MD17D001 - APPLIED ANATOMY OF HEAD AND NECK

- Development of face, paranasal sinuses and the associated structure 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 system of head and neck Salivary glands, Functional anatomy of mastication, deglution 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, functions, clinical consideration.
- Periodontal ligment – 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 pulp 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:

- 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 of tumors.
- Blood dyscrasias.
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, Periapical pathology, pulpal 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 of relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, 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 drugs 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, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- Anesthetic emergencies.
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K, iron), anti sialogogue, immunosupressants, drug interactions, antiseptics, disinfectants, anti viral 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. Test 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 (liners, bases) cavity varnishes.
- Dental ceramics – recent advances, finishing and polishing materials.
- Dental burs – and mechanics of cutting – other modalities of tooth preparation.
- Methods of testing biocompatibility of materials used.

MD17D002- CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These are to be achieve by the time candidate completes the course. These objectives may be considered under the following subtitles

KNOWLEDGE:

At the end of 36 months of training, the candidates should be able to:

- Describe aeitology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathoses including periodontal situation.
- Demonstrate understanding of basic sciences as relevant to conservative/ restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given cases or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self – study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry – Endodontics – Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.
  Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform.

SKILLS:

- Take proper chair side history, exam the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work and surgical and non – surgical Endodontics including endodontic endoosseous implants, as well as endodontic – periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES

- Adopt ethical principles in all aspects of restorative and contemporaries Endodontics including non – surgical and surgical Endodontics.
- Professional honesty and integrity should be the top priority.
- Dental care has to be provided regardless of social status, caste, creed or religion of the patient.
- Develop communication skills in particular to explain various options available management and to obtain a true informed consent from the patient.
- Apply high moral and ethical standards while carrying on human or animal research.
- He/She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation

- Respect patient's rights and privileges including patients right to information.

MD17D003- ENDODONTICS

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
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 / 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.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management – endodontic treatment for young permanent teeth. Pediatric Endodontics – treatment of immature apex.
16. Endodontic surgeries, recent development in technique and devices, endoosseous endodontic implants – biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management.
18. Drugs and chemical used in Endodontics.
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.

21. Geriatric Endodontics.
22. Biologic response of pulp to various restorative materials and operativeprocedures.
23. Lasers in Endodontics.
24. Multidisciplinary approach to endodontics situations.
25. Endodontics radiology – digital technology in endodontics practice.26.Local anesthesia in endodontics.
27. Procedural errors in endodontics and their management.28.Endodontics failures and retreatment.
29. Resorptions and its management.30.Microscopes in endodontics.

Single visit endodontics, current concepts and controversies.32.Management of discolored teeth.