaneous resurfacing - chemical peel, surgical dermabrasion
- 2.5. Regenerative medicine: platelet rich plasma, mesenchymal stem
cells and their aesthetic applications
- 2.6. Laser: physics, tissue interactions and various clinical applications
- 2.7. Other energy based devices: radio-frequency and ultrasound: their
application in skin tightening and body contouring.
- 2.8. Forehead lift: endoscopic and surgical
- 2.9. Brow lift
- 2.10. Blepharoplasty: upper and lower
- 2.11. Oriental blepharoplasty
- 2.12. Secondary blepharoplasty
- 2.13. Thread lifts: science, indications, technique complications
- 2.14. Various facelift techniques: minimal access cranial suspension
(macs) subcutaneous lift, Smas-platysma plication, extended
Smas, subperiosteal lift
- 2.15. Secondary deformities from facelift surgery.

3. Aesthetic skeletal surgery

- 3.1. Facial skeleton: male and female. Age related changes in the facial
skeleton

3.2. Facial skeletal augmentation: bone graft and implants

3.3. Facial masculinisation and feminisation surgeries

3.4. Anthropometry, cephalometry, orthognathic surgery.

4. Soft tissue fillers

4.1. Chemical composition and application of soft tissue fillers

4.2. Temporary, semi-permanent, permanent fillers vascular and other complications of fillers.

5. Botulinum toxin

5.1. Botulinum toxin: science, indications, techniques, complications.

6. Incisions and scars

6.1. Resting skin tension lines and their relation to incision placement and scar revision.

6.2. Non-surgical management of incisions and scars

6.3. Surgical management of scars of the face and other regions.

7. Rhinoplasty

7.1. Nasal anatomy, physiology and assessments

7.2. Rhinoplasty: aesthetic and functional, open and closed, reduction and augmentation

7.3. Structural and preservation rhinoplasty

7.4. Tip-plasty

7.5. The deviated/ crooked nose and cleft rhinoplasty

7.6. The septum in rhinoplasty

7.7. Secondary rhinoplasty.

8. Lip

8.1. Augmentation

8.2. Reduction

9. Fat grafting

- 9.1. Structural fat grafting: principles, extraction, preparation & injection techniques. Micro, milli & nano fat grafting. indications and complications.
- 9.2. Autologous fat grafting: biology, volumetric & non-volumetric effects of fat grafts
- 9.3. Platelet rich plasma, platelet rich fibrin, nano- fat grafting.

10. Liposuction

- 10.1 Principles and composition of various wetting solutions & safety issues
- 10.2 preoperative planning, postoperative care
- 10.3. Lipo-structuring- concept, applications, 7 techniques- power assisted liposuction (PAL), ultrasound assisted liposuction (UAL), laser assisted liposuction, cryo-lipolysis
- 10.4. High definition lipostructuring
- 10.5. Face liposuction and lipolysis
- 10.6. Axillary contouring and axillary breast management
- 10.7. Gynaecomastia correction
- 10.8. Recent techniques- Vaser, radio frequency, j plasma skin tightening
- 10.9. Large volume liposuction.

11. Body contouring surgeries

- 11.1 Obesity & massive weight loss (MWL) and post bariatric surgery weight loss
- 11.2 Management of high BMI patients

- 11.3. Body and limb contouring procedures: brachioplasty, belt lipectomy, lower body lift, upper body lift, thigh plasty, buttock lift: assessment, indications, techniques & complications.

12. Abdominoplasty

- 12.1 anatomy and blood supply
12.2. Standard abdominoplasty & variants
12.3. High tension lateral abdominoplasty, mini abdominoplasty, extended lipo-abdominoplasty
12.4. Neo-umbilicoplasty
12.5. Correction of divaricated recti, ventral hernia, mesh repair.

13. Implants and augmentation

- 13.1. Implant biology
13.2. Buttock augmentation, calf augmentation.

14. Aesthetic genital surgery: male & female

- 14.1. Anatomy & embryology
14.2 Analysis and planning, anatomical and functional corrections
14.3 Penile, scrotal, vaginal, vulval, mons pubis surgical procedures.

15. Hair restoration

- 15.1 Scalp anatomy and pathology biology of the hair follicle from the surgical perspective
15.2 Patterns of hair loss
15.3 Tools for evaluation of hair quality- TrichoScan, densitometry etc.
15.4. Management protocols for alopecia. Medical restoration
15.5. Various techniques of restoration including strip harvest (FUT), (FUE)
15.6 Body hair transplant (non-scalp donor harvest)
15.7 Surgical correction of baldness

15.8 Eyebrow, moustache, beard hair transplantation.

16. Other aesthetic procedures

16.1. Aesthetic jewellery piercing

16.2. Cheek dimple creation

16.3. Buccal fat pad removal

16.4. Ear lobe: repair, augmentation, reduction.

TEACHING AND LEARNING METHODS

GENERAL PRINCIPLES:

The syllabus has been designed to ensure competency-based training of the student during the 3 years. This will cover the Cognitive, Psychomotor and Affective domains.

