MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS

Educational Institution
BELARUSIAN STATE MEDICAL UNIVERSITY

APPROVED by

Associate professor Ya.I.Timchuk
Head of the Dpt., Ph.D.

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METHODOLOGY TEXTS for Practical Training of Students
in the academic discipline
«REMOVABLE PROSTHETICS»

Topic: **Prosthodontic treatment of dental arch defects with removable dentures (4-th year 8th semester)**

For the specialty: 1-79 01 07 "Dentistry"

Total time of classes: 138 hours

APPROVED by

Meeting Department of Prosthetic Dentistry and Orthodontics
Protocol № 6, 24.11. 2025

APPROVED by

Associate professor Ya.I.Timchuk
Head of the Dpt., Ph.D.

Meeting of the Department № _6_
24.11.2025

Thematic Plan of Practical Training in the academic discipline «Removable prosthetics» for 8th semester, 4th year students

1. Complete adentia (CA)

Diagnosis of «complete adentia» according to the clinical protocol

2. Prosthetics for complete adentia (CA)

Diagnosis of «complete adentia» according to the clinical protocol

3. Methods of fixation and stabilization of complete removable plate dentures. Use of dental implant systems in prosthetics for patients with complete adentia

Determination of individual tray boundaries

4. Anatomical impressions. Individual trays. Fitting individual trays using the Herbst method. Obtaining functional impressions

Fitting individual trays for the upper and lower jaws using the Herbst method, obtaining functional impressions from the upper and lower jaws

5. Casting models and making wax bases with occlusal rims. Determination of central jaw relation in complete adentia

Making a wax base with an occlusal rim for the upper and lower jaws

6. Laws of articulation. Construction of dental rows in complete tooth absence

Determination and fixation of central jaw relation by anatomic-physiological method, application of landmarks

7. Checking the construction of complete removable plate dentures. Errors in determining central jaw relation

Checking the construction of wax reproductions of complete removable plate dentures

8. Fitting and application of plate dentures in complete adentia. Rules for use and correction of removable prostheses

Fitting and application of complete removable plate dentures for the upper and lower jaws

9. Prosthodontic treatment of patients with complete edentulism of one jaw. Re-prosthetics in complete adentia.

Performing correction of removable dentures

10. Periodontal diseases, classification, examination methods, differential diagnosis

Interpretation of examination data of patients with periodontal diseases

11. The role of occlusal trauma in the development of periodontal diseases. Features of orthodontic treatment of anomalies of the dentofacial system in a formed bite in periodontal diseases

Interpretation of examination data of patients with periodontal diseases

12. Indications for temporary splinting in periodontal diseases. Types and characteristics of temporary splints

Determination of indications for temporary tooth splinting. Selection of construction

13. Indications for tooth extraction in periodontal diseases. Permanent splinting in periodontal diseases

Determination of indications for permanent tooth splinting. Selection of construction

Lectures - 8 (12 hours)
Practical lessons - 78 hours
Total training hours - 138 hours
Final assessment - exam

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Meeting of the Department № _6_
24.11.2025

Thematic Plan of Lectures in the academic discipline
«Removable prosthetics» for 8th semester, 4th year students

1. Complete adentia. Examination and diagnosis
2. Methods of fixation and stabilization of complete removable plate dentures. Boundaries of complete removable plate denture bases
3. Fitting individual trays and obtaining functional impressions. Method for determining the central relation of the jaws
4. Laws of articulation. Methods for setting artificial teeth
5. Checking the construction of prostheses, possible errors, and complications. Methods for their correction
6. Fitting and application of PRPDs. Patient adaptation to dental prosthetics. Rebasing and repair of complete removable plate dentures
7. Periodontal diseases. Examination methods. Classification of periodontal diseases. Periodontal reserve forces and their changes due to bone tissue loss. Occlusal trauma and prevention of periodontal overload
8. Indications for temporary and permanent splinting in periodontal diseases. Types of stabilization. Indications for the use of removable and non-removable splints, their characteristics, and structural elements

Lectures - 8 (12 hours)
Practical lessons - 78 hours
Total training hours - 138 hours
Final assessment - exam

BELARUS STATE MEDICAL UNIVERSITY, DENTAL FACULTY

EXAMINATIONAL SHEET

PRACTICAL SKILLS ON REMOVABLE PROSTHETICS,

YEAR **4** SEMESTER **8** GROUP □□

_____

Student

_____

Teacher Members of examinational group Date

Practical skills	Points	realization ("Yes", "No")		Examination group	Point
		Student	Teacher		
1. Research and diagnostic methods in the treatment of patients with complete tooth loss					
1.1. Documentation of medical and financial records	2				
1.1.1. Medical history, external examination and oral cavity examination.	2				
1.1.2. Determination of morphological features of hard and soft tissues of the prosthetic bed.	2				
1.1.3. Assessment of the degree of atrophy of the alveolar ridge and jawbone.	2				
1.1.4. Diagnosis of "complete edentulism" according to clinical protocol.	4				
2. Prosthetic treatment of patients with complete tooth loss.	2				
2.1. Obtain anatomical impressions from patients with complete tooth loss.	2				
2.2. Cast models and determine the borders of individual trays.	5				
2.3. Manufacture individual trays from various materials (self-curing plastic).	4				
2.4. Fit individual trays on the upper and lower jaws using Herbst indicators.	3				
2.5. Select impression materials for functional impressions depending on the type of mucosa of the prosthetic bed.	5				
2.6. Obtain functional impressions from the upper and lower jaws.	3				
2.7. Border functional impressions.	2				
2.8. Cast models based on functional impressions.	2				
2.9. Manufacture wax bases with occlusal rims for the upper and lower jaws.	5				
2.10. Determine the central relation of the jaws using an anatomical-physiological method.	4				
2.11. Fix wax bases in the position of central jaw relation, apply reference points.	2				
2.12. Mount models in an occluder (articulator).	2				
2.13. Select artificial teeth by color, shape, and size.	5				
2.14. Check the construction of wax reproductions of complete removable plate dentures.	3				
2.15. Evaluate the quality of completed full removable plate dentures.	5				
2.16. Fit and place full removable plate dentures on the upper and lower jaws, provide recommendations.	5				
2.17. Conduct correction and rebasing of full removable plate dentures.	2				
3. Research and diagnostic methods for patients with periodontal diseases:					
3.1. Collect complaints and medical history, external examination, inspection of the vestibule and oral cavity, occlusion, and hard dental tissues.	2				
3.2. Determine the degree of tooth mobility and depth of pathological periodontal pockets.	2				
3.3. Analyze panoramic radiographs.	2				
3.4. Compile and analyze an odontoparodontogram.	2				
3.5. Conduct differential diagnosis of periodontal diseases.	2				
3.6. Establish a diagnosis and develop a comprehensive treatment plan for periodontal diseases.	5				
3.7. Choose and justify the splinting design.	5				
4. Prosthetic treatment of patients with periodontal diseases:	5				

POINTS □ **MARK** □

Comment: _____

Signs: _____

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Meeting of the Department № _6_
24.11.2025

CRITERIA FOR ASSESSING STUDENT KNOWLEDGE ON A 10-POINT SCALE

10 points – ten:

- Systematized, deep, and comprehensive knowledge of all sections of the curriculum for the discipline "Removable Prosthetics," as well as key issues beyond its scope;
- Accurate use of scientific terminology (including in foreign languages), stylistically correct and logically coherent presentation of answers to questions on the discipline "Removable Prosthetics";
- Flawless mastery of the tools for the discipline "Removable Prosthetics," ability to effectively use them in formulating and solving scientific and professional tasks;
- Pronounced ability to independently and creatively solve complex problems in non-standard situations within the discipline "Removable Prosthetics";
- Complete and thorough understanding of the primary and supplementary literature recommended by the curriculum for the discipline "Removable Prosthetics";
- Ability to navigate theories, concepts, and directions in the discipline "Removable Prosthetics" and provide critical evaluations, utilizing scientific achievements from other dental disciplines;
- Creative independent work in practical and laboratory sessions for the discipline "Removable Prosthetics," active participation in group discussions, high level of cultural execution of assignments.

9 points – nine:

- Systematized, deep, and comprehensive knowledge of all sections of the curriculum for the discipline "Removable Prosthetics";
- Accurate use of scientific terminology (including in foreign languages), stylistically correct and logically coherent presentation of answers to questions;
- Mastery of the tools for the discipline "Removable Prosthetics," ability to effectively use them in formulating and solving scientific and professional tasks;
- Ability to independently and creatively solve complex problems in non-standard situations within the curriculum for the discipline "Removable Prosthetics";
- Complete understanding of the primary and supplementary literature recommended by the curriculum for the discipline "Removable Prosthetics";
- Ability to navigate the main theories, concepts, and directions in the discipline "Removable Prosthetics" and provide critical evaluations;
- Independent work in practical and laboratory sessions for the discipline "Removable Prosthetics," creative participation in group discussions, high level of cultural execution of assignments.

8 points – eight:

- Systematized, deep, and comprehensive knowledge of all sections of the curriculum for the discipline "Removable Prosthetics";
- Use of scientific terminology (including in foreign languages), linguistically and logically correct presentation of answers to questions, ability to make reasoned conclusions;
- Mastery of the tools for the discipline "Removable Prosthetics," ability to use them in formulating and solving scientific and professional tasks;

- Ability to independently solve complex problems within the curriculum for the discipline "Removable Prosthetics";

- Understanding of the primary and supplementary literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Ability to navigate the main theories, concepts, and directions in the discipline "Removable Prosthetics" and provide critical evaluations;

- Independent work in practical and laboratory sessions, participation in group discussions, high level of cultural execution of assignments in the discipline "Removable Prosthetics."

7 points – seven:

- Systematized and comprehensive knowledge of all sections of the curriculum for the discipline "Removable Prosthetics";

- Use of scientific terminology, stylistically correct and logically coherent presentation of answers to questions, ability to make well-founded conclusions;

- Proficiency in the tools for the discipline "Removable Prosthetics," ability to use them in solving educational and professional tasks;

- Free command of standard solutions within the framework of the curriculum for the discipline "Removable Prosthetics";

- Mastery of the main and necessary additional literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Ability to navigate the main theories, concepts, and directions in the discipline "Removable Prosthetics" and provide comparative assessments;

- Independent work in practical and laboratory sessions, participation in group discussions, high level of execution culture in tasks related to the discipline "Removable Prosthetics."

6 points – six:

- Sufficiently complete and systematic knowledge within the framework of the curriculum for the discipline "Removable Prosthetics";

- Use of necessary scientific terminology, stylistically correct and logically coherent presentation of answers to questions, ability to make well-founded conclusions in the discipline "Removable Prosthetics";

- Proficiency in the tools for the discipline "Removable Prosthetics," ability to use them in solving educational and professional tasks;

- Ability to independently apply standard solutions within the curriculum for the discipline "Removable Prosthetics";

- Mastery of the primary literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Ability to navigate basic theories, concepts, and directions in the discipline "Removable Prosthetics" and provide comparative evaluations;

- Active independent work during practical and laboratory sessions, periodic participation in group discussions, high level of cultural execution of assignments in the discipline "Removable Prosthetics."

5 points – five:

- Sufficient knowledge within the framework of the curriculum for the discipline "Removable Prosthetics";

- Use of scientific terminology, stylistically correct and logically coherent presentation of answers to questions, ability to draw conclusions;

- Proficiency in the tools for the discipline "Removable Prosthetics," ability to use them in solving educational and professional tasks;

- Ability to independently apply standard solutions within the curriculum for the discipline "Removable Prosthetics";

- Mastery of the primary literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Ability to navigate basic theories, concepts, and directions in the discipline "Removable Prosthetics" and provide comparative evaluations;

- Independent work during practical and laboratory sessions, participation in group discussions, high level of cultural execution of assignments in the discipline "Removable Prosthetics."

4 points – four, PASSED:

- Sufficient knowledge within the framework of the educational standard;

- Mastery of the primary literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Use of scientific terminology, stylistic and logical presentation of answers to questions, ability to draw conclusions without significant errors in the discipline "Removable Prosthetics";

- Proficiency in the tools for the discipline "Removable Prosthetics," ability to use them in solving standard tasks;

- Ability to solve standard tasks in the discipline "Removable Prosthetics" under the guidance of the instructor;

- Ability to navigate the main theories, concepts, and directions in the discipline "Removable Prosthetics" and provide evaluations;

- Work under the guidance of the instructor during practical and laboratory sessions, acceptable level of cultural execution of assignments in the discipline "Removable Prosthetics."

3 points – three, NOT PASSED:

- Insufficient knowledge within the framework of the educational standard;

- Knowledge of part of the primary literature recommended by the curriculum for the discipline "Removable Prosthetics";

- Use of scientific terminology, presentation of answers with significant linguistic and logical errors in the discipline "Removable Prosthetics";

- Weak proficiency in the tools for the discipline "Removable Prosthetics," incompetence in solving standard tasks;

- Inability to navigate the main theories, concepts, and directions in the discipline "Removable Prosthetics";

- Passivity during practical and laboratory sessions, low level of cultural execution of assignments in the discipline "Removable Prosthetics."

This level is insufficient for current and final assessment; a retake is allowed with appropriate independent work from the student.

