SYLLABUS FOR Ph.D. ENTRANCE EXAMINATION (2016)

CONSERVATIVE DENTISTRY AND ENDODONTICS

APPLIED ANATOMY OF HEAD AND NECK
- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous stem of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general, consideration, in physiology of permanent dentition, form, function, alignment, contact, occlusion.
- Internal anatomy of permanent teeth and its significance
- Applied histology - histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

DEVELOPMENT OF TEETH:
- Enamel - development and composition, physical characteristics, chemical properties, structure
- Age changes - clinical structure
- Dentin - development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.
- Pulp - development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Cementum - composition, cementogenesis, structure, function, clinical consideration.
- Periodontal ligament - development, structure, function and clinical consideration.
- Salivary glands - structure, function, clinical considerations.
- Eruption of teeth.

APPLIED PHYSIOLOGY:
- Mastication, deglutition, digestion and assimilation; fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology - general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- Physiology of saliva - composition, function, clinical significance.
- Clinical significance of vitamins, diet and nutrition - balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, Physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

PATHOLOGY:
FACULTY OF DENTAL SCIENCES

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances - ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms - classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- Blood dyscrasias.
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth. pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

MICROBIOLOGY:
- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry - strepto, staphylococci, lactobacilli, cornybacterium, actinomycetes, clostridium, neisseria, vibrio, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology - antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

PHARMACOLOGY:
- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia - agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia - pre medications, neuromuscular blocking agents, induction agents, inhalation anesthesia and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogue, immunosuppressants, drug interactions, antisepsics, disinfectants, antiviral agents, drugs acting on CNS.

BIOSTATISTICS:
- Introduction, Basic- concepts, Sampling, Health information systems - collection, compilation, presentation of data. Elementary statistical methods - presentation of statistical data, Statistical averages - measures of central tendency, measures of dispersion, Normal distribution, Tests of significance - parametric and non-parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression, Use of computers.

RESEARCH METHODOLOGY:
- Essential features of a protocol for research in humans
Experimental and non-experimental study designs
Ethical considerations of research

APPLIED DENTAL MATERIALS:
- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments- tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs - design and mechanics of cutting- other modalities of tooth preparation.
- Methods of testing biocompatibility of materials used.

CONSERVATIVE DENTISTRY

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management -recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GLC and restorative techniques, failures and management.
8. Direct and indirect composite restorations.
9. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.
   a. Tissue management
10. Impression procedures used for indirect restorations.
11. Cast metal restorations, indications, contraindications, tooth preparation for class 2 inlay, Onlay full crown restorations. Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials
12. Direct gold restorations.
13. Recent advances in restorative materials and procedures.
15. Advance knowledge of minimal intervention dentistry.
16. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
17. Hypersensitivity, theories, causes and management.
18. Lasers in Conservative Dentistry
19. CAD-CAM&CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics
ENDODONTICS

1. Rationale of endodontics.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Pathobiology of periapex.
6. Diagnostic procedure - recent advances and various aids used for diagnosis.
   a. Orofacial dental pain emergencies: endodontic diagnosis and management
7. Case selection and treatment planning.
8. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation - objectives and principles
10. Endodontic instruments and instrumentation - recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.
11. Working length determination I cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non-surgical Endodontics by calcium hydroxide.
17. Endoperio interrelationship. endo + Perio lesion and management
18. Drugs and chemicals used in Endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric Endodontics
22. Endo emergencies and management.
23. Biologic response of pulp to various restorative materials and operative procedures.
25. Multidisciplinary approach to endodontics situations.
27. Local anesthesia in endodontics.
29. Endodontics failures and retreatment,
30. Resorptions and its management.
31. Microscopes in endodontics.
32. Single visit endodontics, current concepts and controversies.
SYLLABUS FOR Ph.D. ENTRANCE EXAMINATION (2016)

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, temporal 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, enteral nutrition, roots of access to Gltract, 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 if 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 pharmadynamic 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, hematinsics, 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:**

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 workup; 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 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 scaring, face lift, blepharoplasty, otoplasty, facial bone recontouring 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 endocrinai 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 ultrasoi

