FOUNDATION UNIVERSITY COLLEGE OF DENTISTRY – ISLAMABAD

DEPARTMENT OF PROSTHODONTICS

Study Guide for Preclinical Prosthodontics

(For Second Year BDS)

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Introduction to Preclinical Prosthodontics

Preclinical Prosthodontics is taught as a practical adjunct to the course of Science of Dental Materials. It is aimed at introducing the Second Year student to the science of Prosthodontics at a basic preclinical level. Students will mostly work in a laboratory setting on learning different aspects of denture fabrication, and through deliberate practice they will get the opportunity to develop sound working skills in relevant tasks through various preclinical exercises, as mentioned in their logbooks. Although direct patient-care is not dealt with, however a small portion of clinical work will still be covered through student-to-student clinical interaction. It is hoped that these diverse working opportunities will help groom the various capabilities of students both in laboratory as well as clinical settings.

After successful completion of this course component, students will be able to work comfortably in the following two years of their undergraduate studies.

Main Learning Outcomes

By the end of this course component, students of Second Year BDS will be able to:

1. Recognize different instruments used in denture fabrication
2. Perform wire bending into different shapes
3. Make wrought wires clasps on different teeth
4. Identify and manipulate different types of gypsum products for making casts and pouring impressions and ideal moulds
5. Identify and manipulate different impression materials
6. Fabricate record bases with different materials
7. Perform mounting of study cases/casts on plain line articulator
8. Perform tooth setup of different partially edentulous situations
9. Perform laboratory processing of partial denture case using different techniques and materials

Teaching and Learning Strategies

The following teaching and learning strategies will be adopted to administer the course of Preclinical Prosthodontics in line with modern requirements of medical education:

1. **Laboratory Demonstrations:** Most of the content will be covered in a laboratory setting for which appropriate practical/laboratory demonstration sessions will be organized. Students will be facilitated by demonstrators with or without supervision of the senior faculty for completing the preclinical exercises. Any amount of lab work will also be facilitated by laboratory technicians for covering some of the technically challenging tasks.
2. **Clinical/Chairside Demonstrations:** These will be covered within the Department of Prosthodontics by concerned demonstrators with or without supervision of senior faculty. Clinical sessions will be limited to history and examination portion on patients and impressions portion on fellow students. Students will get a chance to handle the materials in a clinical setting and will also start developing communication skills for active patient care.
3. **DOPS (Direct Observation of Procedural Skills):** For assessing the competency of students in various clinical and laboratory steps involved in prosthesis fabrication. For this purpose, specific criteria have been developed as mentioned in student logbooks.

Teaching Faculty

The following teaching faculty of Department of Prosthodontics shall be responsible for conducting various teaching sessions and assessing student performance in given exercises:

- In-charge Prof. Dr. Salman Ahmad (HOD Prosthodontics)
- Team members Demonstrator (Name)

Course Content / Quota of Preclinical Exercises

In order to meet the main learning outcomes, different preclinical exercises have been devised and students will be required to complete the given quota of exercises in order to qualify for sitting in annual professional examination. The following exercises and quota shall be implemented as course content for Preclinical Prosthodontics:

No.	Exercises	Quota
1.	History taking	3 patients
2.	Clinical (extraoral and intraoral) examination	3 patients
3.	Plaster slab formation	3 slabs
4.	Ideal mold pouring (upper and lower arch)	2 sets
5.	Clasp making (on molars, premolars and canines)	10 clasps each
6.	Alginate model impressions (upper and lower arch)	2 sets
7.	Cast fabrication	3 sets
8.	Trimming of the cast	3 sets
9.	Alginate student impressions (upper and lower arch)	1 set
10.	Partial denture for anterior missing teeth	2 cases
11.	Advanced wire bending (2 exercises)	3 each
12.	Partial denture posterior missing teeth	2 cases
13.	Formation of baseplate #1	2 plates
14.	Formation of baseplate #2	2 plates
15.	Lab processing of dentures (1 upper and 1 lower case)	2 cases
16.	Finishing and polishing of processed dentures	2 cases

