

ORAL PATHOLOGY & MICROBIOLOGY AND FORENSIC ODONTOLOGY - DS206

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, Immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.
2. Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, Pathology, prognosis and management of oral oncology, Concepts of oral prelaingnancy.
3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
4. Oral microbiology and their relationship to various branches of dentistry.
5. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology
6. Forensic odontology
7. Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, sophisticated instrumentation centers for electron microscopy and other techniques.
8. Maintenance of records of all postgraduates activities.
9. Library assignment.
10. University Dissertation.

A. COURSE CONTENTS:

First year

1) BIOSTATISTICS AND RESEARCH METHODOLOGY:

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/organization of data/measurement scales presentation of data and analysis.
- Measures of central tendency.
- Measures of variability.
- Sampling and planning of health survey.
- Probability, normal distribution and indicative statistics.
- Estimating population values.
- Tests of significance (parametric/non-parametric qualitative methods.)
- Analysis of variance
- Association, correlation and regression.

Approach:

- Didactic lectures on biostatistics and discussion on research methodology by eminent researchers.

- Two - day P.G. orientation course including general approach PG course, library and main dissertation, journal club topic selection and presentation, seminars, clinico-pathological meets, teaching methodology and use of audiovisual aids.

2) APPLIED GROSS ANATOMY OF HEAD AND NECK INCLUDING HISTOLOGY:

- Temporomandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply; blood supply, lymphatic drainage and venous drainage of Oro dental tissues.
- Embryology
 - Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
 - Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles.

Genetics:

Introduction modes of inheritance, chromosomal anomalies of oral tissues and single gene disorders.

Approach:

- To be covered as didactic lectures.
- Posting in department of anatomy for dissection of head, face and Neck.

3) PHYSIOLOGY [GENERAL AND ORAL]:

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (Influence on growth, development and structure of oral soft and hard tissues and paraoral tissues.)
- Calcium metabolism.
- Theories of mineralization.
- Tooth eruption and shedding.

- Hormones. (Influence on growth, development and structure of oral soft and hard tissues and para oral tissues.)
- Blood and its constituents.

Approach:

To be covered as didactic lectures.

4) CELL BIOLOGY:

- Cell-structure and function (ultrastructural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell - cell and cell - extra cellular matrix interactions.
- Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.

Approach:

To be covered as seminars and didactic lecture.

5) GENERAL HISTOLOGY:

Light and electron microscopy considerations of Epithelial tissues and glands, bone, hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

Approach:

- Topics to be covered as didactic lectures.
- Postings in the department of anatomy and histology for slide discussion
- Record book to be maintained.

6) BIOCHEMISTRY:

- Chemistry of carbohydrates, lipids and proteins.
- Methods of identification and purification.
- Metabolism of carbohydrates, lipids and proteins.
- Biological oxidation.
- Various techniques - cell fractionation and ultra filtration, centrifugation, Electrophoresis, Spectrophotometry, and radioactive techniques.

Approach:

- Topics to be covered as didactic lectures.
- Postings to the department of biochemistry to familiarize with various techniques
- Record book to be maintained.

7) GENERAL PATHOLOGY:

- Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, haemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

Approach:

- To be covered as seminars and didactic lectures.

8) GENERAL MICROBIOLOGY:

- Definitions of various types of infections.
- Routes of infection and spread
- Sterilization, disinfection and antiseptics.
- Bacterial genetics.
- Physiology and growth of microorganisms.

Approach:

- To be covered as seminars and didactic lectures.
- Record book to be maintained.

9) BASIC IMMUNOLOGY:

- Basic principles of immunity, antigen and antibody reactions.
- Cell mediated immunity and Humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of the autoimmune phenomena.
- Immunodeficiency with relevance to opportunistic infections.
- Basic principles of transplantation and tumor immunity.

Approach:

- To be covered as didactic lectures.

10) SYSTEMIC MICROBIOLOGY/APPLIED MICROBIOLOGY:

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen, for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroides and fusobacteria
- Actinomycetales

- Spirochetes

Virology:

- General properties: structure, broad classification of viruses, pathogenesis, pathology of viral infections.
- Herpes virus: list of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.
- Hepatitis virus: list of viruses, pathogenesis, and mode of infection, list of diagnostic tests, and their interpretations, methods of prevention and control.
- Human Immunodeficiency virus: structure with relevance to laboratory diagnosis, type of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

Mycology:

- General properties of fungi, classification bases on disease, superficial, subcutaneous, deep opportunistic infections.
- General principles of fungal infections, diagnosis rapid diagnosis method of collection of sample and examination for fungi.