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


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 thrombogenisis,
Arterial and venous thrombi,
Disseminated Intravascular coagulation
3. Shock
Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
Circulatory disturbances, ischemia hyperemia, venous congestion, eden
infarction
4. Chromosomal abnormalities:
Marians 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
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 endocrinial 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 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, Haemostas dead space management, decontamination and debridment, 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 ad differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. Chronic Infections of the Jaws: Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
13. Cysts of the Orofacial region: classification, diagnosis, management of OKC, dentigerous, radicular non Odontogenic, ranula
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
25. Mandibular Fractures: classification, examination and diagnosis, general principles of treatment, complications and their management
27. Orbital Fractures: blow out fractures
28. Nasal Fractures


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: neuroendocrine responses, inflammatory medi 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
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 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
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ORAL PATHOLOGY AND MICROBIOLOGY

Developmental defects of oral and maxillofacial region and abnormalities of teeth
• Dental caries (Introduction, Epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine – pulpunit, histopathology, root caries, sequelae and immunology).
• Pulpal and Periapical diseases
• Infections of oral and Para oral regions (bacterial, viral and fungal infections)
• Non - neoplastic disorders of salivary glands
• Bone pathology
• Haematological disorders
• Physical and chemical injuries, allergic and Immunological diseases.
• Cysts of odontogenic origin
• Dermatologic diseases.
• Periodontal diseases
• Oral manifestations of systemic diseases
• Facial pain and neuromuscular disorders including TMJ disorders
• Regressive alterations of teeth

Clinical Pathology:

• Laboratory investigations - Hematology, Microbiology and Urine analysis
• Postings to Clinical Pathology for relevant training
• Record book to be maintained-

Specialized Histotechniques And Special Stains:

Special staining techniques for different tissues.
Immunohistochemistry
Preparation of frozen sections and cytological smears

Approach:

Training to be imparted in the department or in other institutions having the facility Record book to be maintained

RECORDING OF CASE HISTORY AND CLINICO-PATHOLOGICAL DISCUSSIONS:
Approach:

Posting to the department of Oral medicine, Diagnosis and Radiology and Oral and Maxillo-facial surgery. Record of case histories to be maintained

Dermatology:
Study of selected mucocutaneous lesions-etiopathogenesis, pathology, clinical presentation and diagnosis.

Approach:
• Posting to the Dept of Dermatology of a Medical college
• Topics to be covered as Seminars
• Record of cases seen to be maintained.
ORAL ONCOLOGY:
Detailed study including Pathogenesis, molecular and biochemical changes of various tumors, tumor like lesions and Premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues. Tumour markers
Approach:
To be covered as seminars
Posting to a Cancer center to familiarize with the pathological appearances, diagnosis, radio-diagnosis and treatment modalities.

ORAL MICROBIOLOGY AND IMMUNOLOGY:
• Normal Oral microbial flora
• Defense mechanism of the oral cavity
• Microbiology and immunology of Dental caries and Periodontal diseases
• Dental caries (Introduction, epidemiology, microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit, histopathology, root caries, sequelae and immunology)
  • Tumor immunology
  • Infections of Pulp and Periapical and periodontal tissues
• Oral sepsis and Bacteremia
• Microbial genetics
• Infections of oral and Para oral regions (bacterial, viral and fungal infections)
Approach:
To be covered as seminars

FORENSIC ODONTOLOGY:
Legal procedures like inquest, medico-legal evidences post mortem examination of violence around mouth and neck, identification of deceased individual-dental importance.
Bite marks rugae patterns and lip prints.
Approach:
To be covered as seminars
Posting to a Cancer center to familiarize with the pathological appearances, diagnosis, and radio-diagnosis and treatment modalities

HISTOPATHOLOGY – SLIDE DISCUSSION:
Record book to be maintained

Laboratory Techniques And Diagnosis:
• Routine hematological tests and clinical significance of the same
• Biopsy procedures for oral lesions
• Processing of tissues for Paraffm sections
• Microtome and principles of microtomy
• Routine stains, principles and theories of staining techniques
• Microscope, principles and theories of microscopy
• Light microscopy and various other types including electron microscopy
• Methods of tissue preparation for ground sections, decalcified sections.
• Special stains and staining techniques for different tissues
• Immunohistochemistry
• Preparation of frozen sections and cytological smears
OTHER TOPICS IN ORAL PATHOLOGY.
• Detailed description of diseases affecting oral mucosa, teeth, supporting tissues & jaws
• Cystsof the oral & Para-oral regions
• Systemic diseases affecting oral cavity.