2 points – two, NOT PASSED:

- Fragmentary knowledge within the framework of the educational standard;

- Knowledge of individual literary sources recommended by the curriculum for the discipline "Removable Prosthetics";

- Inability to use scientific terminology in the discipline "Removable Prosthetics," presence of gross stylistic and logical errors in answers;

- Passivity during practical and laboratory sessions, low level of cultural execution of assignments in the discipline "Removable Prosthetics."

This level is insufficient for current and final assessment; a retake is allowed with significant independent work from the student in the discipline "Removable Prosthetics."

1 point – one, NOT PASSED:

- Absence of knowledge and competence growth within the framework of the educational standard or refusal to answer;

- Use of prohibited (unauthorized) materials and methods.

The student will not be reassessed and will be recommended for expulsion from the higher educational institution.

TOTAL TIME OF CLASS – 6 academic hours (240 min).

PLAN FOR PRACTICAL CLASSES
4-th year, 8-th semester

№№	Stage of Class	Time in min
1.	Class organisation and instruction of students	**12**
2.	Student's basic knowledge control	**24**
3.	Training stage	**48**
4.	Practicing practical skills	**96**
5.	Checking the knowledge and mastering practical skills	**48**
6.	Final stage	**12**

Methods and Forms of Training

Linear (traditional) method (lecture, practical sessions);
Active (interactive) methods:
Problem-Based Learning (PBL);
Case-Based Learning (CBL).

List of Equipment

1. Workstation for a dentist (table, chair).
2. Dental unit with a light and spittoon.
3. Instrument table with a secured rigid container for Class B waste.
4. Dental chair (for the dentist).
5. Trolley with consumables and containers for disposal.
6. Sink.
7. Container for collecting Class A waste with a volume of 10 liters.
8. Container for collecting Class B waste with a volume of 10 liters.
9. Set of tools in simulated sterile packaging (tray - 1 pc., dental tweezers - 2 pcs., dental mirror - 1 pc., dental probe - 1 pc., excavator - 1 pc., spatula - 1 pc., smoother - 1 pc., angled probe - 1 pc.).
10. Set of cutting instruments for tooth preparation using a turbine handpiece.
11. Paper palette for mixing the second layer of silicone material.
12. Rubber bowl for mixing impression materials.
13. Spatula for mixing impression materials.

14. Scalpel.
15. Retraction cord.
16. Silicone impression material.
17. Alginate impression material.
18. Gypsum.

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);

2. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

3. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.

4. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

Organization of Independent Work for Students

The time allocated for independent work can be used by students for:

- Preparation for lectures and practical classes;
- Preparation for assessments and exams in the subject;
- Studying topics (questions) assigned for independent study;
- Solving problems;
- Completing research and creative assignments;
- Preparing thematic reports, essays, presentations;
- Performing practical tasks;
- Taking notes from educational literature;
- Preparing reports;
- Compiling a review of scientific literature on a given topic;
- Designing informational and demonstration materials (displays, posters, graphs, tables, newspapers, etc.);
- Creating models and laboratory educational aids;
- Compiling a thematic selection of literary sources and internet sources

CLASS 1

Subject: Complete adentia (CA)

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students about the etiology, pathogenesis, and clinical features of Complete adentia; conducting patient examinations and diagnosing " Complete adentia " according to the clinical protocol of the Ministry of Health of the Republic of Belarus.

OBJECTIVES OF THE LESSON:

1. Study the etiology of Complete adentia.
2. Study the pathogenesis of Complete adentia development.
3. Study the clinical manifestations of Complete adentia in the oral cavity.
4. Study the methods for examining patients with Complete adentia.
5. Study the complications arising in patients with Complete adentia.

Location of the lesson: Clinical base.

Practical skills to be developed during the lesson:

Patient examination. Filling out medical documentation. Providing emergency assistance in dental practice during fainting, hypertensive crisis, and anaphylactic shock.

Diagnosing " Complete adentia " according to the clinical protocol of the Ministry of Health of the Republic of Belarus.

Form of control for the practical session: Interview, electronic tests, solving situational tasks.

Location for performing practical skills: At the patient's dental chair.

Criteria for assessing practical skills: According to the evaluation sheet (checklist) for monitoring practical skills in the discipline, scored from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

For full comprehension of the topic, students need to review:

- From anatomy: anatomical structure of teeth, dental arches, and jaws;
- From histology: structure of the oral mucosa;
- From general dentistry: new technologies and modern materials used in making partial removable dentures;

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Anatomical structure of the upper jaw.
2. Anatomical structure of the lower jaw.
3. Muscles that elevate the lower jaw.
4. Muscles that depress the lower jaw.
5. Structure of the periodontium.
6. Structure of the oral mucosa.

CONTROL QUESTIONS:

1. Complete adentia (CA). Causes and Prevalence.
2. Diagnosis of «complete adentia» according to the clinical protocol
3. Methods for examining patients with Complete adentia.
4. Anatomical and topographical features of the edentulous maxilla.
5. Anatomical and topographical features of the edentulous mandible.
6. Functional and morphological changes occurring in the dental and jaw system with complete tooth loss.
7. The mechanism of development of "senile prognathism."

Complete primary adentia – a condition characterized by the absence of teeth and/or their buds in one or both jaws, caused by genetic or other factors that affected the fetus during its development.

Complete secondary adentia – a pathological process that arises due to the complete loss of all teeth in one or both jaws as a result of an accident, tooth extraction for medical reasons, periodontal diseases, or due to the development of caries and its complications.

Complete absence of teeth (complete adentia (CA) primary and secondary) - code in the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) – K00.0 - Adentia and K08.1 - Loss of teeth due to accident, extraction, or localized periodontal disease.

In this context, in medical literature, synonyms for the nosology "complete adentia" are the terms "complete tooth loss" or "complete secondary adentia."

THE MAIN DIAGNOSTIC METHODS FOR COMPLETE ADENTIA INCLUDE:

- Collection of medical history;
- External examination and palpation of the maxillofacial area;
- Oral cavity examination using additional tools;
- Instrumental studies (radiological methods): targeted intraoral contact radiography or orthopantomography of the jaws.

When using dental implants for the treatment of PE, cone-beam computed tomography (CBCT) of the maxillofacial region is applied.

ADDITIONAL DIAGNOSTIC METHODS FOR COMPLETE ADENTIA INCLUDE:

- Instrumental studies (radiological methods): CBCT of the maxillofacial area, CBCT of the temporomandibular joints;
- Use of devices (facial arch, HIP analyzer, others) for spatial orientation of the maxillary model in the articulator and for transferring the hinge axis of rotation of the mandible, followed by
- Identification and analysis of excessive occlusal contacts between artificial dental prostheses (supercontacts);
- Functional-diagnostic studies (functional tests, electromyography);
- Consultation with a specialist physician based on medical indications (orthodontist, maxillofacial surgeon, dental surgeon, otorhinolaryngologist, endocrinologist, hematologist, cardiologist, gastroenterologist, rheumatologist, neurologist, infectious disease specialist, allergist-immunologist, radiologist, clinical laboratory diagnostician, physiotherapist, general practitioner, psychotherapist, psychiatrist-narcologist, and others);
- Photography for assessing smile and facial aesthetics, as well as analyzing the dental system.

In diagnosing Complete adentia, the general somatic condition of patients is also assessed, primarily identifying any pathologies that may influence the choice of treatment method (such as bronchial asthma, epilepsy, endocrine system conditions, allergic reactions, etc.), and specifically identifying:

- Inadequate psycho-emotional state of the patient;
- Acute lesions of the oral mucosa and the vermilion border of the lips;
- Acute inflammatory diseases of the organs and tissues of the mouth;

- Unsatisfactory hygienic condition of the oral cavity;
- Reluctance to undergo treatment or refusal of treatment.

FEATURES OF CLINICAL EXAMINATION IN COMPLETE ADENTIA. DETERMINATION OF MORPHOLOGICAL FEATURES OF THE PROSTHETIC TISSUES

Methods of Examination	Methods	Criteria for Evaluating Results
1. Subjective: | Interview	Collection of complaints, medical history, and life history.	Study the patient's complaints, general condition, living conditions, and professional working conditions. Identify the cause of tooth loss and the duration since their extraction. Establish whether the patient has used removable dentures. Evaluate the condition of previously made dentures from both the physician's and the patient's perspectives. In cases where the patient is being fitted for dentures for the first time, it is necessary to ascertain their awareness of dentures.
II. Objective: **1. Visual examination;** **- examination oral cavity.**	Visual examination Using tweezers, probe;	**External examination**: assess the degree of changes in facial configuration. Note the symmetry of the face, the presence or absence of scars on the facial skin that restrict mouth opening, the degree of lip reduction, the condition of their red border, the prominence of nasolabial and chin folds, the condition of the mucous membrane in the corners of the mouth, and the degree of reduction in the height of the lower third of the face. Pay attention to the degree of mouth opening (free or restricted), the nature of jaw relationships (orthognathic, prognathic, or progenic). Note any peculiarities in speech articulation and pronunciation of sounds, as well as facial expressions. **Oral cavity examination:** When examining the upper jaw, pay attention to the prominence of the alveolar ridge and the direction of the vestibular fold (gentle or vertical), the height of the palatine arch (deep, medium, flat), and the prominence of tubercles (highly pronounced, slightly pronounced, unpronounced). Note the prominence of the torus and its topography in relation to line A, whether it is a pronounced torus or a slightly pronounced wide torus. In examining the lower jaw, focus on the prominence of the alveolar ridge—whether it is well-defined; uniformly or significantly atrophied; well-defined in the area of frontal teeth and sharply atrophied in the area of molars; sharply atrophied in the area of frontal teeth and well-defined in the area of molars; and the topography of the

		mucogingival junction (the alveolar ridge protrudes above the level of muscle attachment; the alveolar ridge is atrophied to the level of muscle attachment; atrophy of the body of the mandible below muscle attachment; uneven atrophy in areas of molars or anterior teeth). Note the location of frenula, ligaments, sublingual salivary glands, and any bony protrusions or exostoses.
2. Palpation examination		The alveolar ridge should be palpated to detect sharp protrusions and roots covered by mucous membranes that are immobile during examination. Determine the integrity of the alveolar ridge, as well as the direction, position, and mobility of mucous membrane folds and frenula. Establish whether there is a palatine elevation. Assess the condition of the mucogingival junction and alveolar ridge.
3. Laboratory	Instruments for determining the pliability of the mucous membrane.	Determine the pliability of the mucous membrane covering the hard palate and alveolar ridges. If there is suspicion of hidden roots or when planning dental implantation, radiography of alveolar ridges (orthopantomography and intraoral dental radiography) is indicated. Radiological examination of the temporomandibular joint may be performed as needed. Axial imaging may also be required.

SITUATIONAL TASKS

1. Patient M., 67 years old, came to the clinic of orthopedic dentistry with complaints of complete tooth loss. What is the strategy of the orthopedic dentist when a patient presents with complete tooth loss?

2. Patient V., 60 years old, came to the clinic for prosthetics. The following was identified: chewing and speech disturbances, external aesthetic appearance issues, pronounced chin and nasolabial folds, complete absence of teeth, and prognathic jaw relationship. What examination methods were used? What additional examination methods need to be conducted? What causes the pronounced nasolabial and chin folds? What contributes to the "aged" appearance of the face?

3. During the oral examination of patient D., who has complete tooth loss, movable strands of mucous membrane were noted, located longitudinally along the alveolar ridge and easily displaced with slight touch. Evaluate the condition of the mucous membrane tissues of the prosthetic bed.

4. Patient X., 68 years old, was fitted with complete removable dentures on both jaws a month ago. He now presents with complaints of pain under the base in the area of tooth 25. Upon examination, a protruding root of tooth 25 is observed with swollen, hyperemic mucous

membrane. Indicate the error made during the examination of the patient and the development of the treatment plan.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

Regulatory legal acts:

6. Clinical Protocol "Diagnosis and Treatment of Patients (Adult Population) with Partial Edentulism": Resolution of the Ministry of Health of the Republic of Belarus dated August 10, 2022, No. 84.
7. On the Rules of Medical Ethics and Deontology: Resolution of the Ministry of Health of the Republic of Belarus dated August 7, 2018, No. 64.
8. On the Forms and Procedure for Giving and Revoking Consent for the Inclusion and Processing of Patient Personal Data: Resolution of the Ministry of Health of the Republic of Belarus dated June 7, 2021, No. 74.
9. On the Procedure for Providing Emergency Medical Care to Adult Patients in Dental Clinics (Departments): Order of the Committee on Health of the Republic of Belarus dated June 16, 2017, No. 444.

ELECTRONIC COURSEWARE

CLASS 2

Subject: Prosthetics in Complete Adentia (CA).

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students the general principles of treatment and medical prevention of complete adentia and to master the diagnosis according to classifications of adentia upper and lower jaws.

OBJECTIVES OF THE LESSON:

1. Reinforce knowledge about the etiology and pathogenesis of complete adentia.
2. Teach students the general principles of treating complete adentia.
3. Master the classifications of adentia jaws by Schröder, Keller, Kurlandsky, and Oksman.
4. Master the classification of the mucous membrane of the prosthetic bed according to Suppli.
5. Familiarize with the basic principles of treating complete adentia.
6. Understand the features of medical dispensary observation of patients with complete adentia.

Location of the session – clinical base.

Practical skills to be developed during the session:

Diagnosis of "complete adentia" according to clinical protocol.

Forms of control for practical skills: interviews; electronic tests; solving situational tasks.

