

# **PERIODONTOLOGY AND ORAL IMPLANTOLOGY**

## **Goals:**

The goals of post graduate training course in Periodontology and Oral Implantology would be to train a candidate who will,

- Recognize and diagnose all the common periodontal diseases, confidentially plan and carry out suitable basic and advanced therapeutic & preventive procedures.
- Develop and exercise motivation, education of several aspects of periodontics and implants and maintain high ethical standards.
- Progress day by day with the subject through continuing education program both as an academician and as a practising dentist.
- Be an inspired teacher, keen to share his knowledge and skills with a colleague or a junior or any lecturer.

## **Objectives:**

The following objectives are laid out to achieve the goals of the course. The following Subheadings may be considered in achieving objectives.

1. Knowledge
2. Skills
3. Human values ethical practice and communication abilities.

At the end of training , the candidate must be able to,

## **Knowledge :**

- Discuss historical perspective to advancement in the subject proper and related topics
- Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic & genetic aspects of periodontal pathology.
- Describe various preventive periodontal measures.(Including indigenous methods)
- Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to iatrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental / Emotional determinates in a given case
- Recognize conditions that may be outside the area of his Speciality / competence and refer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update himself by attending course, conferences and seminars relevant to periodontics or by self-learning process.

- Plan out / carry out research activity both basic and clinical aspects with the aim of publishing his work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- Plan out epidemiological survey to assess prevalence and incidence of periodontal diseases in Indian population (Regional wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology

### **Skills & Attitudes :**

- Take a proper clinical history, medical history evaluation, thorough intraoral of intra- oral, and extra oral, examination advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & surgical procedures independently
- Management of related medical emergencies

### **Human values, ethical practice and communication abilities**

- Adopt ethical principles in all aspects of treatment modalities. Professional honesty and integrity are to be fostered.
- Develop communication skills to make awareness regarding periodontal disease.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble, accept the limitations in knowledge and skill, and ask for help from colleagues when needed .
- Respect patient's rights and privileges, including patient's right to information and right to seek a second opinion .

## **SYLLABUS FOR FIRST YEAR M.D.S.**

### **BASIC SCIENCES:-**

1. Applied Anatomy and Histology.
  2. Applied Physiology and Biochemistry.
  3. Applied Pharmacology.
  4. Applied Oral and General Pathology and Microbiology.
  5. Biostatistics.
  6. Research Methodology.
  7. Biotechnology.
  8. Bio information.
- 1-4 are exam going subjects and 5-8 are non exam going subjects.

### **Paper-I**

#### **Applied Anatomy Histology.**

1. Blood supply , nerve supply of oral cavity.
2. Muscles of mastication and temporomandibular joint
3. Microstructural anatomy of periodontium including development
4. Maxillary sinus & its lining
5. Osteology of maxilla and mandible

## Paper-II

### Applied Physiology and Biochemistry

#### A. PHYSIOLOGY

- Cellular physiology
- Body fluids, homeostasis, fluid transmission
- Saliva
- Pain-Pathway and mechanisms
- Hematology- Normal blood constituents, clinical variations, blood clotting mechanism, their disorders and management.
- Heart-Normal physiology, variations, peripheral vascular resistance. Blood volume. Cardiovascular homeostasis. Dynamics of blood and lymph flow
- Respiratory system -Normal Physiology and variations in health and disease , oxygen-carbon dioxide gas exchange, emergency situations, artificial respiration.
- Endocrinology- Thyroid, pancreas, adrenaline, growth hormones, sex hormones and pregnancy.

#### B. BIOCHEMISTRY

- Molecular Biology
- Carbohydrates, lipids, proteins
- Connective tissue
- Fluids- Extracellular and Intracellular
- Enzymes
- Lab investigations & interpretation of data of
  - Liver Function
  - Kidney Function
  - Acidosis & alkalosis
  - Electrolytes
- Saliva, collagen, and histochemistry
- Nutrition & Diet
  - Definition, balanced diet
  - Energy requirement or BMR value
  - Vitamins & Minerals and Deficiency Diseases.

## Paper-III

### Applied Pathology and Microbiology

#### A. GENERAL PATHOLOGY

- Cell- growth and regulation.
- Growth Factors and cytokines.
- Inflammation-Details of cellular events-Chemical mediators: promoters and suppressors
- Healing Different types repair and regeneration.
- Immunology / Immunogenetics / Immunochemistry
- Disturbances in cell growth & differentiation
- Brief understanding of Histochemistry / Cytochemistry / Enzyme Histochemistry.