**Approach:**
Seminars & Slide discussions. Record notebook to be maintained. Training in histopathology slide reporting.

**Experimental Aspects Of Oral Diseases:**
Approach: Posting is desirable in Centers where animal experimentation is carried out to familiarize with laboratory techniques, upkeep & care of experimental animals.

**RECENT ADVANCES IN ORAL PATHOLOGY:**
Approach: Update of knowledge in Oral Pathology through study of recent journals
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ORTHODONTICS

APPLIED ANATOMY

- Prenatal growth of head - Stages of embryonic development, origin of head, origin of face, origin of teeth.
- Post-natal growth of head - Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.
- Assessment of growth and development - Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, and gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.
- Muscles of mastication - Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion.
- Development of dentition and occlusion - Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of Occlusal development, pattern of occlusion.
- Assessment of skeletal age - The carpal bones, carpal X – rays, cervical vertebrae.

APPLIED PHYSIOLOGY

- Endocrinology and it disorders pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones
- Calcium and its metabolism
- Nutrition-metabolism and their disorders : proteins, carbohydrates, fats, vitamins and minerals
- Muscle physiology
- Craniofacial Biology: cell adhesion molecules and mechanism of adhesion
- Bleeding disorders in orthodontics; Hemophilia

DENTAL MATERIALS

- Gypsum products: Dental plaster, dental stone and their properties, setting reaction etc.
- Impression materials in general and particularly alginate impression material.
- Acrylics: chemistry, composition physical properties.
- Composites: composition, types, properties, setting reaction
- Banding and bonding cements : Zn (PO4)2, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass ionomer cements
- Wrought metal alloys: deformation, strain hardening, annealing recovery, recrystallization, grain growth properties of metal alloys.
- Elastics: Latex and non-latex elastics.
- Applied physics, Bioengineering and metallurgy.
- Specification and tests methods used for materials used in Orthodontics
• Survey of all contemporary literature and recent advances in above – mentioned materials.

GENETICS:
• Cell structure, DNA, RNA, protein synthesis, cell division
• Chromosomal abnormalities.
• Principles of oro-facial genetics
• Genetics in malocclusion
• Molecular basis of genetics.
• Studies related to malocclusion
• Recent advances in genetics related to malocclusion
• Genetic counseling
• Bioethics and relationship to Orthodontic management of patients.

PHYSICAL ANTHROPOLOGY:
• Evolutionary development of dentition 8.1.5.2 Evolutionary development of jaws.

PATHOLOGY
• Inflammation
• Necrosis

BIOSTATESTICS
• Statistical principles
• Data Collection
• Method of Summarizing
• Methods of analysis – different tests – errors
• Sampling and Sampling technique
• Experimental models, design and interpretation.
• Development of skills for preparing clear concise and cognent scientific abstracts and publication.

APPLIED RESEARCH METHODOLOGY IN ORTHODONTICS
• Experimental design
• Animal experimental protocol
• Principles in the development, execution and interpretation of methodologies in Orthodontics
• Critical Scientific appraisal of literature.

DIAGNOSIS AND TREATMENT PLANNING

Orthodontic History
• Historical perspective,
• Evolution of orthodontic appliances,
• Pencil sketch history of Orthodontic peers.
• History of Orthodontics in India.
Concepts of Occlusion and Esthetics
- Structure and function of all anatomic components of occlusion,
- Mechanics of articulation,
- Recording of masticatory function,
- Diagnosis of Occlusal dysfunction
- Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

Etiology and Classification of malocclusion:
- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

Dentofacial Anomalies:
- Anatomical, physiological and pathological and characteristics of major groups of development defects of the orofacial structures.

Child and Adult Psychology:
- Stages of child development
- Theories of psychological development
- Management of handicapped child.
- Motivation and Psychological problems related to malocclusion / orthodontics
- Adolescent psychology
- Behavioral psychology and communication

Diagnostic procedures, Prognosis and treatment planning in orthodontics
- Emphasis on the process of data gathering, synthesis and translating it into a treatment plan.
- Problem cases – analysis of cases and its management.
- Adult cases, handicapped and mentally retarded cases and their special problems
- Critique of treated cases.

