FOUNDATION UNIVERSITY COLLEGE OF DENTISTRY

Operative Dentistry

Study Guide

Final year B.D.S

MISSION:

Equip students with necessary knowledge, skills and attitudes to competently and empathetically provide restorative and endodontic treatment to the patients of their community.

INTRODUCTION:

Operative Dentistry is a field of dentistry that deals with the management of teeth that are defective through disease, trauma, wear, and/or abnormal development, or are unesthetic, to restore a state of normal form, function, health, and appearance. The practice of dentistry in this area requires a wide range of knowledge, from diagnosis, disease processes and prevention, and minimally invasive clinical approaches; to biomaterials and other dental science disciplines as they apply to this distinct and unique interest area limited to the hard calcified tissues of the oral cavity.

The aim of Final year Operative Dentistry course is to develop understanding of the principles that governs the management of patient receiving direct restorations and endodontic treatment. The main stays of the course are introduction to theoretical concepts and clinical training of students to safely treat patient under supervision.

During this course student will refine their manual skill, they will learn to apply rubber dam, prepare suitable cavity for restoration, manipulate restorative material and restore tooth. Endodontic theory is taught as part of Operative Dentistry course. During this course student learns the principles governing diagnosis & procedure of endodontic treatment. During clinical rotation the student will also perform endodontics on extracted or patient's single rooted tooth to allow student hands on application of principles taught in theory.

LEARNING OUTCOMES OF COURSE OF OPERATIVE DENTISTRY:

After completing the course of Operative dentistry, the student of Final Year BDS will be able to:

- Obtain and solicit relevant data from the patient for diagnosis.
- Diagnose caries on clinical and radiographic examination of patient.
- Develop appropriate treatment plan based on patient data.
- Apply rubber dam or any other suitable isolation material/technique for performing restorative and endodontic procedures
- Demonstrates basic principles of cavity preparation while placing direct restoration.
- Manipulate and apply liners/base and restorative material.
- Identify preventive treatment needs of a patient and perform preventive dental procedure independently.
- Describe clinical procedures of endodontic treatments.
- Perform root canal treatment on single rooted teeth.
- Describe clinical procedure of indirect restoration of single tooth.

TEACHING AND LEARNING METHODOLOGIES:

Teaching and learning methods are primarily focused more on promoting active learning through active participation of the learner. Actively learning students take charge of their own learning, actively seeking guidance and performance feedback from tutors, and routinely conducting self-assessment of their own learning needs.

- Large Group Interactive Sessions (LGIS)
- Small Group Interactive Sessions (SGIS)
- Self-Directed Learning (SDL)

Following teaching modalities may be used for clinical/ small group teaching:

1. Live patient demonstrations by supervisors
2. Video demonstrations
3. Formative supervised learning events in clinical settings such as
    a. Mini-CEX (Mini Clinical Evaluation Exercise)
    b. DOPS (Direct Observation of Procedural Skills)
4. Students' presentations
5. Projects/ Assignments

RECOMMENDED REFERENCE MATERIAL:

1. The Art & Science of Operative Dentistry by Sturvedant. (Textbook)
2. Endodontics Principles & Practice by Torabinejad (Textbook)
3. Contemporary Fixed Prosthodontics by Rosentiel. (Text book)
4. Harty's Endodontic in Clinical Practice by T.R. Pittford. (Reference Book)

FACULTY OF OPERATIVE DENTISTRY DEPARTMENT:

HEAD OF THE DEPARTMENT

Associate Professor Dr Nadia Aman (BDS, MSC, FCPS)