Approach:

- To be covered as seminars and didactic lectures.
- Postings to the dept. of microbiology to familiarize with relevant diagnostic methods.
- Record book to be maintained.

11) ORAL BIOLOGY (ORAL AND DENTAL HISTOLOGY):

- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects.
- Study of morphology of permanent and deciduous teeth (Lectures and practical demonstrations to be given by PG students).

Approach:

- To be covered as seminars and didactic lectures.
- Slide discussion on histological appearance of normal oral tissues.
- Record book to be maintained.

12) BASIC MOLECULAR BIOLOGY AND TECHNIQUES:

Experimental aspects - DNA extraction, PCR, western blotting.

Approach:

- To be covered as didactic lectures
- Postings in centers where facilities are available for demonstration of routine molecular biology techniques.
- Record book to be maintained.

13) BASIC HISTO TECHNIQUES AND MICROSCOPY:

- Routine haematological tests and clinical significance of the same.
- Biopsy procedures for oral lesions.
- Processing of tissues for Paraffin lesions.
- 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.

Approach:

- Topics to be covered as seminars.
- Preparation of ground and decalcified sections, tissue processing, sectioning and staining.
- Record book to be maintained

ACADEMIC ACTIVITIES:

- Submission of synopsis of dissertation at the end of six months.
- Journal clubs and seminars to be presented by every post graduate student twice a month.
- To attend interdepartmental meetings.
- To attend dental camps based on the survey to be done.
- Part I year ending examination to be conducted by the college.

SECOND YEAR**ORAL PATHOLOGY**

- 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 – pulp unit, 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
- Hematological 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 Urineanalysis
- 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

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 Paraffin 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
- Cysts of 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 & Internet browsing. Journal Clubs & Group discussions.

ACADEMIC ACTIVITIES:

- Library assignment to be submitted at the end of 6 months
- Commencement of dissertation work
- Journal clubs and seminars to be presented by every PG student
- Clinico - pathological discussions once in a month by every PG student
- To attend interdepartmental meetings.
- Lecture and practical classes and slide discussions to be taken for I BD students in oral and dental anatomy, dental histology and oral physiology.
- Year ending examination (theory and practical) to be conducted by the college.

THIRD YEAR

- Non-neoplastic disorders of salivary glands.
- Bone pathology
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts of odontogenic origin
- Oral manifestations of systemic diseases

Approach:

To be covered as seminars
 Slide discussions of the same
 Record book to be maintained

ACADEMIC ACTIVITIES:

- Visit to center of Animal experimentation to familiarize with Laboratory techniques, upkeep and care of animals
- Completion of Dissertation work and submission of the same, six months before the Final Examination
- Study of Journals, Internet Browsing, and group discussions, to update knowledge in the recent advances in Oral Pathology
- Lecture and Practical demonstrations for third B.D.S students in Oral pathology and Microbiology
- Reporting of histopathology slides
- Journal clubs and Seminars to be presented by every post graduate student twice a month
- Clinico-pathological discussions by every student once in a month
- To attend Inter-departmental meetings.

MONITORING LEARNING PROGRESS:

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

Teaching and Learning activities

- **Pre-clinical work:** Minimum requirements for each student-
 1. **Ground Sections-** 3 longitudinal sections and 2 cross sections
 2. **Decalcified Sections-** 2 primary and 2 permanent teeth
 3. **Tooth Carving-** All permanent teeth except third molars
- **Case discussions:** Each PG should complete at least 15 case discussions in 3 years of course
- **Seminars:** Each PG should complete at least 15 seminars in 3 years of course
- **Journal clubs:** Each PG should complete at least 15 journal clubs in 3 years of course

- **Teaching lectures for undergraduates:** Each PG 2 lectures per year
- **Final dissertation:** Synopsis has to be submitted to the university before six months of PG first academic year.
Complete bound copy of the Final dissertation with signatures of PG guide and Co-guide has to be submitted to the university before final exams.
- **Library dissertation:** Complete bound copy of the Library dissertation with signatures of PG guide and Co-guide has to be submitted to the university before the completion of first academic year of PG.