Cephalometrics
- Instrumentation
- Image processing
- Tracing and analysis of errors and applications
- Radiation hazards
- Advanced Cephalometrics techniques.
- Comprehensive review of literature.
- Video imaging principles and application.

Practice management in Orthodontics
- Economics and dynamics of solo and group practices
- Personal management
- Materials management
- Public relations
- Professional relationship
• Dental ethics and jurisprudence
• Office sterilization procedures
• Community based Orthodontics

CLINICAL ORTHODONTICS

Myofunctional Orthodontics:
• Basic principles
• Contemporary appliances – their design and manipulation
• Case selection and evaluation of the treatment results.
• Review of the current literature

Dentofacial Orthopedics
• Principles
• Biomechanics
• Appliance design and manipulation
• Case selection and evaluation of the treatment results.
• Review of the current literature.

Cleft lip and palate rehabilitation
• Diagnosis and treatment planning
• Mechanotherapy
• Special growth problems of cleft cases
• Speech physiology, pathology and elements of therapy as applied to orthodontics
• Team rehabilitative procedures.

Biology of tooth movement:
• Principles of tooth movement-review
• Review of contemporary literature
• Applied histophysiology of bone, periodontal ligament
• Molecular and ultra cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:
• Orthodontist’ role in conjoint diagnosis and treatment planning
• Pre and post-surgical Orthodontics
• Participation in actual clinical cases, progress evaluation and post retention study
• Review of current literature

Ortho / Perio / Prosth inter relationship
• Principles of interdisciplinary patient treatment.
• Common problems and their management

Basic principles of Mechanotherapy includes Removable appliances and fixed appliances
• Design
• Construction
• Fabrication
• Management
• Review of current literature on treatment methods and results.
Applied preventive aspects in Orthodontics
- Caries and periodontal disease prevention
- Oral hygiene measures
- Clinical procedures

Interceptive preventive aspects in Orthodontics
- Principles
- Growth guidance
- Diagnosis and treatment planning
- Therapy emphasis on
  a. Dento-facial problems
  b. Tooth material discrepancies
  c. Minor surgery for Orthodontics

Retention and relapse
- Mechnotherapy – special reference to stability of results with various procedures
- Post retention analysis
- Review of contemporary literature

Recent advances like:
- Use of implants
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis
PERIODONTOLOGY

1. Development of the periodontium
3. Age changes in the periodontal tissues
   - macroscopic and microscopic anatomy
   - blood supply of the periodontium
   - lymphatic system of the periodontium
   - nerves of the periodontium
5. Temporomandibular joint, maxilla and mandible.
6. Nerves of periodontics
8. Muscles of mastication.

Physiology:

1. Blood
2. Respiratory system - acknowledge of the respiratory diseases which are a cause of periodontal diseases( periodontal medicine)
3. Cardiovascular system.
   a. Blood pressure
   b. Normal ECG
   c. Shock
4. Endocrinology- hormonal influences on periodontium
5. Gastrointestinal system
   a. Salivary secretion-composition ,function and regulation
   b. Reproductive physiology
   c. Hormones-actions and regulation,role in periodontal disease
   d. Family planning methods
6. Nervous system
   a. Pain pathways
   b. Taste- taste buds ,primary taste sensation and pathways for sensation

Biochemistry:

2. Diet and nutrition and periodontium
3. Biochemical test and their significance
4. Calcium and phosp

Pathology:

1. Cell structure and metabolism
2. Inflammation and repair , necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances-oedema , haemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes melitus
7. Cellular growth and differentiation. Regulation
8. Lab investigations
9. Blood

**Microbiology:**
1. General bacteriology  
   a. Identification of bacteria  
   b. Culture media and methods  
   c. Sterilization and disinfection  
2. Immunology and infection  
3. Systemic bacteriology with special emphasis on oral microbiology - staphylococci genus, actinomysis, and other filamentous bacteria and actinobacillus actinomycetum comitans  
4. Virology  
   a. General properties of viruses  
   b. Herpes, hepatitis virus. Hiv virus  
5. Mycology  
   a. Candidiasis  
6. Applied microbiology  
7. Diagnostic microbiology and immunology, hospital infections and management