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COURSE OUTLINE

COURSE CONTENT	LEARNING OUTCOMES Student must be able to:	TEACHING STRATEGY	ASSESSMENT
OPERATIVE DENTISTRY			
1. Sterilization and Cross Infection Control a. Definitions b. Methods c. Protection of health care professionals	• Describe principles and methods of cross inflectional control • Demonstrate cross infection control protocol during clinical rotation.	LGIS Demo	MCQs SEQs Direct observation
2. Diagnosis, treatment planning for Dental restorations a. Patient assessment, b. examination and diagnosis c. Treatment planning.	• Demonstrate documentation of patient history and examination findings • Perform extra and intra oral examination and its documentation • Describe phases of dental management of patients • Identify caries on radiograph	LGIS	MCQs SEQs OSPE OSCE
3. Cariology a. Classifications, definitions. b. Pathogens and carious lesion c. Caries risk assessment d. Caries management e. Prevention of caries	• classify caries • describe caries prevention strategies • describe models of caries management • differentiate between different type of carious lesion • diagnose caries	LGIS	MCQs SEQs OSCE
4. Instruments in Operative Dentistry a. Dental instrument classification, nomenclature b. Types of instruments c. Manual instruments d. Rotary instrument	• identify instruments used for direct restoration • demonstrate instrument grips • describe iso standardization of rotary instruments • enlist other types of abrasives used in operative dentistry	LGIS Demo	OSCE MCQs SEQs
5. **Principles of tooth preparation**	• Describe steps of cavity preparation for direct restorations • Recall factors affecting the cavity preparation • Define outline, resistance,	LGIS	SEQ MCQ

	retention and convenience form. • Discuss outline, resistance, retention and convenience form principles • Describe methods of caries removal • Apply principles of preparation on a patient requiring direct restoration		DOPS
6. Restorative Materials a. Amalgam I. Applied Chemistry II. Mercury Safety & Hazards III. Principles of cavity design IV. Cavity Designs (class I, I compound,II, V) a. Matrix, types and indication b. Composites a. Applied Chemistry, b. Acid etching, c. Enamel & Dentine bonding, d. Restoration of Class III & IV e. Posterior Composite f. Polishing of composite restoration	• Describe of chemistry of amalgam and composite • Enlist generations of Dentin Bonding Agents • Discuss curing shrinkage and curing stresses. • Apply principles of cavity preparation for direct restoration • Demonstrate adhesion for composite restoration • Perform direct restorations class I-IV for composite restorations • Perform amalgam class I, II, V, VI restorations • Perform Class I or II amalgam restorations	LGIS Demo	MCQs SEQs DOPS Clinical exam
7. Biomaterials a. Liners and Bases and rationale for use b. Ca(OH)2 c. Glass Ionomers d. Resin modified Glass Ionomer e. Zinc Phosphates f. Zinc Oxide Eugenol and others	• Recall chemistry of materials used as liner and base • Describe classification of Liners • Discuss remaining Dentin thickness and its role in choice of liners & base • Demonstrate mixing and application of liners and bases for direct restoration of a patient.	LGIS Demo	SEQs MCQs DOPS OSPE Clinical exam
8. Complex Restorations a. cusp capping b. dentinal pins, indication, selection and placement c. matrix application and complex restoration placement	• Identify indication of complex restorations • Describe principles of preparation for complex direct restoration • List materials used for	LGIS	SEQ MCQ

	complex restorations • Classify dentinal pin • Discuss the indication of dentinal preparation and dentinal pins and their design features		
9. Esthetic Procedures a. Causes of discoloration b. Bleaching c. Micro/macro abrasion d. Veneers (porcelain & composite)	• Enlist causes of discoloration and suitable treatment option for managing discolorations • Discuss indications and contraindications of esthetic clinical procedure • Describe mechanism of action of different aesthetic procedure.	LGIS	SEQs MCQs
INDIRECT RESTORATIONS			
Indirect Restorations 1. Inlays i. Definitions, types , and features of preparation for inlay ii. Impression, temporization iii. Cementation 2. Onlays a. Definitions, types , and features of preparation for inlay b. Impression, temporization, cementation, failures 3. Crowns a. classification, Indications & Contra indications b. Diagnosis & Treatment Planning c. Basic Principles of preparation d. Steps of preparation & types of margins. e. Impression technique f. Temporization g. All ceramic crown h. Laboratory techniques i. Failure and common errors j. Laboratory Technique	• Describe indications and contraindications of indirect restorations. • Discuss design of inlay and onlay • Describe steps in preparing a tooth for indirect restoration • List hemostatic agents and types of tissue retraction • Describe impression technique and material used for impression • Identify types of preparation margins and their indications • List material used for impression and impression technique • Outline failures in crown • Describe preparation features of veneer, all ceramic, full metal crown.	LGIS	MCQs SEQs OSCE Student Presentations