Location for performing practical skills – at the patient's dental chair.

Criteria for evaluating practical skills – according to the evaluation sheet (checklist) for controlling practical skills in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

For full comprehension of the topic, students need to review:

• from human anatomy: anatomical structure of the upper and lower jaws;

• from general dentistry: materials science and laboratory techniques for making complete removable plate dentures;

• from surgical dentistry: tooth extraction procedures, indications and contraindications for dental implantation.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Structure of the oral mucosa.
2. Anatomical structure of the upper and lower jaws.
3. Modern materials and technologies for making complete removable plate dentures.
4. Clinical and laboratory stages of making complete removable plate dentures.
5. Surgical preparation of the oral cavity for prosthetics with complete removable dentures.
6. Indications and contraindications for dental implantation.

CONTROL QUESTIONS:

1. General principles of examination, treatment, and stages of planning comprehensive treatment for patients with complete adentia.
2. Classifications of the adentia upper jaw according to Schröder.
3. Classifications of the adentia lower jaw according to Keller.
4. Classifications of the adentia upper and lower jaws according to Kurlandsky.
5. Classifications of the adentia upper and lower jaws according to Oksman.
6. Assessment of the condition of the mucous membrane of adentia jaws. Classification of the mucous membrane of the prosthetic bed according to Suppli.
7. Orthopedic treatment of complete adentia using complete removable plate dentures.

8. Medical dispensary observation of patients with complete adentia.

THE GENERAL PRINCIPLES OF TREATMENT AND MEDICAL PREVENTION OF COMPLETE ADENTIA INCLUDE:

- improving the quality of life for patients;
- enhancing the functional capacity of the stomatognathic system;
- improving chewing and speech functions;
- eliminating overload on the soft tissues of the prosthetic bed;
- enhancing the aesthetics of smiles and faces, teeth, and dental arches.

PLANNING COMPREHENSIVE TREATMENT FOR PATIENTS WITH COMPLETE ADENTIA INCLUDES THE FOLLOWING STAGES:

- motivating the formation of healthy daily habits related to dental health;
- recommendations on choosing methods, items, and means for individual oral hygiene; dietary recommendations;
- professional removal of dental deposits;
- if necessary – therapeutic treatment (in cases of complete edentia in one jaw with caries, non-cariogenic lesions, periodontal diseases), orthopedic treatment (in cases of complete edentia in one jaw, with tooth defects, tooth mobility, increased tooth wear), surgical treatment (in cases of loss of epithelial attachment level, presence of exostoses, narrow vestibule), supportive treatment (medical observation).

CLASSIFICATION OF ADENTIA JAWS BY SCHRÖDER (UPPER JAW)

Type I - well-defined tuberosities of the upper jaw, pronounced alveolar ridge, high palatal vault, and a high position of the transition zone.

Type II - moderate atrophy of the alveolar ridge, moderately defined tuberosities of the upper jaw, medium depth of the palatal vault and vestibule of the oral cavity.

Type III - significant atrophy of the alveolar ridge, absence of tuberosities of the upper jaw, flat palate, and low position of the transition zone.

CLASSIFICATION OF EDENTULOUS JAWS BY KELLER (LOWER JAW)

Type I - well-defined alveolar ridge, transition fold located far from the crest of the alveolar ridge.

Type II - uniform sharp atrophy of the alveolar ridge, movable mucosa attached almost at the level of the crest of the alveolar ridge.

Type III - alveolar ridge well-defined in the area of anterior teeth and sharply atrophied in the area of molars.

Type IV - alveolar ridge sharply atrophied in the area of anterior teeth and well-defined in the area of molars.

CLASSIFICATION OF ADENTIA UPPER JAWS BY KURLANDSKY:

Type I:

- high alveolar ridge, uniformly covered with dense mucosa;
- well-defined high tuberosities of the upper jaw;
- deep palate;
- absence of a torus or a poorly defined torus ending at least 1 cm before line A;
- large mucous-glandular cushion above the aponeurosis of the soft palate muscles.

Type II:

- moderate atrophy of the alveolar ridge;
- poorly defined or undefined maxillary tuberosities, shortened fossa pterygoidei;
- medium depth of the palate;
- pronounced torus;

• moderate compliance of the glandular cushion above the aponeurosis of the soft palate muscles.

Type III:

• almost complete absence of the alveolar ridge;
• significantly reduced size of the body of the upper jaw;
• poorly defined maxillary tuberosities;
• shortened anteroposterior dimension of the hard palate;
• flat palate;
• poorly defined wide torus;
• narrow band of passively movable compliant tissues along line A.

CLASSIFICATION OF ADENTIA LOWER JAWS BY KURLANDSKY:

Type I - alveolar ridge protrudes above the level of muscle attachment points from both internal and external sides.

Type II - alveolar ridge and body of the jaw are atrophied to the level of muscle attachment points from both internal and external sides.

Type III - atrophy of the body of the jaw has progressed below the level of muscle attachment points from both internal and external sides.

Type IV - significant atrophy in the area of molars.

Type V - significant atrophy in the area of anterior teeth.

CLASSIFICATION OF ADENTIA JAWS BY OKSMAN

UPPER JAW

Type I - high alveolar ridge, high tuberosities of the upper jaw, pronounced palatal vault, and high position of the transition fold and attachment points for frena and buccal bands;

Type II - moderate atrophy of the alveolar ridge and tuberosities of the upper jaw, less deep palate, and lower attachment of movable mucosa;

Type III - sharp but uniform atrophy of the alveolar ridge and tuberosities, flattening of the palatal vault, movable mucosa attached at the level of the apex of the alveolar ridge;

Type IV - uneven atrophy of the alveolar ridge, i.e., combines various features of types I, II, and III.

LOWER JAW

Type I - high alveolar ridge, low position of the transition fold and attachment points for frena and buccal bands;

Type II - moderately expressed uniform atrophy of the alveolar ridge and higher attachment of movable mucosa;

Type III - absence of the alveolar part of the lower jaw, movable mucosa attached at the level of the apex of the alveolar ridge;

Type IV - uneven atrophy of the alveolar ridge, i.e., combines various features of types I, II, and III.

CLASSIFICATION OF THE MUCOSA OF THE PROSTHETIC BED BY SUPPLI

Class I – Ideal prosthetic bed ("normal mouth"); the mucosa is moderately pliable, moderately mobile, and pale pink in color.

Class II – Hard prosthetic bed ("hard mouth"); the mucosa is atrophic, minimally pliable, pale pink in color, poorly hydrated, with increased pain sensitivity, covering the alveolar ridges and palate as a taut layer.

Class III – Soft prosthetic bed ("loose mouth"); the alveolar ridges and the posterior third of the palate are covered with loose, excessively pliable, and overly hydrated mucosa.

Class IV – Prosthetic bed with areas of excessively mobile mucosa (loose ridge); the

mobile mucosal tissues are positioned longitudinally and can be easily displaced.

ORTHOPEDIC TREATMENT OF COMPLETE EDENTULISM (CONDUCTED BY A DENTIST-ORTHOPEDIST) USING COMPLETE REMOVABLE PLATE PROSTHESES INCLUDES:

- Obtaining analog impressions;
- Determining and fixing the central relationship of the jaws using wax or plastic bases with occlusal rolls;
- Selecting the color, size, and shape of artificial teeth considering the individual characteristics of the patient (age, size, and shape of the face);
- Checking the wax construction of the removable prosthesis;
- Fitting and placing the finished removable prosthesis;
- Recommendations for hygienic care of dental prostheses as well as service life (replacement) of the constructions;
- Adjusting the removable prosthesis (for medical reasons).

MEDICAL DISPENSARY OBSERVATION OF PATIENTS WITH COMPLETE ADENTIA:

Medical monitoring of treatment outcomes is recommended to be carried out through medical examinations by a dentist-orthopedist 6 months after the completion of orthopedic treatment for complete edentulism. Subsequent medical monitoring of the condition of dental prostheses is recommended to be performed twice a year (every 6 months). During each medical examination, a re-evaluation of the condition of dental prostheses, dental implants, peri-implant tissues, and oral mucosa is conducted, along with a hygienic assessment of the oral cavity. Additionally, at each visit for patients with complete edentulism, professional oral hygiene (including existing fixed dental prostheses) should be performed by a dentist-therapist.

SITUATIONAL TASKS

1. Patient A. during the oral examination showed the following clinical picture: the alveolar ridge of the mandible is completely atrophied in the area of the anterior teeth, and the denture bed in this area is almost absent. The alveolar ridge in the area of the molars is well-defined.

Indicate the type of edentulous mandible according to the Kurland and Keller classification.

2. Patient B. during the oral examination showed the following picture: a well-defined alveolar ridge of the mandible with a transitional fold located far from the crest of the alveolar ridge, i.e., the alveolar ridge protrudes above the level of muscle attachment on both sides.

Indicate the type of edentulous mandible according to Kurland's classification.

3. Patient C. during the oral examination showed: a high alveolar ridge of the maxilla, uniformly covered with dense mucosa, well-defined maxillary tuberosities. A deep palate. The torus is not sharply defined.

Indicate the type of edentulous maxilla according to Schreider's classification.

4. During the oral examination of patient M., there was a complete absence of the alveolar ridge of the maxilla, significant atrophy of the maxillary tuberosities, a flat palate, and low-lying valve zones.

Indicate the type of edentulous maxilla according to Schreider's classification.

5. Patient A. during an objective examination of the oral cavity showed the following picture: uniform sharp atrophy of the alveolar ridge of the mandible, with the movable mucosa attached almost at the level of the crest of the alveolar ridge.

Indicate the type of edentulous mandible according to Keller's classification.

6. Patient E., 63 years old, came to the clinic for prosthetics. Upon examination of the oral cavity, a complete absence of teeth in both jaws was found. Upon examining the alveolar ridge of the mandible, it was determined that the alveolar ridge is completely atrophied, with the frenula of the lower lip and tongue closely positioned, and lateral frenula attaching in the middle of the body of the mandible. The transitional fold is not defined over almost its entire length; it is only slightly expressed in the area of the molars. There is noted presence of a "flabby ridge" of mucosa in the area of the molar groups on both sides. The maxilla has a complete removable denture made a year ago.

Indicate the type of edentulous mandible according to Kurland's classification. To which type according to Suppli can the mucosa be attributed?

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

Regulatory legal acts:

6. Clinical Protocol "Diagnosis and Treatment of Patients (Adult Population) with Partial Edentulism": Resolution of the Ministry of Health of the Republic of Belarus dated August 10, 2022, No. 84.
7. On the Rules of Medical Ethics and Deontology: Resolution of the Ministry of Health of the Republic of Belarus dated August 7, 2018, No. 64.
8. On the Forms and Procedure for Giving and Revoking Consent for the Inclusion and Processing of Patient Personal Data: Resolution of the Ministry of Health of the Republic of Belarus dated June 7, 2021, No. 74.

ELECTRONIC COURSEWARE

CLASS 3

Subject: Methods of fixation and stabilization of complete removable plate dentures. Use of dental implant systems in prosthetics for patients with complete adentia

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To study methods of fixation and stabilisation of complete removable plate prostheses; to acquaint students with the principles of CA treatment using dental implants; to teach students how to use dental implant systems in prosthetics of patients with CA.

OBJECTIVES OF THE LESSON:

1. To study the methods of fixation and stabilisation of complete removable plate prostheses.
2. To familiarise with the general principles of treatment of complete adentia using dental implants.
3. To study the location of the borders of the individual tray on the upper jaw.
4. To study the location of the borders of the individual tray on the lower jaw.
5. To consolidate the knowledge of the requirements for the condition of the mucous membrane of the denture bed when prosthetics with removable structures.

Location of the session – clinical base.

Practical skills to be developed during the session:

Determination of the boundaries of the individual spoon on the upper and lower jaw.

Form of control of practical training: interview, electronic tests, solving situational tasks

Place of performance of the practical skill - at the patient's dental chair

Criteria for evaluation of practical skills - according to the evaluation sheet (checklist) for control of practical skills in the discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

In order to fully grasp the topic, the student should repeat:

- from human anatomy: anatomical structure of the upper and lower jaws;
- from general dentistry: material science and laboratory technique of fabrication of full removable plate prostheses;
- from surgical dentistry: tooth extraction operations, indications and contraindications for dental implantation.

CONTROL QUESTIONS FROM RELATED DISCIPLINES

1. Structure of the mucous membrane of the oral cavity.
2. Anatomical structure of the upper and lower jaws.
3. Modern materials and technologies of fabrication of full removable plate prostheses.
4. Clinical and laboratory stages of fabrication of complete removable plate prostheses. 4.
5. Surgical preparation of the oral cavity for prosthetics with full removable prostheses. 4.
6. Indications and contraindications for dental implantation.

CONTROL QUESTIONS

1. Fixation and stabilisation of complete removable dentures, definition of concepts, groups of methods.
2. Mechanical methods of fixation of dentures on edentulous jaws.
3. Physical methods of fixation of dentures on edentulous jaws.
4. Biomechanical methods of fixation of dentures on edentulous jaws.
5. Biophysical methods of fixation of dentures on edentulous jaws, the concept of the valve zone.
6. Factors of stabilisation of dentures on upper and lower jaws in case of complete loss of teeth.

7. Dependence of denture fixation on the area of the denture bed, the impact of masticatory and mimic muscles, the expression of the submucous layer, the shape of the alveolar process.