Specific Learning Outcomes for Preclinical Prosthodontics Course

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
1.	Introduction to the course	• Summarize the scope of Preclinical Prosthodontics • Name the various instruments and equipment to be used • Identify the instruments and equipment to be used • Arrange for required armamentarium	1 lab
2.	History taking	• Obtain a detailed history from the given patients • Record the findings on given history charts • Present the case to teaching faculty	2 clinics
3.	Clinical examination	• Obtain consent before proceeding with examination • Perform a detailed clinical (extraoral and intraoral) examination independently or under supervision • Record the findings on given examination charts • Name and identify most of the intra-oral structures • Present the case to teaching faculty	2 clinics
4.	Plaster slab formation	• Differentiate between hard and soft plaster • Dispense appropriate amount of plaster for required work • Manipulate the given plaster with correct volume of water • Achieve a desired consistency of the mixture • Fabricate a plaster slab of given dimensions • Trim the slab upto required size	2 labs
5.	Ideal mold pouring	• Dispense appropriate quantity of stone into mixing bowl • Correctly mix the contents with a plaster spatula • Achieve a uniformly creamy mixture • Correctly pour the ideal moulds by tapping or over a vibrator • Allows sufficient time for plaster to harden/set • Recover the casts without any surface voids or bubbles	2 labs

No.	Exercise	Specific Learning Outcomes *At the end of each exercise, a Second Year BDS student should be able to:*	Teaching Strategy *(Duration = 2 hrs each)*
6.	Clasp making (on molars, premolars and canines)	• Identify the different types of pliers • Demonstrate the correct grip of pliers • Perform straightening of given wire pieces • Design properly contoured clasps on given teeth • Form well-adapted clasps on given teeth without any acute bends and proper tag formation at the end	3 labs
7.	Alginate model impressions	• Select the correct size of stock impression tray without any help • Dispense the material in appropriate quantity into the bowl • Mix the material properly in figure-8 motion or along the walls of the bowl • Achieve the required (thick creamy) consistency of mixture • Properly load and evenly spread/distribute the mixed material in the tray within the working time • Center the tray over the arch/model • Seat the tray properly • Remove the impression tray in one swift motion (does not apply excessive pressure during removal of the tray) • Record a good quality impression without surface voids or bubbles • Record impression with equal thickness at all borders	1 lab

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
8.	Cast fabrication	• Dispense, manipulate and mix the given plaster/stone upto required consistency • Pour the impressions by properly tapping or using a vibrator to remove air bubbles • Allows sufficient time for the plaster/stone to set • Dispense, manipulate and mix the soft plaster for base formation • Formed base is of adequate size and thickness • Carefully retrieve the cast without fracturing any tooth • Inspect the cast surface for any voids and bubbles • Maintain adequate thickness of the cast even in thinner sections	1 lab
9.	Trimming of the cast	• Operate the cast trimmer as per given instructions • Outline the procedure for trimming in correct sequence • Trim the cast in correct sequence • Maintain a land area all around the cast (no damage to teeth or sulcus areas) • Maintain occlusal surface parallel to the floor	

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
10.	Alginate student impressions	• Maintain good working posture by adjusting patient position and dental unit height and seat angulation • Select the correct size of stock impression tray • Dispense the material in appropriate quantity into the bowl • Mix the material properly in figure-8 motion or along the walls of the bowl • Achieve the required (thick creamy) consistency of mixture • Properly load and evenly spread/distribute the mixed material in the tray within the working time • Carry the loaded tray into mouth and center it over the arch • Seat the tray properly • Allow sufficient time for the material to set • Remove the impression tray in one swift motion (does not apply excessive pressure during removal of the tray) • Judge the quality of the recorded impression (without surface voids or bubbles, with equal thickness at all borders and accurately representing intra-oral anatomical features) • Fabricate the cast within 30 minutes • Trim the cast as per given criteria	2 clinics (followed by lab steps)