k. Veneers			
ENDODONTICS			
1. Diagnosis. & Clinical Classification of pulpal & periapical disease a. Reversible pulpitis. b. Irreversible pulpitis. c. Acute apical periodontitis. d. Acute apical abscess e. Chronic apical periodontitis 2. Instruments and Iso standardization I 3. Instruments and Iso standardization II 4. Internal Morphology & Access opening 5. Canal preparation– working length, 6. technique of instrumentation. 7. Irrigants & intra canal medicaments. 8. Obturation (Materials, techniques). 9. Failures in endodontics & retreatment 10. Surgical Endodontics 11. Endo – perio lesions 12. Indications 13. Types of Posts and post selection and placement technique 14. Core Materials	• List indications and case selection for endodontic therapy of permanent teeth • Apply rubber dam for isolating tooth for endodontic treatment • Identify various endodontic instrument and know its application in endodontic treatment • Describe iso standardization of instrument and purpose of standardization • Discuss instrumentation techniques • Discuss methods of obturation • Perform cold lateral condensation obturation technique • Describe indication and contraindication, procedural steps of endodontic surgeries • Perform orthograde endodontics on 2 single rooted teeth (isolation, access opening, working length determination canal instrumentation, irrigation, obturation, core placement) under supervision • Describe principles of restoring endodontically treated tooth • Discuss cores and post designs	LGIS Demonstrations LGIS	MCQs SEQs DOPS SEQ DOPS MCQs SEQs

Assessment

Both formative and summative assessment of theory and clinical component will be carried out through the academic year of final year BDS.

Type of Assessment	Type of Exam	Format	Weightage in internal assessment
Formative	• Theory : Class test /quiz • Practical Students treat patient under supervision Each clinical case treated by student is graded on log books	SEQ and MCQ	Nil
Summative	End of rotation exam of clinical batch	OSCE 35 marks Practical 35 marks Viva 20 marks	30% 6 marks
	First term exam	20 MCQs (20 marks) 6 SEQs (30 marks)	20% 3 marks
	Second term exam	20 MCQs (20 marks) 6 SEQs (30 marks)	20% 3 marks
	Send up exam	• 40 MCQs (40 marks) • 10 SEQs (50 marks) • Viva & OSCE and Practical (100 marks)	30% 6 marks

Final Professional Exam (300 marks)

Internal Assessment: 10% of total marks

10 marks theory component

20 marks practical component

Theory component:

- Theory component comprises of 40 MCQs and 10 SEQs (90 marks).
- SEQ paper comprises of Part A & B.
    - Part A=5 out of 5 questions to be attempted
    - Topics: Endodontics, Peadodontics
    - Part B=5 out of 5 questions to be attempted
    - Topics: Fixed Prosthodontics and Operative Dentistry

Course components	No of MCQs	No of SEQs
Endodontics	8 marks	2
Pedodontics	12 marks	3
Fixed Prosthodontics	4 marks	1
Operative Dentistry	16 marks	4

- **Practical component:**
- Practical component is of 180 marks comprising of OSCE, cavity preparation and restoration of tooth, viva voce
- OSCE will comprise of upto 8 observed stations.
- Viva will be conducted by Internal examiner and External examiners

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