8. Basic principles of treatment of complete adentia with the use of dental implants

MECHANICAL METHODS

1. Repulsive springs.
2. Weighted mandibular prosthesis.
3. Implants.

PHYSICAL METHODS

1. Adhesion.
2. Cohesion.
3. Capillary attraction and surface tension force of liquid.
4. Adhesive preparations (creams, powders, gels).
5. Use of magnets.
6. Use of rarefied space (single and multi-cell chambers, raue discs).

BIOMECHANICAL METHODS

1. Anatomical retention.
2. Gingival clasps.
3. Pelottes.
4. Utilisation of the hyoid space.

BIOPHYSICAL METHODS

Creation of a valve zone - a rarefied space under the entire denture base

The transitional fold is the place of transition of the actively mobile cheek mucosa to the actively mobile alveolar mucosa; its width is 1-3 mm and in the area of the 'A' line 3-8 mm. The transitional fold is characterised by low mobility and good pliability.

The valve zone is the area of tight contact between the mucosa of the transitional fold, the 'A' line, the floor of the mouth and the edge of the denture at the time of the creation of the circular closure valve. The denture must reach the transitional fold to form a circular flap. This will create a space between the denture and the underlying mucosa with thin air and the denture will be secured by the pressure difference.

FACTORS DETERMINING STABILISATION OF COMPLETE REMOVABLE PLATE PROSTHESES:

- ✓ - degree of atrophy of edentulous alveolar processes;
- ✓ - pliability and mobility of the denture bed mucosa;
- ✓ - uniform distribution of masticatory load on the denture bed, which is achieved by tight adhesion of the denture base to the mucosa throughout;
- ✓ - preservation of the volumetric boundaries of the complete denture with regard to function, which is created when taking a functional impression;
- ✓ - selection of the optimal occlusal scheme, taking into account the functional anatomy of the denture bed tissues:

- the tooth rows should be positioned in a centrally aligned position without supracontacts with multiple interdental contacts of the same strength and provide preferably vertical transmission of the denture base pressure to the supporting tissues without negative lateral loads on the alveolar process;

- to create a balanced occlusion as far as possible, which means that during any functional movements of the mandible, the tooth rows maintain uniform and multiple contacts without deocclusion zones throughout.

PRINCIPLES OF ORTHOPAEDIC AND SURGICAL TREATMENT OF PA USING DENTAL IMPLANTATION INCLUDE:

- The planning of PA treatment with dental implantation is carried out by an orthopaedic dentist together with an oral surgeon or maxillofacial surgeon;

immediate or delayed dental implantation can be performed according to medical indications;

- fixed or removable dentures supported by dental implants are used in the treatment of PA. Zirconium dioxide, ceramic, composite and ceramic-metal prostheses can be used as fixed dental implant-supported prostheses. Removable plate prostheses with attachment to dental implants can be used as removable structures;

- manufacturing of surgical templates is performed according to medical indications;

- implant positioning in the horizontal and vertical planes is determined by the anatomical conditions of the bone tissue, gingival biotype, technical features of the implant system and the type of the planned prosthetic construction;

- the use of directed bone regeneration and soft tissue plasty is performed beforehand, simultaneously with the placement of dental implants (gum shapers), as well as at the stages of medical rehabilitation (according to medical indications);

- use of alternative types and positions of implants and (or) increase of their number (on medical indications);

- the choice of abutments is made from standard factory-made options or abutments are made individually by casting or milling;

- use of cement or screw methods of fixation of fixed orthopaedic constructions;

- orthopaedic treatment is performed immediately or postponed for 3-6 months, which is determined by medical indications;

- the possibility of fabricating temporary prosthetic structures to replace dental defects is determined at the planning stages.

IN REMOVABLE IMPLANT-SUPPORTED PROSTHETICS, THE FOLLOWING TYPES OF REMOVABLE AND FIXED PROSTHESES ARE DISTINGUISHED:

-on spherical ball and socket attachments (2-4 implants);

- using magnets;

- using a bar system;

- telescopic fixation system;

- multi-unit system on 4-6 implants.

SITUATIONAL TASKS

1. Patient I., 58 years old, complained of poor fixation of a full removable denture on the maxilla. Objectively: moderate atrophy of the alveolar process of the maxilla, its slope in the area of maxillary tubercles on the right and left, sharply expressed, with an overhang. When examining the oral cavity with the denture base applied, blind fossae are visible. The borders of the denture base reach the most protruding parts of the slope. What can explain the patient's complaints during prosthetic treatment? Indicate the doctor's tactics.

2. Patient N. 60 years old. Complaints about frequent fractures of the base of a full removable maxillary denture. Examination of the oral cavity revealed a moderate degree of atrophy of the alveolar process, the alveolar tubercles are not pronounced, the palate is of medium depth with a pronounced torus. The previously fabricated maxillary prosthesis has traces of repeated mending. The dentures are balanced on the jaw. Indicate the doctor's tactics. State the cause of the fracture. Specify the type of atrophy of the alveolar process of the maxilla according to V.Y. Kurlyandsky.

3. Patient M., 74 years old, three days ago was fitted with a full removable denture on the upper jaw. When biting and chewing food, the denture is displaced. Name the possible causes of this defect and how it can be eliminated.

4. Patient Y., 67 years old. Complaints of poor fixation of dentures on the upper jaw. She has been using dentures for a day. Examination of the oral cavity revealed that the upper jaw prosthesis balances on the transitional fold of the alveolar process in the area of teeth 16, 15, 14. There are areas of hyperaemia with violation of the integrity of the epithelial layer. Indicate the cause of this pathology. Your tactics of management of the patient.

5. Patient S., 58 years old. Complaints of poor fixation of a full removable denture on the lower jaw. removable denture on the lower jaw. She had a denture a year
a year ago. Objectively: type IV atrophy of the alveolar process according to Kurlandsky, high muscle tone for the mandible.Kurlandsky, high tone of the muscles of the floor of the mouth. The mucosa covering the alveolar process is atrophied, thin. In the area of teeth 15, 25, there are tight, unyielding tendons going almost directly from the apex of the ridge to the transitional fold, their width is 3-4 mm. Determine the type of mucous membrane (Suppli). Indicate the doctor's tactics.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

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4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 4

Subject: Anatomical impressions. Individual trays. Fitting individual trays using the Herbst method. Obtaining functional impressions

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students the technique of obtaining anatomical impressions from edentulous jaws; to study modern techniques of making individual trays; to teach students how to stock individual trays and obtain functional impressions using Herbst's samples.

OBJECTIVES OF THE LESSON:

1. To consolidate knowledge about the properties and indications for the use of different classes of impression materials in the treatment of PA.
2. To master the technique of obtaining anatomical impressions from edentulous jaws.
3. To get acquainted with modern methods of individual trays fabrication.
4. To learn to justify the choice of impression material and special methods of individual tray preparation depending on the functional state of the denture bed tissues.
5. To master the fitting of the individual tray on the upper and lower jaw using the Gerbst test.
6. To master the technique of obtaining functional impressions from edentulous jaws

Location of the session – clinical base.

Practical skills to be developed during the session:

Fitting an individual trays on the upper and lower jaws using Herbst's test, obtaining a functional impression of the upper and lower jaw.

Form of control of practical training: interview, electronic tests, solving situational problems.

Place of practical skill performance - at the patient's dental chair

Criteria for evaluation of practical skills - according to the evaluation sheet (checklist) for control of practical skills in the discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

In order to fully grasp the topic, the student should repeat:

- from anatomy: anatomical structure of jaws;
- from histology: structure of mucous membrane of the oral cavity;
- from general dentistry: classification and properties of impression materials; modern materials and methods of individual trays manufacturing.

CONTROL QUESTIONS FROM RELATED DISCIPLINES

1. Structure of the mucous membrane of the oral cavity.
2. Anatomical structure of the upper jaw. Landmarks in the complete absence of teeth.
3. Anatomical structure of the lower jaw. Landmarks in the complete absence of teeth.
4. Materials and methods of fabrication of individual trays.
5. Classification and properties of impression materials used in the fabrication of complete removable plate prostheses.

CONTROL QUESTIONS

1. Impressions: anatomical and functional. Definition. Characteristics.
2. Impression materials: classification and properties. Areas of application in manufacturing complete removable plate denture.
3. Individual trays. Requirements. Materials and techniques of manufacture.
4. Boundaries of individual trays on the maxilla and mandible.
5. Fitting an individual trays according to the Gerbst method on the maxilla.
6. Fitting of an individual trays according to the Gerbst method on the mandible.
7. Justification of the choice of impression material and the method of obtaining a functional

impression depending on the condition of the mucous membrane of the denture bed. Methods of obtaining ‘unloading’, compression impressions and impressions with differentiated pressure.

8. Criteria for assessing the quality of a functional impression.

TRAY SELECTION RULES WHEN TAKING ANATOMICAL IMPRESSIONS

The quality of the impression depends to a large extent on the correct choice of impression trays. The trays must be selected not only in size but also in shape, depending on the clinical situation in the oral cavity and the type of orthopaedic construction to be fabricated. The height of the sides of the trays, the pronounced vault on maxillary spoons and the shape of the lingual notch on mandibular trays are important.

Standard or customised impression trays are used to take impressions. Standard trays are made of metal or plastic and differ in shape, size, number and size of perforation holes.

The most widely used impression trays are those made of sheet steel. Their size is usually marked on the handle with numbers (№. 1, 2, 3, 4, 5) or letters S, M, L. Standard impression trays for edentulous jaws are characterised by lower sides and a rounded transition from the sides to the tooth bed. Numbers (№7, 8, 9, 10) are marked on the handle. The trays are chosen either by empirical selection or with the help of a special device - a compass, which resembles a drawing circles. It allows you to measure the width of the jaw. There are tray sets that come with a compass and a special table for selecting spoons according to the measurement results.

Non-perforated trays are less convenient to use, as the disadvantages of many impression materials include poor adhesion to the impression trays and the perforations create retention points. In addition, the perforations in the trays ensure unobstructed removal of excess impression material and prevent excessive compression of the oral mucosa. Some models of impression spoons are limited on the edges of the sides by a special groove, which prevents the impression material from tearing off the trays at the time of impression removal.

There are trays for taking an impression from the entire tooth row, part of the tooth row, as well as bilateral spoons for taking an impression from the teeth-antagonists with closed tooth rows.

In addition to metal trays, plastic trays are used. They are also full and partial, unilateral and bilateral. At present, there are many variations of plastic impression trays with a mesh capron dental impression tray. The impression mass is applied on both sides of the mesh, and simultaneously the working and auxiliary impressions are taken in the central occlusal position.

The use of double-sided plastic trays for bite impressions is convenient and saves time and materials. In addition, plastic trays meet the requirements of asepsis during dental appointments, as they are positioned by the manufacturers as disposable. Nevertheless, traditional metal trays should be preferred for obtaining working impressions. This is due to the need to create a constant, even pressure of the impression material on all areas of the denture bed. The tray should provide a rigid support for the impression material, whereas a plastic tray can deform at the time of taking an impression and then return to its original position, resulting in distortion of the impression. Thus, the use of plastic tray is expedient when making auxiliary and diagnostic, but not working impressions.

Guidelines for the correct selection of an impression tray for edentulous jaws:

- the tray must completely cover the entire denture bed: on the maxilla, the maxillary cusps and distally to the ‘A’ line; on the mandible, the retromolar triangles and on the lingual side to the internal oblique line;
- the tray should provide a rigid support for the impression material;
- the alveolar process should be positioned in the middle of the tray bed;
- when placed in the oral cavity, the tray must not compress the individual areas of the denture bed;
- there must be a gap for the impression material between the vestibular and oral surfaces of the alveolar process and the inner surfaces of the rims of the tray;
- the height of the rim of the impression tray must correspond to the height of the alveolar process. If the rim of the tray is much lower than the transitional crease when it is placed on the

alveolar ridge, it will be difficult to compensate for this gap with the impression material. If it is higher, it will traumatise or squeeze the mucosa and interfere with the impression margin.

A functional impression is an impression showing the functional state of the denture bed tissues obtained with a customised tray *using functional tests, with or without pressure on the mucosa of the denture bed.*

FITTING OF INDIVIDUAL TRAYS ACCORDING TO THE HERBST TECHNIQUE

Test	**Correction area of the individual spoon in the event of failure of its fixation**
TRAY SELECTION ON THE UPPER JAW	
1. *Swallowing*	Distal border on line «A»
2. *Opening the mouth wide*	Maxillary tubercle area and retromolar area from the vestibular surface
3. *Suction of the cheeks*	Vestibular surface on the right and left cheek mucosal thrusts
4. *Extension of the lips*	Vestibular surface in the area of the frenulum of the upper lip
TRAY SELECTION ON THE MANDIBLE	
1. *Swallowing and wide mouth opening*	If the tray is dropped when swallowing, it is shortened on the lingual side from the mucosal tubercle to the maxillary hyoid line. If the tray is dropped posteriorly when the mouth is opened wide, it is shortened on the vestibular side from the mucosal tubercle to the projection of the first molar; if the spoon is dropped in the frontal region, it is shortened on the vestibular side between the canines.
2. *Run the tip of the tongue along the red border of the upper and lower lips*	Along the maxillary lingual line
3. *Touch the tip of the tongue to the cheek with the mouth half-closed*	Lingual surface of the premolars
4. *Stick the tip of the tongue forward towards the tip of the nose*	Lingual surface in the area of the lingual frenulum
5. *Extending the lips in a tube*	Vestibular surface between the canines

The following factors must be considered when taking functional impressions from edentulous jaws:

1. the general contour or relief of the denture bed;
2. the degree of pliability and mobility of the mucosa in different areas of the denture bed;
3. The shape of the impression tray, the length of its edges;
4. properties of the impression material;
5. Pressure exerted on the denture bed tissues by the impression material when taking an impression;
6. the method of edging of the future prosthesis - active or passive;
7. the method of obtaining a functional impression.

