

3. ORAL AND MAXILLOFACIAL SURGE RY

Objectives:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives

- Knowledge
- Skills
- Attitude
- Communicative skills and ability

Knowledge:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature.
- To have understood the general surgical principles like pre and post surgical management particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice or oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

Skills:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

Attitude:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Wiling to adopt new and techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when

required.

Communication skills:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time.
- Develop the ability to communicate with professional colleagues
- Develop ability to teach undergraduates.

Course content:

The program outlines addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgeon competently and have the ability to intelligently pursue further apprenticeship towards advance Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

Applied Basic Sciences:

A thorough knowledge both on theory and principles in general and in particular the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in bio-statistics. Epidemiology. research methodology, nutrition and computers.

■ **Anatomy**

Development of face, paranasal sinuses and associated structures and their anomalies; surgical anatomy of scalp temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial facial bones and its surrounding soft tissues, cranial nerves tongue, stemporal and infratemporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum teeth gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagittal sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation, Histology of skin oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

■ **Physiology**

Nervous system-physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; digestive system composition and functions of saliva mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia - types and management; CVS - cardiac cycle, shock, heart sounds. blood pressure, hypertension; Endocrinology-metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic, responses to stress, need for nutritional support, enteral nutrition, routes of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism - the body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes for treatment of acidosis and alkalosis.

■ **Biochemistry**

General principles governing the various biological principles of the body, such as osmotic; pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.

■ **General Pathology**

Inflammation - Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; wound management - Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; hemostasis -role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogenesis, grading and staging of tumors, various laboratory investigation.

■ **General microbiology**

Immunity, Hepatitis B and its prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques - Smears and cultures, urine analysis and culture.

■ Oral pathology and microbiology:

Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, dental caries, diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like the cysts odontogenic infection, benign, malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases, role of laboratory investigation in oral surgery.

■ Pharmacology and therapeutics:

Definition of terminology used, pharmacokinetics and pharmacodynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitive reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, vitamins A, B-complex, C,D,E,K.

■ Computer science:

Use of computers in surgery, components of computer and its use in practice-principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent/medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients - understanding clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- Principles of surgical audit - understanding the audit of process and outcome. Methods adopted for the same Basic statistics.
- Principles of evidence based surgery - understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery - developing a surgical diagnosis, basic necessities for surgery, aseptic techniques, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies - Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup - Concept of fitness for surgery; basic medical work up; work up in

- special situation like diabetes renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
 - Post operative care - concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardiovascular instability in this period, Criteria for shifting to the ward, pain management
 - Wound management - Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
 - Surgical Infections - Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV Infection and cross infection.
 - Airway obstruction / management - Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
 - Anaesthesia - stages of Anaesthesia, pharmacology of inhalation, intravenous and regional anaesthetics, muscle relaxants.
 - Facial pain; Facial palsy and nerve injuries.
 - Pain control - acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia.
 - General patient management - competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anaesthesia.
 - Clinical oral surgery - all aspects of dento alveolar surgery
 - Pre-prosthetic surgery - A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
 - Temporomandibular joint disorders - TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
 - Tissue grafting -Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting. Reconstructive oral and maxillofacial surgery - hard tissue and soft tissue reconstruction.
 - Anaesthesia - Stages of anaesthesia, pharmacology of inhalation, intravenous and regional anaesthesia, muscle relaxants.
 - Cyst and tumors of head and neck region and their management - including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesion of jaw lesions.
 - Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries.
 - Maxillofacial trauma - basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive, management including polytrauma patients.
 - Assessment of trauma-multiple injuries patients/closed abdominal and chest injuries/penetrating injuries, pelvic fractures, urological injuries, vascular injuries.

- Orthognathic surgery -The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery - The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries - Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques In the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery - detailed knowledge of structures of facial neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc. surgical management of post acne scaring, face lift; blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery - basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes etc. Current concepts in the management of craniofacial anomalies.
- Head and neck oncology - understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology - principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

Allied specialties:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases endocrinal and metabolic respiratory and renal diseases, Blood dyscrasias.
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro - surgery: Evaluation of a patient with head injury, examination of various Neuro-surgical procedures
- ENT/Ophthalmology: Examination of ear, nose throat. exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures
- Orthopaedic: basic principles of orthopaedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound

- Anesthesia: Evaluation of patients for GA techniques and management of emergencies, various IV sedation techniques.

Academic Clinical programme (*applicable for all three years*):

- Seminars to be presented attended once in a week.
- Journal clubs (departmental and interdepartmental) to be conducted once in fifteen days.
- Departmental and Interdepartmental discussions to be held once in a month.
- Minimum 2 scientific papers should be presented.
- Every candidate shall maintain a logbook to record his/hers work or participation in all activities such as journal clubs, seminars, CDE programs etc. this work shall be scrutinized and certified by the head of the departmental and head of the institution and presented to the university every year.