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
11.	Partial denture for anterior missing teeth	• Identify various parts of acrylic partial denture • Classify the given casts according to Kennedy's classification • Identify various parts of the cast • Identify various anatomical landmarks on the cast • Identify the cast surveyor and its tools • Perform surveying of the given casts beforehand • Form well-adapted clasps on selected abutment teeth • Prepare a wax pattern of uniform thickness on the given cast • Fabricate the bite rims as required • Arrange the anterior artificial teeth in the given edentulous segment at correct occlusal level	4 labs
12.	Advanced wire bending	• Use the correct pliers for wire bending • Demonstrate the correct grip of pliers • Perform straightening of given wire pieces beforehand • Bend the wire into exact shape and dimensions without any help	1 lab

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
13.	Partial denture posterior missing teeth	• Classify the given casts according to Kennedy's classification • Identify various anatomical landmarks on the cast • Identify the cast surveyor and its tools • Perform surveying of the given casts beforehand • Form well-adapted clasps on selected abutment teeth • Prepare a wax pattern of uniform thickness on the given cast • Fabricate the bite rims as required • Mount the casts on plain articulator without any help • Arrange the posterior artificial teeth in the given edentulous segment at correct occlusal level and correct angulations • Maintain contact with adjacent and opposing teeth • Maintain the arch shape during tooth setup	4 labs
14.	Formation of baseplate by dough technique	• Dispense, manipulate and mix the powder and liquid upto desired consistency • Allow time for dough stage to be reached before using the material • Adapt the material dough with fingers and thumbs to the desired form/shape on the cast • Maintain uniform thickness of baseplate	2 labs
15.	Formation of baseplate by sprinkle-on technique	• Dispense small quantities of powder onto the cast surface at different angulations • Dispense and manipulate the powder and liquid in alternate applications on cast surface • Hold the cast in proper orientation for the procedure • Fabricate a uniformly thick baseplate of desired shape/form	2 labs

No.	Exercise	**Specific Learning Outcomes** *At the end of each exercise, a Second Year BDS student should be able to:*	**Teaching Strategy** *(Duration = 2 hrs each)*
16.	Lab processing of dentures	• Perform the flasking procedure independently • Maintain a smooth surface finish on plaster without any undercuts • Perform the dewaxing procedure independently • Apply an adequate coat of separating agent on the plaster surfaces • Dispense and manipulate powder and liquid monomer in correct ratio into the mixing vessel • Properly mix the contents to reach desired consistency (not too liquid and not too dry) • Allow time for dough stage to reach before next steps • Pack the acrylic mixture at correct (dough) stage • Apply correct pressure during packing • Removes excess flash material from borders of the flask • Allow time for initial bench cure before placing in water bath • Follow the curing protocol and time it properly • Follow the cooling regimen at the end of curing cycle	5 labs
17.	Finishing and polishing of processed dentures	• Perform the deflasking procedure independently or under supervision • Remove the plaster mold from within the flask • Cut away the plaster mold to retrieve the processed denture without any damage to it • Finish the processed denture by trimming away the excess material either on lathe machine or by using electric micromotor • Maintain uniformly thick borders of the denture • Maintain rounded shape of borders/edges • Produce proper polish of the denture maintaining smooth and shiny surface without any damage during the procedure	1 lab

Assessment Tools

- MCQs (for theory/knowledge component related to practical work/exercises)
- OSPE (for all practical work)

Marks in Annual Exam

- 10 MCQs of 1 mark each (total 10 marks)
- 4 OSPE stations of 3 marks each (total 12 marks)

Learning Resources

1. Preclinical Manual of Prosthodontics by Lakshmi S.
2. Online YouTube resources (as instructed during demonstrations)

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