SITUATIONAL TASKS

1. Patient M., 73 years old. Diagnosis: complete loss of teeth of the upper jaw. On Schroeder type III atrophy on the maxilla. The mucous membrane of the alveolar process in the anterior part forms folds, which are spread when pressure is applied. What are the peculiarities of obtaining a functional impression?

2. The following functional tests were applied to patient O., 62 years old, when fitting an individual spoon on the mandible: touching the tip of the tongue with the mouth half-closed to the cheek; stretching the tongue towards the tip of the nose; swallowing; stretching the lips in a tube; running the tongue along the red border of the upper and lower lips; opening the mouth wide.Name the errors in the sequence of functional tests.

3. Patient A., 66 years old, after fitting an individual spoon on the upper jaw with the help of functional tests. upper jaw with the help of functional tests it was noted, that when pressing the handle of the spoon upwards and forwards, the spoon is easily displaced.

What is the suspected cause of poor spoon fixation? Indicate the physician's tactics.

4. Patient N., 60 years old, complains of frequent fractures of the base of a full removable maxillary denture. Examination of the oral cavity revealed a sharp degree of alveolar atrophy, alveolar tubercles are not pronounced, the palate is of medium depth with a pronounced torus. The previously made maxillary prosthesis has traces of repeated mending. The dentures are balanced on the jaw. State the doctor's tactics. State the cause of the fracture. Indicate the type of atrophy of the alveolar process of the maxilla according to Kurlyandsky V.Yu.

5. Patient K., 62 years old, diagnosed with complete secondary adentia of both jaws, Schroeder class 1 on the upper jaw and Keller class 3 on the lower jaw. The mucosa on the upper jaw is pliable and dense, on the lower jaw a mobile ridge is identified laterally on the right side. Specify the impression materials that can be used for a functional impression on the maxilla and mandible.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners’ Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 5

Subject: Casting models and making wax bases with occlusal rims. Determination of central jaw relation in complete adentia.

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students to determine the boundaries of complete removable plate prostheses on the upper and lower jaws; to study the methods of edging functional impressions and making wax bases with occlusal rollers for edentulous jaws; to study the methods of determining the central ratio of the jaws in complete adentia.

OBJECTIVES OF THE LESSON:

To master the technique of manufacturing and quality assessment of working and auxiliary models.

1.Master the technique of edging of functional impressions.

2.To learn to determine the borders of complete removable prostheses on the upper and lower jaw.

3. To master the methods of making wax bases with occlusal rollers.

4.To learn how to determine the jaw centre relationship in complete adentia.

Location of the session – clinical base.

Practical skills to be developed during the session:

Making a wax base with a bite roll on the upper and lower jaw.

Form of control of practical training: interview, electronic tests, solving situational tasks.

Place of practical skill performance - at the patient's dental chair.

Criteria for assessment of practical skills - according to the evaluation sheet (checklist) for control of practical skills in the discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

In order to fully grasp the topic, the student should repeat:

- from anatomy: anatomical structure of the upper and lower jaw;
- from histology: structure of mucous membrane of the oral cavity;
- from general dentistry: classification and properties of impression materials; materials and techniques for making working and auxiliary models for the fabrication of the complete removable plate denture; materials and laboratory techniques for making wax templates with bite rolls.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Structure of the mucous membrane of the oral cavity.
2. Anatomical structure of the upper jaw.
3. Anatomical structure of the lower jaw.
4. Classification and properties of impression materials used in the fabrication of PSPP.
5. Classification and properties of materials used for the production of working and auxiliary models.
6. Materials for the manufacture of wax templates with bite rolls and their properties.

CONTROL QUESTIONS:

1. Edging of the edges of the functional impression, purpose, methodology. Casting models and approximate lines applied to the model (valve zone, alveolar, middle).
2. Boundaries of complete removable plate prostheses on the upper and lower jaws.
3. Materials and requirements for wax bases with occlusal rollers and methods of their fabrication.
4. Advantages and indications for the fabrication of rigid bases with occlusal rollers.
5. The concept of central ratio and central occlusion.

6. Methods of determining the height of the lower face (occlusal height) and their brief characterisation.

7. Anatomo-physiological method of determining the occlusal height: essence, methodology. Sequence of determining the central ratio of the jaws.

8. Methods of fixation of the central jaw ratio. Sequence of transferring anatomical landmarks to wax bases.

EDGING OF THE EDGES OF THE FUNCTIONAL IMPRESSION

After obtaining a functional impression, it must be edged. For this purpose, a 3-5 mm thick wax roller is glued 2-3 mm from the outer edge of the impression.

The impression border is necessary to preserve the volumetric edge of the future denture at the border of the valve area, and it also prevents the denture borders from being cut off when the dental technician opens the plaster working model.

PRODUCTION OF WORKING AND AUXILIARY MODELS

The chemical nature of dental gypsum is semi-aqueous calcium sulphate. Synthetic additives are added to natural gypsum to increase its strength. Gypsum has been widely used to obtain impressions in the manufacture of stamped and soldered constructions, removable prostheses. At one time, it was the material of choice because of its high accuracy in reproducing the details of the denture bed, its adjustable viscosity and dimensional stability. Due to the mucostaticity of the gypsum mixture, it was widely used for taking impressions from edentulous jaws. However, it is extremely difficult to take plaster impressions from the dentition. Plaster in the final hardening phase is not a plastic material. The slightest undercurve in the oral cavity makes it difficult to remove the impression and leads to the breakage of its elements. The procedure of obtaining such an impression is unpleasant for the patient. At present, plaster is practically not used for taking impressions. Its field of application has shifted to the dental laboratory. Dental plaster is obtained from natural gypsum by dehydrating it by firing.

There are five gypsum grades according to hardness according to the ISO international standard:

1 degree of hardness - soft.

2 degree of hardness - medium hard.

3 degree of hardness - hard.

4 degree of hardness - extra hard.

5 degree of hardness - extra hard.

Grades 1-2 are used in dentistry as auxiliary materials for taking impressions, plastering models into occluders and articulators and for other technical purposes;

Class 3 - for making diagnostic models, working models for removable prosthetics;

Grades 4-5 - for the production of collapsible and heavy-duty models for fabrication of fixed and combined constructions.

The prepared casts are shaken off to remove excess water and filled with plaster. Gypsum is kneaded with water without adding salt, mixed thoroughly so that there are no lumps, air bubbles, sufficiently liquid consistency. Gypsum powder is added to the solution in small portions as it is immersed. This is done until a small hill appears on the surface of the solution. Excess liquid is drained if necessary, the mass is stirred with quick circular movements to a homogeneous cream-like consistency. Then apply a small portion to the protruding part of the impression. By lightly tapping the impression on the edge of the rubber cup move this portion into the recessed areas, as a result, the plaster penetrates well into all areas and eliminates the formation of air pores. It is recommended to carry out this operation on a vibration table. Having filled with some excess of the whole mould, put the remaining plaster with a slide on the tile, the spoon is turned over and slightly pressed against the plaster, so that the surface of the spoon was parallel to the table. The height of the model base should be at least 1.5-2 cm. Use a spatula to distribute the plaster flush

with the edges of the mould, remove the excess. After the plaster has completely hardened, the model is released.

BOUNDARIES OF THE BASES OF COMPLETE REMOVABLE PLATE PROSTHESES MAXILLARY AND MANDIBULAR

On the vestibular side of the maxilla, the vestibular border of the denture passes through the deepest point of attachment of the transitional fold, bypassing the frenulum of the upper lip and mobile mucosal cheek ties, completely overlapping the maxillary tubercles, entering the maxillary wing notches, but not overlapping the maxillary wing fold. The distal border of the denture overlaps the blind fossa (border of the hard and soft palate) by 1-2 mm, i.e. it minimally reaches the line 'A' located on the soft palate; in case of a gentle slope of the soft palate, the line 'A' overlaps by 1-2 mm.

On the vestibular side of the mandible, the boundaries of the denture on the mandible pass at the deepest point of attachment of the transitional fold, bypassing the frenulum of the lower lip and the mobile mucous cheek tendons, and completely overlap the mucous tubercles in the retromolar triangles in the distal areas. On the lingual surface, the distal borders overlap the maxillary hyoid line by 2-3 mm in its rounded form or, in the case of a pointed form, reach it; in the frontal area, the prosthesis is positioned along the border of the transition of the mucosa of the alveolar process into the mucosa of the floor of the mouth, bypassing the frenulum of the tongue.

FABRICATION OF WAX BASES WITH OCCLUSAL ROLLERS

To make a wax base with occlusal rollers, a plate of dental wax is carefully heated over a flame, then pressed to the palatal surface of the pre-moistened model with the thumbs, taking care not to squeeze or thin the plate. To avoid adhesion of the wax to the model, the plate is heated on one side and the other side is applied to the model. Use a heated spatula to trim off the excess wax at the borders of the denture plate. The thickness of the upper jaw base is 1 lamina of base wax, the lower jaw 2 laminae of base wax.

The wax base is reinforced with a wire to prevent it from deforming in the oral cavity. The wire is bent to the relief of the palatal or lingual surface and heated. When heated, it is inserted into the wax template, thus strengthening it.

The next step is the fabrication of the occlusal rollers. A plate of wax heated over a flame is rolled into a roll and placed on the wax base exactly in the centre of the alveolar process. The rolls should be monolithic and have the following dimensions: in the frontal section, height 1.8-2.0 cm, width 0.4-0.6 cm, in the lateral section, height 0.8-1.2 cm, width 0.8-1.0 cm. In the projection of the distal surface of the second molars on the rolls of the upper and lower jaw, a cut is made at an angle of 45° towards the maxillary tubercles and the mucous tubercle, respectively. The length of the roll is determined by the tooth-free extent of the alveolar process. The rollers must be tightly glued to the wax base, for this purpose, a well heated spatula is used on the outer and inner surface of the rollers. The wax melts and glues the rollers to the wax base well. The rollers are given a smooth surface, their ends are nullified and the edges of the wax base are levelled.

CENTRAL JAW RELATIONSHIP AND CENTRAL OCCLUSION

The main feature of mandibular movements in humans is the presence of not only rotational but also translational movements in the temporomandibular joint in three planes. If rotation is the movement of an object around an axis and in the joint it occurs in the lower pole, then translational is the movement in which all points of the body are displaced in the same direction and at the same speed. Progressive motion in a joint occurs in the upper pole and is characterised by a displacement of the horizontal axis passing through the centres of the two articular heads during any movement in the joint.

Thus, the human mandible can make movements in several directions:

- vertical (up and down), which corresponds to the opening and closing of the mouth;

- sagittal (sliding or moving back and forth);
- transversal (lateral movements to the left and right).

When considering the sagittal movements of the mandible, the two most important positions are central relationship and central occlusion.

In the initial phase of mandibular movements, when the articular heads are located in the uppermost, medial sagittal non-tensioned position in the articular fossae, the mandible is in the central relationship. In this position, the mandible rotates about a fixed horizontal axis connecting the articular heads on both sides of the joint, called the 'terminal axis of rotation' or 'articulated terminal axis'.

As the articular heads rotate around the terminal axis, the midpoint of the lower incisors describes an arc of about 20-25 mm in length. This trajectory is called the 'terminal closing arc'.

The terminal hinge axis of rotation can be registered clinically. In this case, the articular heads occupy a centric (posterior unconstrained) position in the joint. This is the most physiologically favourable position of the articular heads.

Unfortunately, the centric relationship is often associated only with edentulous jaws, but it is determined in all patients and is a key concept in occlusal issues. Currently, there are many definitions of the central ratio, which characterise it both from the position of the jaws and the position of the articular heads. The main criterion, however, is that the central ratio is completely independent of the position and interlocking of the teeth and determines the position of the mandible in relation to the skull.

In our opinion, in the treatment of complete adentia, the most complete definition of the central relationship is the following: the most distal position of the mandible in relation to the maxilla at a certain occlusal height, in which the articular heads are in a non-tensioned extreme anteroposterior and medial-sagittal position in the articular fossae. From this position, the mandible can perform lateral movements and rotation around the terminal axis is performed before progressive movements.

Unlike all types of occlusion (central, anterior, lateral), the central relationship remains virtually unchanged in the patient throughout life, except in cases of damage or lesions of the temporomandibular joints. The lower jaw can return to this starting position many times, which is why the central relationship is the starting point for the formation of the occlusion when prosthetics in the central occlusion are not possible, e.g. in patients with complete tooth loss.

With the inhibitive opening movement of the mandible, the articular heads start to move forwards: a translational movement is added to the rotational movement in the joint. The midpoint of the lower incisors ceases to rotate around the terminal axis and the mandible moves out of the central relationship position. The arch at maximum opening movement is 40 to 50 mm.