The training will essentially be self-directed and revolve around practical skills acquired from graded patient care responsibilities and formal academic sessions. Trainees are expected to be fully conversant with the use of computers (documentation, editing and presentation software (word, power point, excel etc.)) and be able to use databases like the Medline, PubMed etc.

PATIENT CARE RESPONSIBILITIES:

The student will be posted in the OPD, Wards, Operation theatres and the Emergency medicine where he will participate in patient care responsibilities

1. History taking,
2. Clinical Examination,
3. Documentation : Clinical notes, Clinical photographs,
4. Progress notes,
5. Order and interpret relevant investigations,
6. Treatment planning,
7. Make a pattern of the treatment plan where indicated,
8. Counsel the patient or relatives regarding the procedure to be undertaken,
9. Take informed consent,

10. Assist or perform the surgical treatment,
11. Coordinate care and rehabilitation with other ancillary departments.

FORMAL ACADEMIC SESSIONS:

Below is a suggested Academic schedule that could be followed:

Sr. No.	Description	Frequency
1	Subject seminars	Once a week
2	Journal club	Once in two weeks
3	Didactic lectures by faculty	Once a month
4	Bedside teaching	As and when feasible
5	Clinical rounds	Once a week
6	Structured interactive group discussion (Including buzz sessions, debates, problem based learning etc)	Once a week
7	Case Presentation and Treatment Planning	Once a week
8	File Audit/Statistic Meet/Mortality and Morbidity Audit	Once month
9	Cadaver dissections	As and when possible/ Once a week
10	Skills laboratory i). Microvascular laboratory ii). Craniofacial techniques/ fracture fixation iii). Simulator based	Daily/ Weekly/ Once a month (as per requirement)
11	Grand Round/Interdepartmental Meet	Once a month

The following things have to be considered in the formal teaching program

- i. PG student shall be required to participate in the teaching and training programme of Undergraduate students and interns.
- ii. Department should encourage e-learning activities.

EXTERNAL POSTINGS:

As it is not possible for all departments to expose the student to all aspects of Plastic and reconstructive surgery, it is recommended (if permissible) that the student be permitted external postings to departments of excellence in various subspecialties for a period of 2 weeks to a month at a time, a total of three months being permitted during a period of 3 years. This is provided that the student has shown the required progress and worked to the satisfaction of the

faculty members and head of the department, availability of permissible leave of absence as per the concerned University Rules & Regulations.

The sub-speciality where posting may be done would include:

1. Burns
2. Hand surgery
3. Microvascular surgery
4. Aesthetic surgery
5. Cleft and craniofacial surgery
6. Others as deemed useful by the HOD and student
 - i. Orthopaedics
 - ii. Anaesthesia
 - iii. Oncosurgery
 - iv. Radiodiagnosis

PAPER PRESENTATION AND PUBLICATION (Compulsory)

A postgraduate student would be required to present one poster, 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 postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

RESEARCH METHODOLOGY/ THESIS: (Optional)

It is desirable for the trainee to take up a thesis during their posting and complete it before their training ends.

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 skills laboratories in medical colleges is mandatory.

ASSESSMENT

GENERAL PRINCIPLES

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and practical/clinical examination.

FORMATIVE ASSESSMENT

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.

INTERNAL ASSESSMENT

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

QUARTERLY ASSESSMENT

1. Patient based:
 - i. Documentation of case records
 - ii. Progress notes
 - iii. Clinical photographs
2. Laboratory or Skill based learning:
 - i. Cadaver dissection
 - ii. Microvascular laboratory
 - iii. Learning on simulation models
3. Self-directed learning and teaching:
 - i. Seminar: departmental
 - ii. Journal based / recent advances learning
 - iii. Case presentation and treatment planning.

The department could also conduct an annual assessment on the lines of the final Summative assessment.

SUMMATIVE ASSESSMENT: Assessment at the end of training.

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

The Post graduate examination shall be in two parts:

The examinations shall be organised based on 'Grading' or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training.

1. **Log book** of work done during the training period including rotation postings, departmental presentations, and internal assessment reports should be submitted.
2. At least **two presentations** at national level conference. At least one research paper should be published/ accepted in an indexed journal. **(It is suggested that the local or University Review committee assess the work sent for publication).**

There will be four theory papers based on broad distribution, as below:

Paper I: General principles and basic sciences relevant to plastic and reconstructive surgery.