#### B. ORAL PATHOLOGY

- Developmental disturbances of oral structures.
- Epidemiology of oral diseases

- Oral manifestations of nutritional and metabolic diseases.
- Diseases of blood and blood forming organs.
- Effects of disturbances in endocrine function on oral tissues

### **C. MICROBIOLOGY**

- Oral microbiology – Classification & characteristics
- General microbiology
  - Bacterial cell morphology
  - Bacterial growth & metabolism
  - Antibiotic sensitivity tests
  - Mechanism of drug resistance
  - Sterilization
  - Infection control
  - Different staining & culturing techniques

### **D. IMMUNOLOGY**

- Infection
- Complement system
- Immune reaction
- Immunodeficiency disorders
- Tumour & transplant immunology
- Systemic bacteriology of pathogenic oral microbes, periodontal pathogen
- Viruses -Herpes, AIDS, Hepatitis, Oncogenic, Measles, Mumps
- Fungi
- Vaccines

## **Paper-IV**

### **Applied Pharmacology, Biostatistics and Research Methodology**

#### **A. PHARMACOLOGY**

- Drug Administration -Modes, posology, toxicology of antibiotics
- Chemotherapeutic agents
- Antiseptics & Disinfectants
- Analgesics & anti-inflammatory drugs
- Conscious sedation & local anaesthesia-indications & contraindications. Pre-medication and anaesthetics in different clinics
- Emergency drugs in dental practice
- Local Drug Delivery Systems
- Antibiotic Sensitivity tests
- Calcium channel blockers.
- Immunosuppressive drugs
- Biotransformation of drugs related to periodontics

#### **B. BIostatISTICS**

- Introduction
- Collection, Classification & presentation.
- Averages (Mean, median & mode)
- Dispersion Skewness & Kurtosis
- Correlation
- Regression
- Binomial, Poisson & Normal distributions
- Tests of significance (Large samples)
- $\chi^2$ , t and f tests, logistic regression analysis
- Measures of morbidity, fertility, mortality & survival

- Clinical trials

## C . RESEARCH METHODOLOGY

### CORE CURRICULUM

1. What is research ?
2. What is research methodology?
3. Types of research
  - a) Basic or Fundamental
  - b) Applied
  - c) Clinical.
  - d) Experimental
4. How does one select a subject for Research ?
  - a) Intuition?
  - b) Intuition based on experience.
  - c) Knowledge of subject & questions that one asked of oneself
  - d) Areas of unknown aspects that have not been explored.  
Questions those are unanswered.
  - e) Survey of relevant literature, using a library.
5. How does one set about a Research Problems?
  - a) List the aims & objectives.
  - b) What is there in the relevant literature that has been done, is being done and remains undone?
  - c) How can the aims and objectives be achieved?
    - i Retrospective research.
    - ii Prospective research?
    - iii Advantages & disadvantages of each What will therefore be the best in the circumstances?
    - iv Evolve a hypothesis
    - v Develop a protocol to give answers so as to give the necessary data in the light of the hypothesis.
    - vi Develop a model especially designed to test hypothesis and may confirm the data.
    - Vii Advantages & Disadvantages of experimental model.
    - Viii How does the data from the experimental model fit the hypothesis?  
Are the conclusions comparable? Are there any other conclusions possible?
6. Objectivity in Research Methodology.
  - a) Open trials? Bias and safeguards against it.
  - b) Double blind & triple blind studies.
  - c) Cross over methods.
7. Quantification in Research Methodology.
  - a) Instrumental quantification rationales & fallacies.
  - b) Reproducibility .
  - c) Scoring methods, especially to lend objectivity to subjective observation.  
Safeguards against subjective bias.
8. Records, Protocols and Analysis  
The logic of Research.  
Examples of special areas of Research:-
  1. Clinical
  2. Experimental
  3. Histological & Morphological
  4. Histochemical
  5. Genetic

## 6. Epidemiologic studies.

### **Etiology of periodontal diseases:-**

- Periodontal tissues, Saliva, Gingival Crevicular Fluid, Clinical Epidemiology
- Pathogenesis & microbiology of Periodontal diseases
- Bio-films
- Defense mechanisms of the gingiva
- Host response: Basic concepts
- Host-Bacteria interactions in periodontal diseases
- Altered leukocyte function & periodontal diseases
- Dental calculus
- The role of iatrogenic & other local factors
- Dental occlusion
- Influence of systemic diseases on the Periodontium
- AIDS and the Periodontium
- Smoking.
- Effect of External forces on Periodontitis
- Genetics
- Classification of Gingival & Periodontal Disease

### **Periodontal Pathology:-**

#### **Gingival Diseases**

- Gingival Inflammation
- Clinical features of gingivitis
- Gingival enlargement
- Acute gingival infections
- Desquamative gingivitis & oral mucous membrane diseases
- Gingival diseases in childhood.