The mandible continues to make a closing movement along the terminal closing arc until contact is reached between the teeth. This initial point of contact varies from person to person and depends on the position of the teeth and the occlusal height. The initial point of contact between the teeth in a central relationship is called the posterior contact position, sometimes synonymously referred to in the literature as central contact position and posterior contact position.

During further closing movement, after the initial contact of the teeth in the position of the central relationship is achieved, the mandible slides forward and upwards into the central occlusion, which is characterised by maximum intermolar interlocking of the teeth of the upper and lower jaws. Centric sliding occurs along the scutes of the premolars and molars, which should normally be in symmetrical bilateral contacts. The displacement of the mandible from the position of central relationship to the position of maximum inter-articular contact is accompanied by movement of the articular heads downwards and forwards along the posterior ramps of the articular tubercles.

The sliding of the mandible from the position of central relationship to the position of central occlusion is called centric sliding, and its magnitude is 1-2 mm on average.

According to U. Posselt, only 10% of people have no centric slip, in which case the central ratio will coincide with the central occlusion. Thus, the position of initial tooth contact when closing the mouth will coincide with the position of maximum interproximal contact.

METHODS OF DETERMINING THE HEIGHT OF THE LOWER FACE

Static:

1. Determining the height of occlusion before removing the last pair of antagonist teeth, whereby the clinician may take:

- measurements on the patient's face;

- measurements on plaster models of the jaws in the articulator;

- measurements on profile photographs of the face;

- fabrication of a face mask.

2. Measurements of old dentures.

3. Anatomical.

4. Anthropometric.

5. Telerentgenography.

6. Toothless alveolar ratio (Occlusal rollers are shaped to create:

- parallelism of the alveolar ridges of the maxilla and mandible, with a distal divergence of up to 50 (this method can only be used in cases of uniform minor atrophy of the alveolar processes);

- distance from the incisal papilla of the upper jaw to the incisal edge of the lower central incisors - 4 mm, with the incisal edge of the upper incisors 6 mm below the papilla (this method can only be used if the lower incisors are preserved).

Dynamic:

Anatomo-physiological (determination of physiological resting height).

Phonetic.

Determination of swallowing threshold

Examination of the tone of masticatory muscles and the strength of masticatory pressure.

Using the patient's tactile sensations.

Functional-physiological or hardware.

DETERMINATION OF THE LOWER FACE HEIGHT AND FIXATION OF THE CENTRAL JAW RATIO IN PATIENTS WITH COMPLETE ABSENCE OF TEETH

Order of activities	Means of operation	Criteria for correct action
1. Seat the patient in the dental chair.	Dental chair	The patient's back rests firmly against the backrest of the chair, head slightly tilted backwards.
2. to evaluate the quality of the manufactured wax bases with occlusal rollers on the models of the upper and lower jaws.	Plaster models of upper and lower jaws, wax bases with occlusal rollers.	1. The boundary of the wax bases corresponds to the boundaries delineated on the plaster models. 2. Tight adhesion of the wax base to the models, no balancing. 3. The dimensions of the rolls: in the frontal section, height 1.8 - 2.0 cm, width 0.4 - 0.6 cm, in the lateral section, height 0.8 - 1.2 cm, width 0.8 - 1.0 cm.
3. Remove the wax bases with occlusal rollers from the model and disinfect with alcohol.	A cotton swab moistened with alcohol.	All surfaces of the wax base with the bite rolls must be treated.
4. Dip the wax bases with occlusal rollers into a tray with cold water for 2-3 min.	A tray of water.	
5. Insert wax rollers into the patient's mouth, apply and check the position of the upper jaw wax base on the denture bed.	A set of dental instruments, a wax base of the upper jaw.	Tight fit of the base to the denture bed, conformity to the boundaries of the future denture, no balancing.
6. Form the vestibular surface	Set of dental	Harmonious position of the upper lip: the upper

of the occlusal roll of the maxilla.	instruments, Naisch apparatus, wax base of the upper jaw.	lip is not sunken or protruding. Nasolabial angle ≈ 900, red lip border should be visible.
7. Determine the height of the occlusal shaft of the maxilla in the frontal region.	Set of dental instruments, Naisch apparatus, wax base of the upper jaw.	The frontal part of the wax base protrudes from under the upper lip by 1-2 mm or is at its level in case of medium lip type (8-14 mm). It should be remembered that the length of the upper lip can be different, depending on this, the edge of the upper roll can protrude from under the lip at 2 mm in the short type of lip (5-7mm), and be at its level or above the edge of the upper lip at 2 mm in the long type of lip (15-2mm). Add or remove excess wax in the frontal height area.
8. Form a prosthetic plane on the upper occlusal ridge in the frontal area.	Ruler, Larin's apparatus, set of dental instruments, Naisch's apparatus, wax base of the upper jaw.	Achieve parallelism with the pupillary line. A ruler is placed on the occlusal surface of the roll in the frontal area. It should be parallel to the ruler placed on the pupillary line.
9. Form the prosthetic plane in the lateral area.	Ruler, Larin's apparatus, set of dental instruments, Naisch's apparatus, wax base of the upper jaw.	The ruler placed on the horizontal surface of the roll in the lateral section should be parallel to the ruler aligned with the Kamper horizon (wing of the nose, middle of the ear goiter). Achieve parallelism by cutting or adding wax on the occlusal rollers.
10. Determine the height of the lower face using the anatomo-physiological method.	Ruler, Larin apparatus, set of dental instruments.	After talking to the patient, when the lower jaw is set in a position of relative physiological rest, it is necessary to measure the distance between two points marked at the base of the nasal septum and on the chin. At the same time lips should be closed for the whole length (without tension). The height of the lower face (height of occlusion) is determined by subtracting from the height of physiological rest 2-4 mm. The expression of various anatomical formations on the face is also observed.
11. Stock the occlusal roll of the mandible according to the defined mandibular height.	Ruler, set of dental instruments, Naisch apparatus, wax base of the mandible.	The lower occlusal ridge must lie tightly against the upper occlusal ridge throughout. The occlusal height should be 2-4 mm lower than the physiological resting height.
12. Determine the position of the mandible in relation to the skull in the sagittal and horizontal planes.	Wax base with occlusal rollers of the upper and lower jaws	Clamping is the same each time, there is no forward or backward movement of the mandible or left-right displacement. The weight-tibular surfaces of the occlusal rollers are in the same plane when closing.
13. Fix the central relationship of the jaws.	Spatula, wax base with occlusal rollers of upper and lower jaws	On the occlusal surface of the maxillary shaft, cross-shaped incisions up to 1.5-2 mm wide are made. On the occlusal surface of the mandibular shaft, make notches opposite the cross-shaped incisions, in which small pieces of softened wax are placed. The wax templates are then inserted into the oral cavity

		and the patient is asked to close the mouth while monitoring the position of the bases and mandible.
14. Check that the jaw centricity is correctly determined and fixed	Wax base with upper and lower jaw occlusal rollers, water tray.	After removing the wax rolls from the oral cavity, they are placed on the plaster models, making sure that the bases adhere to the denture bed and do not balance on the models. The bases are separated, cooled in water and reinserted into the oral cavity. The doctor checks the correctness of the patient's jaw closure, excludes possible displacement of the mandible in the horizontal and sagittal planes and displacement and deformation of the wax bases. Checks the correctness of determining the height of the lower face.
15. Apply anatomical landmarks to the occlusal rollers for the placement of artificial teeth.	Spatula.	The first line, the midline, is drawn in such a way that it divides the upper lip filtrum and Cupid's bow into equal parts (the frenulum of the upper lip should not be used as it is often shifted to the side). The intersection of the midline with the prosthetic plane is the location of the mesial corners of the central incisors. The perpendicular drawn from the external wing of the nose divides the canine in half, i.e. there are 2.5 teeth on each side between the midline and the canine line The horizontal line drawn along the border of the red border of the upper lip when the patient smiles is an approximate reference point for the height of the upper frontal teeth.

SITUATIONAL TASKS

1. After the dentist took a functional impression, the dental technician cast the working model without preliminary edging. Indicate the technical error and its possible negative consequences.

2. During the fabrication of the working model for a complete removable denture, the dental technician used plaster of 1 degree of hardness. What are the possible negative consequences of fabricating a complete removable denture on such a working model?

3. After opening the working model, the dental technician found a large number of pores within the boundaries of the denture bed. What are the tactics of the technician and the dentist? Specify measures to prevent such errors.

4. An orthopaedic dentist examined the working models with wax bases and occlusal rollers received from the dental laboratory before determining the central jaw ratio. He found: loose adhesion of the upper and lower bases to the model, lack of reinforcing wire, abrupt transition of the bases to

the occlusal rollers, width of the rollers in the frontal area 0.5 cm, in the lateral area - 1.0 cm. What mistakes have been made by the dental technician, can the central ratio of the jaws be determined on the made rollers?

5. After fitting the wax base on the maxilla, the edge of the bite roll protrudes 4 mm from under the patient's upper lip, the prosthetic plane in the frontal area is parallel to the pupillary line, in the lateral area it is parallel to the line connecting the cochlea of the ear and the corner of the mouth, in profile the upper lip protrudes significantly forward. What mistakes were made by the doctor when fitting the roll, methods of their elimination.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 6

Subject: Laws of articulation. Construction of dental rows in complete tooth absence

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students laws of articulation, features in the fabrication of complete removable plate dentures and methods for designing dental arches in complete adentia.

OBJECTIVES OF THE LESSON:

1. Reinforce knowledge of the laws of articulation.
2. Learn to determine the central relationship of the jaws in complete edentulism.
3. Master the principles of designing dental arches in complete edentulism.
4. Lern the techniques for placing artificial teeth when fabricating complete removable dentures.
5. Study the peculiarities of tooth placement in prognathic and retrognathic relationships of edentulous alveolar ridges.

Location of the lesson: Clinical base.

Practical skills to be developed during the lesson:

Determination and fixation of central jaw relation by anatomic-physiological method, application of landmarks Form of control for the practical session: Interview, electronic tests, solving situational tasks.

Location for performing practical skills: At the patient's dental chair.

Criteria for assessing practical skills: According to the evaluation sheet (checklist) for monitoring practical skills in the discipline, scored from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

For full comprehension of the topic, students need to review:

- From anatomy: anatomical structure of teeth, dental arches, and jaws;
- From histology: structure of the oral mucosa;
- From general dentistry: new technologies and modern materials used in making removable dentures.

CONTROL QUESTIONS FROM RELATED DISCIPLINES

1.Articulation, occlusion, bite.
2. Articulators and occluders, device, principles of operation.
3. Artificial teeth, types, rules for selecting artificial teeth.
4. Features of the anatomical structure of edentulous upper and lower jaws.

CONTROL QUESTIONS:

1. The laws of articulation by Gysi-Hanau. General principles for creating a balanced occlusion.
2. Types of artificial teeth, comparative characteristics. Rules for selecting artificial anterior and posterior teeth in complete removable prosthetics.
3. Occlusal schemes, advantages, indications for use.
4. Methods for setting teeth. Placement of artificial teeth according to anatomical landmarks.
5. Placement of teeth using glass (Vasiliev's method). Mounting models in the articulator and establishing the horizontal plane (glass).
6. Features of tooth placement in the case of prognathic and retrognathic relationships of edentulous alveolar ridges.

Complete removable dentures require the recreation of an occlusion that will maintain their

stability and prevent the displacement of the denture base during functional and non-functional loads.

The eccentric anterior guiding function, which ensures the separation of molars in natural occlusion (the Christensen phenomenon), will cause the complete removable denture base to tilt. A balanced occlusion is necessary for complete removable dentures.

A balanced occlusion is one where there are simultaneous contacts of the occlusal surfaces of all or several teeth on both sides, regardless of the position of the lower jaw. Currently, the concept of bilateral balanced occlusion is relevant only in complete removable prosthetics. It is essential to center the application of occlusal loads on the supporting tissues under the denture in both buccolingual and anteroposterior directions.

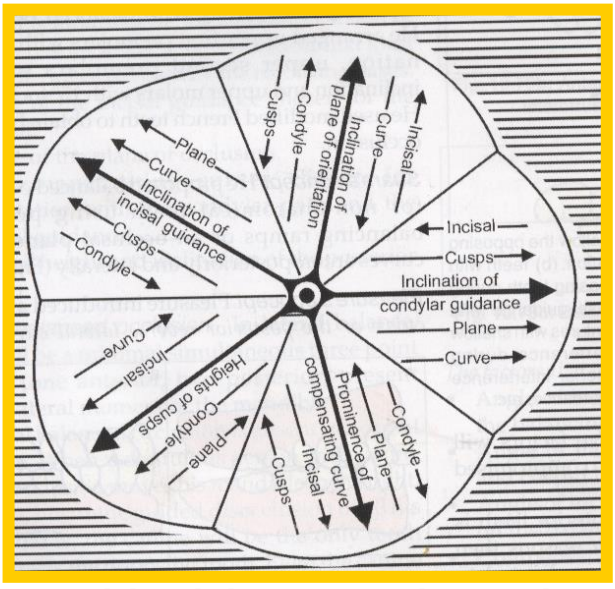
LAWS OF THE ARTICULATION THEORY OF GYSI-HANAU

The concept of balanced occlusion was first proposed by Gysi in 1914; later, in 1926, engineer R. Hanau identified nine factors that determine the articulation of artificial teeth to create a fully balanced occlusion.