Recommended books for reading

Sr. No.	Title	Author
1	Shafer's textbook of oral pathology	Rajendran R.
2	Oral pathology; clinical pathologic correlations	Regezi, Joseph
3	Oral pathology	Somes and J.v.
4	Cowson's essential of oral pathology and oral medicine	Cawson R.A.
5	Oral and maxillofacial pathology	Neville, Brad W.
6	Oral microbiology	Marsh Philip D
7	Oral and maxillofacial infection	Topazian and Richard
8	Orell and strerett's fine needle aspiration cytology	Orell, Svante
9	Color atlas of common oral diseases	Langlais, Robert
10	Differential diagnosis of oral and maxillofacial lesion	Wood, Normann K.
11	Robin's basic pathology	Kumar, vinay
12	Oral disease and disorder; differential diagnosis	Prabhu S.R.
13	Anantnarayan and Paniker's textbook of microbiology	Ananthnarayan
14	Textbook of pathology	Mohan, Harsh
15	Clinical outline of oral pathology	Eversole, Lewis S.
16	Theory and practice of histopathological techniques	Banchroft, John D
17	Oral pathology : A comprehensive Altas and text	Sook – Bin woo
18	Oral and maxillofacial pathology – A rationale for diagnosis and treatment vol 1 & vol 2	Marx and stern
19	Odontogenic tumor and allied lesions	PA Reichart & HP Philipsen
20	Cysts of Oral & Maxillofacial region	Merwyn Shear
21	Color Atlas/Text of Salivary Gland Tumor Pathology	Irving Dardick
22	Surgical Patholgy of Salivary gland	Gary L Ellis
23	Histological Typing of Salivary Gland Tumours	LH Sobin, G Seifert
24	Contemporary Oral & Maxillofacial Patholgy	P Sapp, LR Eversole, GP. Wysocki
25	Biopsy pathology of oral tissues	E Odell & P Morgan
26	Oral anatomy, histology and embryology	Bercovitz, B.K.B
27	Dental anatomy ;its relevance to dentistry	Woelfel, Julian B.
28	Wheeler's dental anatomy, physiology and occlusion	Ash, Major M.
29	Orban's oral histology and embryology	Kumar, G.S.
30	Ten cate's oral histology, development, structure and function	Nanci, Antonio

31	Essential of oral histology and embryology a clinical approach	Avery, James K.
32	Difiore's atlas of histology with functional correction	Eroschenko, victor
33	Prescott Harley and klein's microbiology	Willey, Joanne
34	Textbook of medical physiology	Guyton, arthur C.
35	Textbook of forensic odontology	Masthan KMK
36	Dental anatomy, histology and development	Bhalaji S.I
37	Essential of medical physiology	Semblingam K.
38	Textbook of histology	Pal G.P
39	Textbook of human histology with color atlas and practical guide	Inderbirsingh
40	Human embryology	Inderbirsingh
41	B.D.Chaurasia human anatomy volume-3 Head and neck and brain	B.D. Chaurasia
42	Mosby's dental dictionary	Mosby

RECOMMENDED JOURNALS

INTERNATIONAL JOURNALS

1	Journal of Oral Pathology & Medicine
2	Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology & Endodontology.
3	Oral Oncology
4	Oral Diseases
5	Oral Microbiology & Immunology
6	Molecular Oral Microbiology
7	Acta Odontologica Scandinavica
8	Critical Reviews in Oral Biology & Medicine / Journal of dental research
9	Archives of Oral Biology
10	Quintessence International
11	BMC Oral Health
12	Journal of Oral Science
13	Medicina Oral
14	European Journal of Oral Sciences
15	Journal of American Dental Association
16	Brazilian Journal of Oral Sciences
17	Brazilian Oral Research
18	Advances in Dental Research

NATIONAL JOURNALS

19	Journal of Oral & Maxillofacial Pathology
20	Indian Journal of Forensic Odontology
21	Indian Journal of Dental Research
22	Indian Journal of Dental Sciences
23	Journal of Advanced Dental Research
24	Journal of International Oral Health
25	Oral Health
26	Journal of forensic Dental science