**Pharmacology:**
1. General pharmacology  
   a. Definitions- pharmacokinetics with clinical applications, routes of administration including local drug delivery in periodontics  
   b. Adverse drug reactions and drug interactions  
2. Detailed pharmacology of  
   a. Analgesics- opioid and non opioid  
   b. Local anaesthetics  
   c. Hematinics and coagulants, anti-coagulants  
   d. Vitamin d and calcium preparations  
   e. Anti diabetic drugs  
   f. Steroids  
   g. Antibiotics  
   h. Antihypertensive  
   i. Immunosupressive drugs and their effects on oral tissue  
   j. Antiepileptic drugs  
3. Brief pharmacology, dental use and adverse effects of –  
   a. General anesthetics  
   b. Anti-psychotics  
   c. Anti- depressants  
   d. Axiolytic drugs  
   e. Sedatives  
   f. Anti epileptics  
   g. Anti- hypertensives  
   h. Anti- anginal drugs  
   i. Diuretics  
   j. Hormones  
   k. Pre-anesthetic medications  
4. Drugs used in bronchial asthma, cough  
5. Drug therapy of-  
   a. Emergency  
   b. Seizures
c. Anaphylaxis
d. Bleeding
e. Shock
f. Diabetic ketoacidosis
g. Acute adisonian crisis

6. Dental pharmacology
   a. Antiseptics
   b. Astringents
   c. Sialogogues
d. Disclosing agents
e. Antiplaque agents

7. Fluoride pharmacology

Biostatistics:
1. Introduction, definition, and branches of biostatistics
2. Collection of data. Sampling, types, bias and errors
3. Compiling data graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability
5. Test of significance (chi square test, “t” test and “z” test
6. Null hypothesis

Etiopathogenesis:
1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defence mechanisms of gingiva
4. Periodontal microbiology
5. Basics concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal diseases.
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

Clinical and therapeutic periodontology and oral Implantology

Please note:
Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation. Diagnosis, prognosis, and treatment of periodontal diseases

I. Gingival diseases
   1. Gingival inflammation
   2. Clinical features of gingivitis
3. Gingival enlargement  
4. Acute gingival infection  
5. Desquamative gingivitis and oral mucous membrane diseases  
6. Gingival diseases in childhood

II. **Periodontal diseases**  
1. Periodontal pocket  
2. Bone loss and patterns of bone destruction  
3. Periodontal response to external forces  
4. Masticatory system disorders  
5. Chronic periodontitis  
6. Aggressive periodontitis  
7. Necrotizing ulcerative periodontitis  
8. Interdisciplinary approaches  
   a. Orthodontic  
   b. Endodontic  
9. Periodontic considerations in periodontal therapy

III. **Treatment of periodontal diseases**  
A. History, examination, diagnosis, prognosis and treatment planning  
   1. Clinical diagnosis  
   2. Radiographic and other aids in the diagnosis of periodontal diseases  
   3. Advance diagnostic techniques  
   4. Risk assessment  
   5. Determination of prognosis  
   6. Treatment plan  
   7. Rationale for periodontal treatment  
   8. General principles of anti infective therapy with special emphasis on infection control in periodontal practise  
   9. Halitosis and its treatment  
   10. Bruxism and its treatment

B. Periodontal instrumentation  
   1. Instrumentation  
   2. Principles of periodontal instrumentation  
   3. Instruments used in different parts of the mouth

C. Periodontal therapy  
   1. Preparation of tooth surface  
   2. Plaque control  
   3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth  
   4. Periodontal management of hiv infected patients  
   5. Occlusal evaluation and therapy in the management of periodontal diseases  
   6. Role of orthodontics as an adjunct to periodontal therapy  
   7. Special emphasis on precautions and treatment for medically compromised patients  
   8. Periodontal splints  
   9. Management of dentinal hypersensitivity
D. Periodontal surgical phase- special emphasis on drug prescription
   1. General principles of periodontal surgery
   2. Surgical anatomy of periodontium and related structures
   3. Gingival curetage
   4. Gigivectomy technique
   5. Treatment of gingival enlargements
   6. Periodontal flap
   7. Osseous surgery (resective and regenerative)
   8. Furcation problem and its management
   9. The periodontic – endodontic continuum
   10. Periodontic plastic and esthetic surgery
   11. Recent advances in surgical techniques