Subsequently, all these factors formed the basis of the laws of the Gysi-Hanau articulation theory. However, among the above factors, only five are considered most significant, referred to in the literature as Hanau's quintet. These include:

1. Angle of the sagittal condylar path (Condylar guidance).
2. Angle of the sagittal incisal path (Incisal guidance).
3. Orientation of the occlusal plane (Plane of occlusion).
4. Expression of Spee's compensation curve (Compensation curve of Spee).
5. Height of the cusps of molars (Heights of cusps).

The only factor that cannot be changed and is determined by the structure of the patient's temporomandibular joint is the angle of the condylar path. All other factors, according to R. Hanau, can be modified, and to ensure a balanced occlusion of artificial teeth in complete removable dentures, the five variables known as "Hanau's quintet" must harmoniously combine with each other, as reflected in the diagram. The direction of the arrows indicates how each of the remaining four factors should change (decrease or increase) when one factor, indicated by the central arrow, is increased.



In addition to the scheme proposed directly by R. Ganau, the interrelationship of these 5 factors aimed at creating a balanced occlusion is reflected in the so-called "Theilman's formula."

$$\frac{[\text{Joint path angle}] \times [\text{Incisal path angle}]}{[\text{Occlusal plane}] \times [\text{Spee's curve}] \times [\text{Height of the cusps of molar teeth}]} = \text{Balanced occlusion}$$

PRINCIPAL DIFFERENCES BETWEEN NATURAL AND ARTIFICIAL DENTAL ARCHES

Natural Occlusion	Artificial Occlusion
1. Relies on the roots of teeth, which are firmly anchored in the bone tissue. 2. Teeth move independently of each other in the bony sockets. 3. Occlusal disorders may not manifest for years. 4. Occlusal load is transmitted only to specific teeth. 5. Teeth tolerate non-vertical forces much better. 6. Chewing primarily occurs in the area of the second molar. 7. Balanced occlusion is not the norm and can be considered a risk factor. 8. Proprioceptive sensitivity allows for control of chewing..	1. Relies on the artificial base of the prosthesis, which is located on the movable mucous membrane of the oral cavity. 2. The prosthesis moves as a whole under any load. 3. Occlusal disorders most often immediately cause displacement of the prosthesis or pain. 4. Chewing forces act on the entire prosthesis. 5. Non-vertical loads are usually perceived worse. 6. Chewing primarily concentrates in the area of the second premolar; chewing on the 7th teeth causes displacement of the prosthesis. 7. Balanced occlusion is the most optimal concept. 8. Lack of proprioceptive sensitivity worsens control of chewing.

COMPARATIVE CHARACTERISTICS OF ARTIFICIAL TEETH DEPENDING ON MATERIAL

Plastic (Polymeric)	Ceramic
• More susceptible to mechanical wear (abrasion); • There is a tendency for a decrease in the vertical component of occlusion over time; • No sound during occlusal contacts; • Occlusal surfaces are subject to wear (which can cause changes in compensatory curves); • Easily adjusted and corrected.	• More durable; • Chemically bonds with the base plastic of the prosthesis; • Less susceptible to abrasion; • Such a tendency is absent; • A clacking sound may be observed during occlusal contacts; • The relief of the occlusal surface does not change; • Difficult to adjust and correct (grinding disrupts the glazed surface); • More brittle; • Mechanical bonding with the base.

A complete set (28 teeth) consists of 4 plates: upper anterior teeth, lower anterior teeth, and molars of the upper and lower jaws (2 plates). The width of the upper anterior teeth (canine to canine) equals the distance between the lines of the canines (the distance between the right and left nasolabial folds) + 6-8 mm. The height of the central incisors corresponds to the distance between the smile line and the occlusal plane. The shape of the teeth depends on the shape of the face. The selection of molars is made according to tables attached to the sets, using the anterior teeth of the corresponding size as a reference.

Depending on the expression of the cusp slopes, artificial molars can be conditionally divided into 3 groups:

1. Anatomical (cusp slope angle 30-40°).
2. Semi-anatomical (slope angle - less than 30°, most often 22°).
3. Non-anatomical (zero slope angle).

OCCLUSAL SCHEMES

1. Bilateral balanced occlusion

a. Anatomical (teeth with cusps at 30-40°)

b. Semi-anatomical (teeth with cusps less than 30°)

2. Linguized (linear)

3. Flat

a. Balanced, with recreation of compensatory curves

b. Unbalanced (neutrocentric)

BILATERAL BALANCED OCCLUSION (ANATOMICAL AND SEMI-ANATOMICAL)

Advantages:

• Balanced

• Good aesthetics (anatomical)

• High chewing efficiency, even after moderate wear of the teeth

Disadvantages:

• Increased lateral load on the alveolar ridge

• Complexity in manufacturing

• Need for frequent remounts to maintain stable occlusion

Indications for use:

• Well-defined alveolar ridges (minimal atrophy)

• Good neuromuscular coordination

• The antagonist of the prosthesis is a natural dentition

• Previous prosthesis with anatomical teeth

LINGUIZED (LINEAR) OCCLUSION

Only the palatal cusps of the upper premolars and molars contact the fossae of the lower corresponding teeth based on the "pestle and mortar" principle, thus occlusal contacts are shifted orally.

Advantages:

• Good aesthetics

• Balanced

• Even pressure on the alveolar ridge

• Minimal lateral loads

• Provides good comminution of the food bolus

Indications for use:

• "Mobile ridge" of the prosthetic bed

• Weakness of masticatory muscles

• Previous prosthesis with linguized occlusion

FLAT OCCLUSION

Characteristics of flat occlusion:

• No fissure-cusp contacts

• No vertical overlap

• Horizontal overlap (sagittal gap) is 1.5-2 mm

• In centric occlusion, there is no contact between the anterior teeth; this is achieved by protruding the mandible

Advantages:

• Minimization of lateral load effects

• Improved stabilization of the prosthesis

• Simple tooth placement technique

• Free movements of the mandible

Disadvantages:

• Low chewing efficiency

• Unnatural shape of artificial teeth

• Most often unbalanced occlusion, which worsens prosthesis stabilization

Indications for use:

• High degree of atrophy of alveolar ridges
• Insufficient neuromuscular control over the prosthesis
• Jaw relationships according to Angle's Class II and III (skeletal forms), crossbite
• Inability to determine a consistently reproducible central jaw relationship
• Significant discrepancy between the dental arches of the upper and lower jaws

PLACEMENT OF ARTIFICIAL TEETH "ON GLASS," M.E. Vasiliev's Method:

The essence of this method lies in replacing the prosthetic plane of the occlusal rim with a glass surface secured on the model of the lower jaw.

Indications for the use of this tooth placement method include:

• Jaw relationship according to Class I according to Angle (orthognathic type);
• Minor degree of atrophy of the alveolar ridges;
• Favorable interjaw relationships;
• Presence of a stable, easily reproducible central jaw relationship;
• Predominance of vertical movements of the lower jaw.

Sequence of Tooth Placement:

1/1 – Place symmetrically along the midline so that the incisal edges touch the glass.

2/2 – Slightly deviated from the midline at the cervical area and do not touch the glass by 0.5 mm with their incisal edges.

3/3 – Contact the glass with their cusps and form pivot points of the dental arch; the anterior part of the canine facet should be a continuation of the arch of the anterior teeth, while the posterior should direct the arch in the area of the posterior teeth.

4/4 – Set so that it touches the glass only with the buccal cusp, while the palatal cusp does not reach the glass by 1 mm.

5/5 – Touches the glass with both cusps.

6/6 – Touches the glass only with the mesio-palatal cusp. The mesio-buccal cusp does not reach the glass by 0.5 mm, the disto-palatal by 1 mm, and the disto-buccal by 1.5 mm.

7/7 – Does not touch the glass with its cusps and continues the line of the first molar.

After completing the placement of the upper group of teeth, proceed to install the lower ones, starting with the second premolars, as they are easily placed between the first and second upper premolars. Then, place the molars on one side, then on the other, and finally, install the anterior group of teeth. In this process, multiple contacts of chewing surfaces are achieved in the lateral sections of the dental arch.

SITUATIONAL TASKS

1. Upon checking the design of the dentures, it was noted that the line between the central incisors of the upper and lower dental arches is not in one plane. Indicate the error made by the dental technician or doctor.

2. A 74-year-old patient. Three days ago, a complete removable denture was placed on the upper jaw. When biting food, the denture shifts. Name possible causes of this deficiency and methods for its correction.

3. Upon checking complete removable dentures with anatomical chewing artificial teeth in both upper and lower jaws, no sagittal or transverse occlusal curves are noted. What error was made during tooth placement?

4. During an examination, a mobile alveolar ridge was detected in the lateral sections of the

lower jaw. Which occlusal scheme is preferable for placing artificial teeth?

5. When placing artificial teeth in a complete denture, a dental technician used Vasiliev's method. In this case, all teeth in both upper and lower jaws were placed strictly along the ridge of the alveolar process. What error was made by the dental technician? Method of correction.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 7

Subject: Checking the construction of complete removable plate dentures. Errors in determining central jaw relation

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students checking the construction of complete removable plate dentures, to teach students correct errors in determining central jaw relation

OBJECTIVES OF THE LESSON:

1. Consolidate knowledge about the requirements for wax reproduction of complete removable plate dentures.
2. Acquire practical skills in checking the accuracy of wax construction for complete removable plate dentures on a working model.
3. Study the stages of checking the design of complete removable plate dentures in the oral cavity.
4. Acquire practical skills in checking the wax construction of complete dentures in a patient's oral cavity.
5. Learn to identify, analyze, and correct medical and technical errors when checking the design of complete removable plate dentures.

Location of the lesson: Clinical base.

Practical skills to be developed during the lesson:

Checking the construction of complete removable plate dentures

Form of control for the practical session: Interview, electronic tests, solving situational tasks.

Location for performing practical skills: At the patient's dental chair.

Criteria for assessing practical skills: According to the evaluation sheet (checklist) for monitoring practical skills in the discipline, scored from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

For full comprehension of the topic, students need to review:

- From anatomy: anatomical structure of teeth, dental arches, and jaws;
- From histology: structure of the oral mucosa;
- From general dentistry: new technologies and modern materials used in making removable dentures.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. The concept of articulation and occlusion.
2. Types of occlusion. Signs of central occlusion.
3. Checking the design of partial removable plate dentures.
4. Methods for determining the height of the lower third of the face and their characteristics.
5. Devices that reproduce the movements of the lower jaw.

CONTROL QUESTIONS:

1. Occlusion, types of occlusion. Signs of central occlusion in an orthognathic bite.
2. Methodology and sequence for checking the wax design of dentures.
3. Requirements for the placement of artificial teeth.
4. Clinical signs and tactics of the doctor when there is an increase or decrease in the height of the lower third of the face during the determination of the central jaw relationship.
5. Clinical signs and tactics of the doctor in case of errors related to the displacement of the lower jaw in sagittal and horizontal planes when fixing the central jaw relationship.

6. Errors caused by shifting, deformation, and detachment of bases from the prosthetic bed when determining the central jaw relationship.

Checking the design of complete removable dentures is an important and responsible clinical stage in their fabrication, as it involves evaluating the results of all previous clinical and laboratory stages. All necessary corrections and changes to the design of the dentures should be made at this moment. After completing the laboratory stages for manufacturing complete removable dentures, there is no possibility to make significant changes to the design, whereas at the design checking stage, any necessary adjustments can be easily made.

CHECKING THE DESIGN OF THE DENTURE OUTSIDE THE ORAL CAVITY (ON A MODEL):

- Positioning of models in the articulator (occluder);
- Quality of working models;
- Marking anatomical landmarks on working models;
- Quality of engraving and isolation of relevant anatomical areas;
- Compliance with the boundaries of the bases;
- Absence of balancing of the prosthetic base;
- Shape of the dental arches;
- Compliance of tooth placement with anatomical landmarks;
- Occlusal relationships between upper and lower dentures (according to the chosen occlusal scheme);
- Expression of compensatory curves of Spee and Wilson;
- Presence and topography of reinforcing elements;
- Presence of individual characteristics of the prosthetic base.

CHECKING THE DESIGN OF THE DENTURE IN THE ORAL CAVITY

Sequence of Actions	***Material Provision***	***Self-Control Criteria***
1. External Examination	Visually	The appearance of the patient should be restored, i.e., any lip and cheek indentation should be eliminated. Moderately pronounced nasolabial and chin folds should be present. The corners of the mouth should not be drooping
2.Fit of the Denture Base to the Prosthetic Bed	Visually	The edge of the base at the periphery should fit tightly against the mucous membrane of the prosthetic bed. There should be no balancing of the base
3. Boundaries of the Denture Base	Visually	The boundaries of the upper jaw denture on the vestibular side should follow the mucogingival junction, bypassing the frenulum of the upper lip and movable buccal bands, completely covering the maxillary tuberosities. The posterior border of the denture should overlap the retromolar pads by 1-2 mm (Line A).
		The boundaries of the lower jaw denture on the vestibular side should follow the mucogingival junction, bypassing the frenulum of the lower lip and movable buccal bands, completely covering the mucous tubercles in the retromolar triangles in distal areas. On the lingual surface, the boundaries in distal areas should follow the internal oblique line, while in the frontal section, they should follow the boundary between the mucosa of the alveolar ridge and the mucosa of the floor of the oral cavity.