Year by year programme:

I Year

First term:

Dissection, basic sciences, basic computer sciences, exodontias, seminars on basic topics, selection of dissertation topic, library assignment topic. attending O.T and ward rounds, preparation of synopses and its submission within the six months after admission to the university as per calendar of events.

Second term (rotation and postings in other department):

Oncology	- 2 months
Emergency	- 1 month
General medicine	- 15 days
General surgery / anaesthesia	- 15 days
Ophthalmology	- 15 days
Neurology	- 15 days
ENT	- 15 days
Orthopaedic	- 15 days

Examination of basic sciences - one paper of three hours duration to be conducted by the college.

II Year

Minor oral surgery and higher surgical training.

Submission of library assignment by the end of first term.

Examination on minor oral surgical procedures - one paper of three hours duration to be conducted by the college.

III year

Maxillofacial surgery, submission of dissertation in the first term, i.e. six months before the final

examination to the university.

Examination of three hours duration three months before the final examination to be conducted by the college. It is desirable to enter general surgical skills and operative procedure that are observed, assisted or performed in the log book in the format as given by MUHS in the revised ordinance governing MDS degree course.

Final examination at the end of the third year.

Sl. No.	Procedure	Category	Year	Number
1	Injection I.M. and I.V.	PI	I, II	50, 20
2	Minor suturing and removal of sutures	P I	I	NA
3	Incision & drainage of an abscess	PI	I	10
4	Surgical extraction	PI	I	15
5	Impacted teeth	PI, PA	I, II	20, 10
6	Pre prosthetic surgery -	PI		
	a) corrective procedures	PI	I	15
	b) ridge extension	PA	I, II	3
	c) ridge reconstruction	A	II, III	3
7	OAF closure	PI, PA	I, II	3, 2
8	Cyst enucleation	PI, PA	I, II	5, 5
9	Mandibular fractures	PI, PA	I, II	10,10
10	Peri-apical surgery	PI, PA	I	5
11	Infection management	PI, PA	I, II	NA
12	Biopsy procedures	PI	I, II	NA
13	Removal of salivary calculi	PA	I, II	3, 5
14	Benign tumors	PA, A	II, III	3, 3
15	Mid face fractures	PA, A	II, III	3, 5
16	Implants	PA, A	II, III	5, 5
17	Tracheotomy	PA, A	II, III	2, 2
18	Skin grafts	PA	III	3, 5
19	Orthognathic surgery	PA, A	II, III	3
20	Harvesting bone & cartilage grafts			
	a) Iliac crest	PA	III	
	b) Rib	A	III	3
	c) Calvarial	A	III	2
	d) Fibula	A, O	III	2
21	T.M. Joint surgery	PA, A	II, I	1
22	Jaw resections	PA, A	III, II	3, 3
23	Onco surgery	A, O	III, III	3, 3
24	Micro vascular anastomosis	A, O	III	5, 10
25	Cleft lip& palate	PA, A	II, III	10, 15

26	Distraction osteogenesis	A, O	II, III	2, 3
27	Rhinoplasty	A, O	III	3, 5
28	Access osteotomies and base of skull surgeries	A, O	III	1, 3

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Paper I : **Applied Basic Sciences:** Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology.

Applied Anatomy

1. Surgical anatomy of the scalp temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of the head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and its applied aspects
9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

Physiology:

1. Nervous system

- Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

2. Blood

- Composition
- Haemostasis, various blood dyscrasias and its management of patients with the same
- Hemorrhage and its control
- Capillary and lymphatic circulation.

- Blood grouping, transfusing procedures.

3. Digestive system

- Saliva - composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. Respiration

- Control of ventilation anoxia, asphyxia, artificial respiration
- Hypoxia - types and management

5. Cardio Vascular System

- Cardiac cycle
- Shock
- Heart sounds
- Blood pressure
- Hypertension

6. Endocrinology

- General endocrinal activity and disorder relating to thyroid gland
- Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads
- Metabolism of calcium

7. Nutrition

- General principles balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus
- Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

Biochemistry

- General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
- General composition of the body
- Intermediary metabolism
- Carbohydrates, proteins, lipids, and their metabolism
- Nucleoproteins, nucleic acid and nucleotides and their metabolism
- Enzymes, vitamins and minerals
- Hormones
- Body and other fluids
- Metabolism of inorganic elements.
- Detoxification in the body.

- Antimetabolites.

Pathology:

1. Inflammation

- Repair and regeneration, necrosis and gangrene
- Role of component system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signalling cell surface receptors
- Role of NSAIDs in inflammation
- Cellular changes in radiation injury and its manifestation

2. Haemostasis

- Role of endothelium in thrombogenesis
- Arterial and venous thrombi
- Disseminated Intravascular coagulation

3. Shock:

- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia hyperemia, venous congestion, edema, infarction

4. Chromosomal abnormalities:

- Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X-Syndrome

5. Hypersensitivity:

- Anaphylaxis, type 2 hypersensitivity, type 3 sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
- Infection and infective granulomas.