E. Future directions and controversial questions in periodontal therapy
   1. Future directions for infection control
   2. Research directions in regenerative therapy
   3. Future directions in anti-inflammatory therapy
   4. Future directions in measurement of periodontal diseases

F. Periodontal maintenance phase
   1. Supportive periodontal treatment
   2. Results of periodontal treatment

IV. Oral implantology
   1. Introduction and historical review
   2. Biological, clinical and surgical aspects of dental implants
   3. Diagnosis and treatment planning
   4. Implant surgery
   5. Prosthetic aspect of dental implants
   6. Diagnosis and treatment of peri-implant complications
   7. Special emphasis on plaque control measures in implant patients
   8. Maintenance phase
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PROSTHODONTICS AND CROWN & BRIDGE

Applied anatomy of Head and Neck:

Embryology - Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands. Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation.


Histology - histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.

Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc. Muscle and neural tissues. Endocrinal system including thyroid. Salivary glands

Anthropology & Evolution - Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo skeletal system, neuromuscular coordination, posture and gait.

Applied Genetics and Heredity - Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to Orthodontic management. Dentofacial anomalies, Anatomical, psychological and pathological characteristic of major groups of developmental defects of the orofacial structures.
Cell biology - Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of Intercellular junctions. Cell cycle and division, cell-to-cell and cell-extra cellular matrix interactions.


Endocrinics- General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system. Neuromuscular co-ordination of the stomatognathic system.

Applied Pharmacology and Therapeutics- Definition of terminologies used - Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics vitamins: A, D, B - complex group C and K etc. Chemotherapy and Radiotherapy

Applied Pathology - Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histopathology and clinical pathology.

Applied Microbiology- Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, pneumo, gono and meningococci, Clostridia group of organisms, Spirochetes, organisms of tuberculosis, leprosy, diphertheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management

a) Applied 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 endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

b) Laboratory determinations- Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures - urine analysis and culture

BioStatistics- Study of Biostatistics as applied to dentistry and research. Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data
Introduction to biostatistics - Scope and need for statistical application to biological data. Definition of selected terms - scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation - Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance

Research methodology - Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic - inductive logic - analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement: Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.


Applied surgery & Anesthesia-General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance. Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

Plastic surgery - Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

Applied Dental Material:

- All materials used for treatment of craniofacial disorders - Clinical, treatment, and laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.

- Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities includes honorable accepted methods of
diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.

- Understanding all applied aspects for achieving physical, psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient

- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology

- Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.

- TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.

- Student shall acquire knowledge of testing biological, mechanical and other physical property of all material used for the clinical and laboratory procedures in prosthodontic therapy.

- Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.

- All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waste management.

I. REMOVABLE PROSTHODONTICS AND IMPLANTS:

a. Prosthodontic treatment for completely edentulous patients - Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous

b. Prosthodontic treatment for partially edentulous patients: - Clasp-retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

Prosthodontic treatment for edentulous patients: -Complete Dentures and Implant supported Prosthesis for Edentulous in both the arches

Complete Denture Prosthesis - Definitions, terminology, G.P.T., Boucher's clinical dental terminology
Scope of Prosthodontics - the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,

Infection control, cross infection barrier - clinical and laboratory and hospital and lab waste management
a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.

b) Effects of aging of edentulous patients - aging population, distribution and edentulism in old age, impact of age on edentulous mouth - Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age

c) Sequelae caused by wearing complete denture - the denture in the oral environment - Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.

d) Temporomandibular disorders in edentulous patients - Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities

e) Nutrition Care for the denture wearing patient - Impact of dental status of food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

f) Preparing patient for complete denture patients - Diagnosis and treatment planning for edentulous and partially edentulous patients - familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning - contributing history - patient's history, social information, medical status - systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health - mental attitude, psychological changes, adaptability, geriatric changes - physiologic, pathological, pathological and intra oral changes. Intra oral health - mucose membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement - sulci or fossae, extra oral measurement is the vertical dimension of occlusion, diagnostic casts.

Specific observations - existing dentures, soft tissue health, hard tissue health - teeth, bone.