Paper II: Clinical part I- Burns, Cleft and Craniofacial, Micro neurovascular and Brachial plexus, Hand and upper extremity surgery

Paper III: Clinical part II- Aesthetic surgery, Head and neck, Breast, Trunk, Genitalia, Lower limb surgery

Paper IV: Recent Advances in Plastic and Reconstructive Surgery

1. Clinical Examination

- i. **Long case:** Should assess the students' ability to diagnose a complex condition, order and interpret relevant investigations and plan the reconstruction of a composite defect.
- ii. **Short cases: 2 or 3:** Each case would assess one or more aspects of one of areas of reconstruction.
- iii. **Ward rounds: 4 cases:** Assess the students' ability to counsel a patient or relatives about a procedure, possible complications, expected results and post-operative management. It could also assess his ability to anticipate complications, prevent them and manage them should they occur.

2. Viva voce

1. Surgical planning
2. Operative procedures
3. Instruments
4. Radiology: X-rays, CT scan,
5. Osteology (Skull, Mandible, Hand, Fibula)

6. Photographs based viva.

LOG BOOK:

The student will maintain a comprehensive log of:

1. Cases operated- observed, assisted, performed independently,
2. Seminars presented/ attended,
3. Faculty lectures attended,
4. Journal presentations made and attended,
5. Conferences/webinars attended, and presentations made.

WORK RECORD: PHOTO ALBUM:

The student will maintain a photographic documentation of the important cases operated or assisted including relevant post-operative follow up.

Recommended reading:

Books (latest edition)

1. Neligan, Peter C. Text book of Plastic surgery. Elsevier.
2. Karoon Agrawal. Text book of Plastic, Reconstructive and Aesthetic surgery (6 volumes): Thieme
3. Kevin C. Chung, Grabb & Smith's: Plastic Surgery. Lippincott, Williams and Wilkins, New York.
4. Mathes, Stephen J. Plastic Surgery (Vol. 1-8). London. W.B. Saunders.
5. Mimis Cohen. Mastery of Plastic & Reconstructive Surgery (Vol.1-3). Little, Brown & Co.
6. Alan D. McGregor, Ian A. McGregor. Fundamental Techniques of Plastic Surgery. Elsevier.
7. Berish Strauch, Luis Vasconez, Charles K. Herman, Bernard T. Lee. Grabb's Encyclopaedia of flaps (2 Vol) .
8. Fu-Chan Wei, Samir Mardini. Flaps and Reconstructive Surgery. Elsevier.
9. Scott W. Wolfe, William C. Pederson, Scott H. Kozin, Mark S. Cohen. Green's Operative Hand Surgery (2 Vol.).

10. David N. Herndon, Total Burn Care. Elsevier.
11. Sujatha Sarabhai. Principles & Practice of Burn care. JP Brothers.
12. Rajiv Sood, Bruce M. Achauer. Burn surgery- Reconstruction and Rehabilitation. Saunders Elsevier.
13. Raymond Fonseca. Oral and Maxillofacial Surgery. Elsevier.
14. Robert Acland, S. Raja Sabapathy. Acland's Practice manual for Microvascular Surgery. The Indian Society for Surgery of The Hand.
15. Prabha Yadav, Vinay Shankhdhar, Dushyant Jaiswal. Mastering Cancer Reconstructive Surgery with Free Flaps. JP Brothers.

Journals

03-05 international Journals and 02 national (all indexed) journals.

National Medical Commission

Student appraisal form for M.Ch. in Plastic and Reconstructive Surgery											
	Element	Less than Satisfactory			Satisfactory			More than satisfactory			Comments
		1	2	3	4	5	6	7	8	9	
1	Scholastic Aptitude and Learning										
1.1	Knowledge appropriate for level of training										
1.2	Participation and contribution to learning activity e.g., Journal Club, Seminars, CME etc)										
1.3	Conduct of research and other scholarly activity assigned (e.g Posters, publications etc)										
1.4	Documentation of acquisition of competence (eg Log book)										
1.5	Performance in work based assessments										
1.6	Self Directed Learning										
2	Care of the patient										
2.1	Ability to provide patient care appropriate to level of training										
2.2	Ability to work with other members of the health care team										
2.3	Ability to communicate appropriately and empathetically with patients families and care givers										
2.4	Ability to do procedures appropriate for the level of training and assigned role										
2.5	Ability to record and document work accurately and appropriate for level of training										
2.6	Participation and contribution to health care quality improvement										

3	Professional attributes																		
3.1	Responsibility and accountability																		
3.2	Contribution to growth of learning of the team																		
3.3	Conduct that is ethical appropriate and respectful at all times																		
4	Scholarship																		
4.1	Teaching and mentoring skills appropriate to level of training																		
4.2	Ability to formulate research questions, initiate conduct and complete research projects																		
4.3	Ability to review and use the published literature appropriately in care of the patient lab or workspace																		
4.4	Ability to provide consultations to other specialties as may be required																		
5	Space for additional comments																		
6	Disposition																		
	Has this assessment been discussed with the trainee?	Yes	No																
	If not explain																		
	Name and Signature of the assessee																		
	Name and Signature of the assessor																		
	Date																		

Subject Expert Group members for preparation of Guidelines for competency based postgraduate training programme for MCh. In Plastic and Reconstructive Surgery

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