#### **Periodontal Diseases**

- The periodontal pocket
- Bone loss & patterns of bone destruction
- Periodontal response to external forces
- Slowly progressive periodontitis
- Rapidly progressive periodontitis
- Necrotizing ulcerative periodontitis
- Refractory periodontitis
- Prepubertal & juvenile periodontitis
- Periodontal Medicine

### **Periodontal Instrumentation:-**

- The Periodontal Instrumentation
- Principles of periodontal instrumentation
- Instrumentation in different areas of the tooth

## Treatment of Periodontal Diseases:-

1. Diagnosis prognosis and Treatment Plan
  - \* Clinical diagnosis
  - \* Radiographic & Other aids in the diagnosis of Periodontal diseases
  - \* Advanced diagnostic techniques
  - \* Determination of the Prognosis
  - \* The treatment plan
  - \* Rationale for Periodontal Treatments
  - \* Periodontal Treatment of Medically compromised patients
  - \* Periodontal treatment of Geriatric Patients
2. Treatment of acute gingival and Periodontal diseases
3. Therapy
  - Preparation of the tooth surface
  - Plaque control
  - Treatment of Uncomplicated chronic gingivitis
  - Antimicrobial & other Chemotherapeutic agents in Periodontal therapy
  - Treatment of aggressive forms of Periodontitis- Refractory. Rapidly progressive , Necrotizing ulcerative and Juvenile
  - Periodontal management of HIV-INFECTED patients
  - Coronoplasty in periodontal therapy
  - Orthodontic considerations in periodontal therapy
  - Interdisciplinary therapy
  - Splinting
  - Evidence based Periodontal Therapy
4. Surgical Phase.
  - The Surgical Phase of therapy
  - General principles of periodontal surgery
  - Surgical anatomy of the periodontium & related structures.
  - Gingival curettage
  - The gingivectomy technique
  - The Periodontal flap with various modifications.
  - The flap technique for Pocket therapy
  - Resective osseous surgery
  - Re constructive osseous surgery
  - Treatment of furcation involvement & combined Periodontal Endodontic therapy.
5. Mucogingival surgery and Perio-esthetics
6. Treatment of gingival enlargement
7. Recent advances in surgical technology
8. Oral Implantology
  - Introduction & Historical Review
    - \* Biologic , clinical and surgical aspects of Dental Implants
    - Periodontal-Implant interface
    - Diagnosis and Treatment Planning
    - Implant surgery
    - Implant prothodontics
    - Implant failures and their Management
    - Peri-implantitis and its management

9. Lasers.
10. Microsurgery.
11. Electrosurgery.
12. Supportive Periodontal Treatments
13. Recent advances in Periodontics.

### **PRACTICAL TRAINING**

Nonsurgical	-100 cases
Surgical	-100 cases and
Implant	-5 cases

to be spread over entire three years MDS course as follows.

Management of clinical cases shall begin from first year onwards Emphasis on clinical training should be as follow:-

First Year:-Basic Periodontology:-

- Knowledge of different indices and taking at least 10 cases of each.
- Case analyses and detailed treatment plan.
- Instrument and Instrumentation.
- Oral prophylaxis including root planing
- Maintenance and supportive periodontal therapy.
- Anesthesia
- X-ray and Imaging interpretation.
- Coronoplasty
- Splinting.
- Hands on and table demonstration of Implant systems.

Second Year and Third Year :-

- Principles of surgical technique.
  - Various types of simple procedures for pocket reduction and elimination
  - Mucogingival surgery
  - Osseous grafts
  - Guided tissue regeneration
  - PRP (Platelet Rich Plasma)
  - Electrosurgery
  - Laser (optional)
  - Microsurgery (optional)
  - Perio-aesthetics
  - Implants Insertion
  - Treating minimum 125 full mouth periodontally involved cases with detailed history, photographs, X-rays, laboratory investigations, occlusal rehabilitation and follow up records.
  - Management of Interdisciplinary cases.
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- SEMINARS: 30 to be completed in three years.
  - JOURNAL CLUB: 30
  - DISSERTATION: In second and third year.

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