6. Neoplasia:

- Classification of tumors
- Carcinogenesis and carcinogen - chemical, viral and microbial
- Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- Characteristics of benign and malignant tumors.

7. Others:

- Sex linked a gamma globulinemia
- AIDS
- Management of immune deficiency patients requiring surgical procedures
- De George Syndrome

- Ghons complex, post primary pulmonary tuberculosis - pathology and pathogenesis.

8. Oral Pathology:

- Developmental disturbances of oral and Para oral structures
- Regressive changes of teeth
- Bacterial, viral and mycotic infections of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances
- Diseases of jawbones and TMJ
- Diseases of blood and blood forming organs in relation ot oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

9. Microbiology:

- Immunity
- Knowledge of organisms commonly associated with disease of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Blood groups, blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures
- Urine analysis and cultures.

Applied Pharmacology and Therapeutics:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitive reactions.
5. Drugs acting on the CNS
6. General and local anaesthetics, hypnotics, analeptics, and tranquillizers
7. Chemotherapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics

Paper II: Minor Oral Surgery and Trauma

MINOR ORAL SURGERY

- **Principles of Surgery:** Developing a surgical diagnosis, basic necessities for Surgery, Aseptic Technique, Incisions, Flap Design Tissue handling, Haemostasis, dead space management, decontamination and debridement, Suturing, Oedema control, patient general health and nutrition.
 - **Medical Emergencies:** prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.
1. **Examination and Diagnosis:** clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
 2. **Haemorrhage and Shock:** applied physiology, clinical abnormalities coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management, secondary hemorrhage, shock.
 3. **Exodontia:** principles of extraction, indications and contraindications types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
 4. **Impaction:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management,
 5. **Surgical Aids to Eruption Of Teeth:** surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
 6. **Transplantation of Teeth**
 7. **Surgical Endodontics:** indications and contraindications, diagnosis, procedures of periradicular surgery
 8. **Procedures To Improve Alveolar soft tissues:** requirements, types, (alveoplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
 9. **Procedures to Improve Alveolar soft Tissues:** hypermobile tissues – operative/ sclerosing method, epulis fissuratum, frenectomy and frenotomy
 10. **Infection of Head and Neck:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
 11. **Chronic Infections of the Jaws:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
 12. **Maxillary Sinus:** maxillary sinusitis - types, pathology, treatment, closure of Oro -antral fistula, Caldwell - luc operation.
 13. **Cysts of the Orofacial region:** classification, diagnosis, management of OKC, dentigerous, radicular non Odontogenic, ranula.

14. **Neurological Disorders of the maxillofacial region:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **Implantology:** definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **Anaesthesia**

Local Anaesthesia: classification of local anaesthetic drugs, modes of action indications and contra indications, advantages and disadvantages, techniques, complications and their management.

General Anaesthesia: classification, stages of GA, mechanism of action, indications, and contraindications, advantages and disadvantages, post anaesthetic complications and emergencies, anaesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA.

17. Trauma

18. Surgical Anatomy of head and Neck

19. Etiology of Injury

20. Basic Principles of Treatment

21. **Primary Care:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.

22. **Diagnosis:** clinical, radiological

23. **Soft Tissue Injury of Face and Scalp:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.

24. **Dento Alveolar Fractures:** examination and diagnosis, classification, treatment, prevention.

25. **Mandibular Fractures:** classification, examination and diagnosis. general principles of treatment, complications and their management

26. **Fracture of Zygomatic Complex:** classification, examination and diagnosis, general principles of treatment, complications and their management.

27. **Orbital Fractures:** blow out fractures

28. Nasal Fractures

29. **Fractures of Middle third of the Facial Skeleton:** emergency care, fracture of maxilla and treatment of Le Fort I, II, III, fractures of Naso orbito ethmoidal region.

30. **Ophthalmic Injuries:** minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.

31. **Traumatic Injuries to Frontal sinus:** diagnosis, classification, treatment

32. Maxillofacial injuries in Geriatric and paediatric Patients

33. Gun shot wounds and War Injuries

34. Osseointegration in Maxillofacial Reconstruction

35. **Metabolic response to Trauma:** neuro endocrine responses, inflammatory mediators, clinical implications

36. **Healing of Traumatic Injuries:** soft tissues, bone, cartilage. response of peripheral nerve to

injury

37. Nutritional Consideration following Trauma

38. Tracheostomy: indications and contraindications, procedure, complications and their management.

PAPER III : MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland - developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy - different procedures
- Various approaches to TMJ
- Recurrent dislocations - Etiology and Management

Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radial Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis

- Model surgery Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis
- Cysts and tumor of oro facial region
- Odontogenic and non-Odontogenic tumors and their management
- Giant lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The application of laser technology in surgical treatment of lesions Cryosurgery
- Principles, applications of cryosurgery in surgical management Cleft lip and palate surgery
- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone. Eyelids external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc.

Craniofacial surgery

- Basic knowledge of developmental anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies

Monitoring Learning Progress

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.