Biomechanical considerations - jaw relations, border tissues, saliva, muscular development - muscle tones, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

g) Pre prosthetic surgery - Improving the patients denture bearing areas and " relations: - non surgical methods - rest for the denture supporting tissues, 0m! correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods - Correction of conditions, that preclude optimal
prosthetic function - hyperplastic ridge - epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and Mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.

h) Immediate Denture - Advantages, disadvantages, contra indication, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals / adjunctive care, oral prophylaxis and other treatment needs.

First extraction / surgical visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implants or implant attachments.

i) Over dentures (tooth supported complete dentures) - indications and treatment planning, advantages and disadvantages, selection of abutment teeth, lose of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and mental trauma.

k) Art of communication in the management of the edentulous predicament - Communication - scope, a model of communication, why communication . important, what are the elements of effective communications, special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

l) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases - base metal alloys.

m) Articulators - Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the lower member of the articulator and uses,

n) Fabrications of complete dentures - complete denture impressions - muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives - preservation, support, stability, aesthetics, and retention. Impression materials and techniques - need of 2 impressions the preliminary impression and final impression. Developing an analogue / substitute for the maxillary denture bearing area -anatomy of supporting structures - mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule,
Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts.

Developing an analogue / substitute for the Mandibular denture bearing area-Mandible - anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure - labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions - preliminary impressions, custom tray, refining, preparing the tray, final impressions.

- Mandibular movements, Maxillo mandibular relation and concepts of occlusion -Gnathology, identification of shape and location of arch form - Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements - influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position, Maxillo - Mandibular relations - the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods - mechanical, physiological, Determining the horizontal jaw relation - Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

- Selecting and arranging artificial teeth and occlusion for the edentulous patient - anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing position of teeth - horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics - to concept of occlusion.

- The Try in - verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

- Speech considerations with complete dentures - speech production - structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures - bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

- Waxing contouring and processing the dentures their fit and insertion and after care - laboratory procedure - wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis - doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures - verifying centric relation, eliminating occlusal errors, special instructions to the patient - appearance with new denture, mastication with new dentures, speaking with new dentures, oral hygiene with dentures, preserving of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and preventive Prosthodontic - periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.


- Implant supported prosthesis for partially edentulous patients - Clinical and laboratory protocol: Implant supported prosthesis, managing problems and implications.
• Introduction and Historical Review
• Biological, clinical and surgical aspects of oral implants
• Diagnosis and treatment planning
• Radiological interpretation for selection of fixtures
• Radiological interpretation for selection of fixtures
• Splints for guidance for surgical placement of fixtures
• Intra oral plastic surgery
• Guided bone and tissue generation consideration for implants fixture.
• Implants supported prosthesis for complete edentulism and partial edentulism
• Occlusion for implants support prosthesis.
• Peri-implant tissue and management
• Peri-implant tissue and management
• Maintenance and after care
• Management of failed restoration.
• Work authorization for implant supported prosthesis - definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients - Removable partial Prosthodontics -


b. Components of RPD - major connector - mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

Rest and rest seats - from of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

Direct retainer- Internal attachment, extracoronal direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing - reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

Indirect Retainer - denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct - indirect retention.

Principles of removable partial Denture design - bio mechanic considerations, and the factors Influence after mouth preparations - Occlusal relationship of remaining T teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past 'experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support, stabilizing components,
guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partial to gain support.

c. Education of patient
d. Diagnosis and treatment planning
e. Design, treatment sequencing and mouth preparation
f. Surveying - Description of dental surveyor, purposes of surveyor procedure of survey, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast - paralleled blockout, shaped blockout, arbitrary blockout and relief.

g. Diagnosis and treatment planning - Infection control and cross infection barriers - clinical and laboratory and hospital and lab waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis: fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials


i. Preparation of Abutment teeth - Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.


k. Support for the Distal Extension Denture Base - Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.

l. Laboratory Procedures - Duplicating a stone case, Waxing the partial denture framework, Anatomic replica patterns, Spruining, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing tinW partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

m. Initial placement, adjustment and servicing of the removable partial denture - adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow - up services

n. Relining and Rebasing the removable partial denture - Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
o. Repairs and additions to removable partial dentures - Broken clasp arms, fractured occlusal rests, distortion or breakage of other components - major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.

p. Removable partial denture considerations in maxillofacial prosthetics - Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis. Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation record

q. Management of failed restorations, work authorization.