

SYLLABUS FOR Ph.D. ENTRANCE EXAMINATION

ORAL & MAXILLOFACIAL SURGERY

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

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, enterals 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 I | 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 & 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, sialogogues, hematinics, anti diabetic, Vitamins A, B-complex, C.D.E.K

Computerscience

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, homeostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.

Medical emergencies - Prevention and management of altered consciousness, 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 cardio vascular 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, special 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.

Anesthesia - stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, 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 anesthesia

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 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 auto and heterogeneous tissue grafting.

Reconstructive oral and maxillofacial surgery - hard tissue and soft tissue reconstruction.

Anesthesia - Stages of anesthesia, pharmacology of inhalation, intravenous and regional anesthesia, 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 scarring, 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 iphasis on cardiovascular diseases endocrinal and metabolic respiratory and renal eases, 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.

Orthopedic: basic principles of orthopedic 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 participate all activities such as journal clubs, seminars, CDE programs etc. this work scrutinized and certified by the head of the departmental and head of the institute and presented to the university every year

ORAL AND MAXILLOFACIAL SURGERY

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.Cardiovascular 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

2. Nutrition

General principles balanced diet, effect of dietary deficiency, protein 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 signaling 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:*

Mariens 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 alpha globulinemia.

AIDS

Management of immune deficiency patients requiring surgical procedures

De George Syndrome

C 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 to 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 anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C, D, E, K

MINOR ORAL SURGERY

Principles of Surgery: Developing a surgical diagnosis, basic necessities! 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 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. Anesthesia
Local Anesthesia: classification of local anesthetic drugs, modes of action indications and contraindications, advantages and disadvantages, techniques, complications and their management.
General Anesthesia: classification, stages of GA, mechanism of action, indications, and contraindications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic 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, fractured 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, retinobulbar hemorrhage, and traumatic optic neuropathy.
31. Traumatic Injuries to Frontal sinus: diagnosis, classification, treatment
32. Maxillofacial injuries in Geriatric and pediatric 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.

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
- Radical 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

Lasersurgery

The application of laser technology in surgical treatment of lesions Cryosurgery

Principles, applications of cryosurgery in surgical management of 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