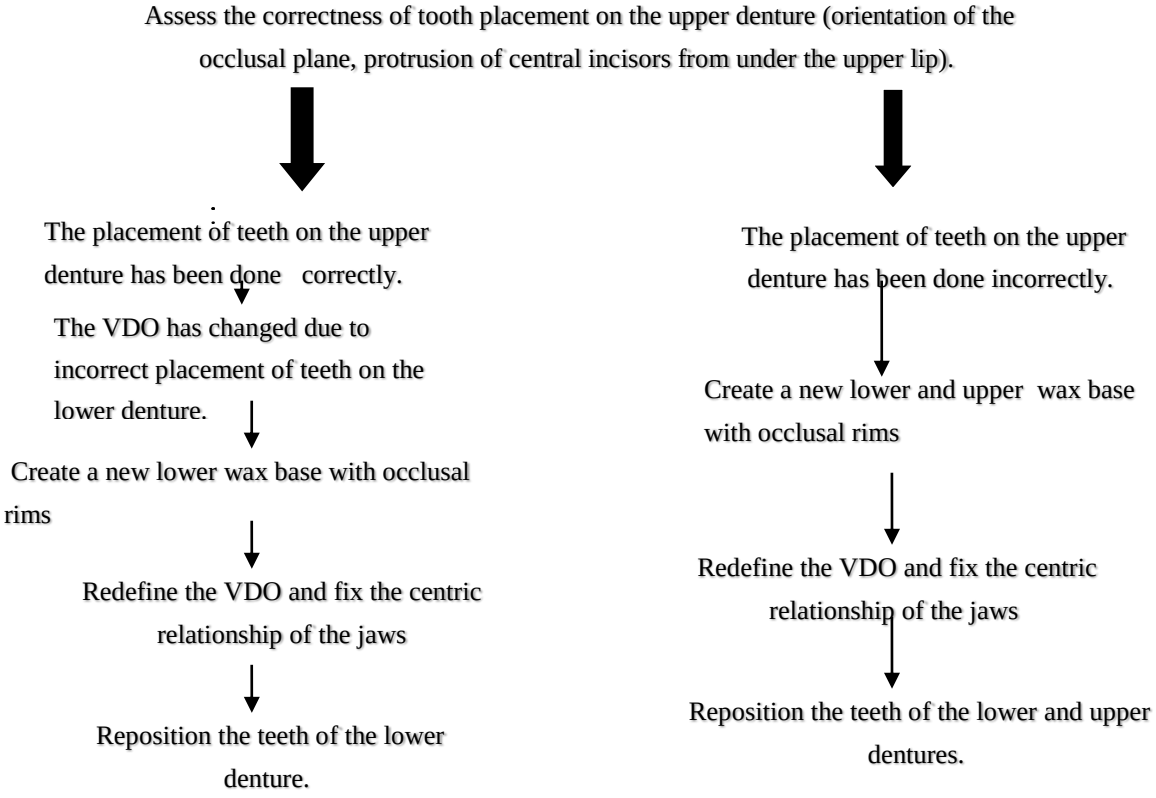
4. Orientation of the Occlusal Plane	Visually	The occlusal plane should be parallel to the Frankfurt horizontal plane (interpupillary line) in the frontal section and to Camper's horizontal plane (trago-auricular line) in lateral sections. Compensatory curves of Spee (sagittal) and Wilson (transverse) should be formed.
5. Relationship of Dental Arches in Central Occlusion and All Eccentric Positions of the Lower Jaw	Visually	In Central Occlusion (CO): The midline of the face coincides with a line drawn between the central incisors; each tooth has 2 antagonists, except for teeth 17, 27, 31, and 41. There should be a tight fissure-cusp contact in lateral sections. In eccentric positions of the lower jaw: maintenance of multiple contacts (balanced occlusion).
6. Closure Density of Dental Arches	Spatula	The closure should be tight when introducing a spatula into the lateral area.
7. Check Height of Lower Face Section		The occlusal height should be 2-4 mm less than the height of physiological rest.
8. Check Aesthetic Guidelines for Tooth Placement: Shape, Color, and Size of Artificial Teeth	Visually	Artificial teeth should match in shape, size (height and width of upper anterior teeth), and color. The upper anterior teeth should protrude 1-1.5 mm from under the edge of the upper lip when speaking; when smiling, the artificial gums should not be visible.

ERRORS IN DETERMINING THE CENTRAL RELATIONSHIP OF THE JAWS:

1. Errors in Finding and Fixing the Vertical Component of Occlusion (Height of Lower Face Section)

Error in Determining Height of Lower Face Section	Clinical Manifestation at Design Check Stage
1. Increase in Interalveolar Height	"Surprised" facial expression, increased lower third of face, tension in facial muscles, tense lips, smooth nasolabial and chin folds, tooth clenching during phonetic tests, difference between occlusal height and physiological rest height is less than 2-4 mm.
2. Decrease in Interalveolar Height	"Aging" facial expression, drooping corners of mouth and nostrils, pronounced nasolabial and chin folds, sensation of insufficient space for the tongue, difference between occlusal height and physiological rest height is more than 2-4 mm.

ALGORITHM FOR ELIMINATING ERRORS RELATED TO INCORRECT DETERMINATION OF VERTICAL DIMENSION OF OCCLUSION (VDO)



2. Errors in Fixing the Centric Relationship of the Jaws Caused by Displacement of the Lower Jaw Relative to the Upper Jaw

Error in Fixing Centric Relationship	Clinical Manifestation at Design Check Stage
1. Forward displacement of the lower jaw (fixation of lower jaw protrusion)	• Prognathic relationship of artificial teeth • Sagittal gap; • Cusp interdigitation of lateral teeth; • Increased height of the lower third of the face to the height of the cusps.
2. Lateral displacement of the lower jaw (fixation of right or left lateral occlusion)	• Lack of contact between lateral teeth on the side of displacement; • Displacement of the center of the lower dental arch toward the opposite side of jaw displacement • Cusp contact of antagonist teeth on the opposite side; • Increased height of the lower third of the face to the height of the cusps.

GENERAL DIAGNOSTIC CRITERION: *AT THE STAGE OF DESIGN CHECK, REPETITION OF THE ERROR MADE IN DETERMINING AND FIXING THE CENTRIC RELATIONSHIP OF THE JAWS LEADS TO NORMALIZATION OF OCCLUSION.*

ALGORITHM FOR ELIMINATING ERRORS RELATED TO THE DISPLACEMENT OF THE LOWER JAW RELATIVE TO THE UPPER JAW

Regardless of the nature of the displacement of the lower jaw (provided that the tooth placement on the upper denture is correct):

:

Remove the artificial teeth from the lower base and create a new occlusal rim or fabricate a new lower wax base with an occlusal rim.

Redefine and fix the centric relationship of the jaws.

3. Reposition the teeth of the lower denture.

3. Errors Caused by Displacement, Deformation, and Departure of Bases from the Denture Bed When Determining the Centric Relationship of the Jaws.

Departure of Bases from the Denture Bed	**Displacement of Bases**	**Deformation of Bases**
Clinical Manifestations at the Design Check Stage		
Lack of tight, even contact between antagonist teeth in various sections of the dental arch	• When the lower base is displaced forward – prognathic, backward – progenic relationship of dental arches; • When the upper template is displaced forward – progenic, backward – prognathic relationship of dental arches; • Cusp interdigitation of lateral teeth; • Increased height of the lower third of the face to the height of the cusps.	Lack of tight, even contact between antagonist teeth in various sections of the dental arch (cusp contact in lateral sections, occlusion disturbances in the frontal section)
Main Preconditions for Error Occurrence		
• Lack of tight, even contact between upper and lower occlusal rims; • Mismatch between the base and denture bed.	• Unfavorable anatomical conditions in the oral cavity (atrophy of the alveolar processes II-III degree); • Poor fit of wax bases to the model and denture bed.	• Lack of reinforcement for wax bases • Excessive heating of bases with occlusal rims.

Algorithm for Error Correction		
1. Fixation of occlusion in the oral cavity 2. Recasting and setting models in the articulator 3. Repositioning of teeth	1. Fabrication of new bases with occlusal rims 2. Determination of the centric relationship of the jaws 3. Repositioning of teeth	1. Fabrication of new bases with occlusal rims 2. Determination of the centric relationship of the jaws 3. Repositioning of teeth

SITUATIONAL TASKS

1. During the check of the wax design of dentures upon external examination, patient M. exhibits a smoothing of nasolabial folds and chin folds, a "click" during tooth closure. In a state of physiological rest, there is no gap between the anterior teeth. With a partially open mouth, the anterior group of upper jaw teeth protrudes from under the upper lip by 3-4 mm.

What error has occurred? At what stage of denture fabrication? Methodology for error correction.

2. In patient V., during the check of denture designs in the oral cavity, a prognathic relationship of dental arches is established, predominantly cusp interdigitation of lateral teeth, a sagittal gap between anterior teeth, and an increased bite height to the height of lateral tooth cusps.

When was the error made and what does it consist of? Methodology for correction.

3. What are the signs of reduced height of the lower third of the face during the check of the wax composition of dentures, and what is the physician's tactic in this case?

4. In a patient at the stage of checking denture designs, cusp interdigitation on the right side, increased occlusal height, and displacement of the center of the lower dental arch to the right are noted, with a gap between lateral teeth on the left.

At what stage of denture fabrication was the error made and what does it consist of? Methodology for correction.

5. In a patient during the check of denture designs in the oral cavity, it is found that there is only contact in the frontal section and a gap between lateral teeth. The lower third of the face is not increased. When checking the density of contact between lateral teeth with a spatula, a gap appears.

What error has occurred? Physician's tactic for its correction.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

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5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 8

Subject: Fitting and application of plate dentures in complete adentia. Rules for use and correction of removable prostheses

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: Teach students to evaluate the quality of complete removable denture prostheses; instruct students on the methodology for fitting and placing a finished complete removable denture prosthesis, and develop skills for familiarizing patients with recommendations for using and caring for the prostheses.

OBJECTIVES OF THE LESSON:

1. Reinforce knowledge of the requirements for manufacturing complete removable denture prostheses.
2. Acquire practical skills in the rules for using complete removable denture prostheses and study the complications that may arise during their use.
3. Familiarize with the theory of adaptation to removable prostheses.
4. Learn the rules and means of hygienic care for removable denture prostheses.
5. Teach students to provide practical recommendations to patients on the rules for operating and hygienic care for complete removable denture prostheses.

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Fitting and placing complete removable denture prostheses on the upper and lower jaws.

Form of assessment for practical skills: Interview; electronic tests; solving situational tasks.

Location for performing practical skills: At the patient's dental chair.

Criteria for assessing practical skills: According to the assessment sheet (checklist) for monitoring practical skills in the subject, scored from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

For full understanding of the topic, students need to review:

• From anatomy: anatomical structure of teeth, dental arches, and jaws;

• From general dentistry: technological processes, structural and auxiliary materials used in the fabrication of complete removable denture prostheses;

• From normal physiology: I.P. Pavlov's theory of cortical inhibition to understand complex neuro-reflex processes occurring in the patient's body after the prosthesis is placed.

CONTROL QUESTIONS FROM RELATED DISCIPLINES

1. Anatomical structure of the upper and lower jaws.
2. Physico-chemical properties of plastics used in dental prosthetics.
3. Polymerization regime of base plastics.
4. Types of porosity in plastics. Changes occurring in plastics due to violations of polymerization regimes.
5. Conditional and unconditional reflexes.

CONTROL QUESTIONS:

1. Evaluation of the quality of finished complete removable denture prostheses.
2. Sequence and methodology for fitting and placing complete removable denture prostheses.
3. Possible difficulties in fitting and placing complete removable denture prostheses and ways to resolve them.
4. Patient adaptation to dental prostheses. Phases of adaptation to complete removable

denture prostheses.

5. Recommendations for patients on the rules for using and hygienic care for complete removable denture prostheses.

6. Relining complete removable denture prostheses. Techniques, indications, and contraindications.

ALGORITHM OF ACTIONS FOR FITTING AND PLACING COMPLETE REMOVABLE DENTURE PROSTHESES

Sequence of Actions	***Material Provision***	***Self-Control Criteria***
I. Evaluation of the prosthesis outside the oral cavity.		
1. Plastic base	Visually	The thickness of the base is 2-2.5 mm, with high-quality grinding and polishing of the outer surface. The inner surface should have a well-defined microrelief of the mucous membrane, with no pores or sharp edges, and a uniform color of the plastic.
2. Artificial teeth	Visually	The artificial teeth must match in shape, size, and color; they should be positioned correctly in the dental arch.
II. Medicinal treatment of the prosthesis with a 3% hydrogen peroxide solution, alcohol, etc.		
III. Fitting and application of the prosthesis		
1. Application of the prosthesis to the upper jaw	Visually	The borders of the prosthesis on the vestibular side should follow the transition fold, bypassing the frenum of the upper lip and movable buccal frena, completely covering the maxillary tuberosities. The posterior border of the prosthesis should overlap the blind pits by 1-2 mm (line A). The borders of the prosthesis are clarified using functional tests. Fixation and stabilization are checked by occluding the teeth and shifting the lower jaw in different directions. The base of the prosthesis should fit snugly against the mucous membrane without balancing. Balancing is determined by alternating pressure on the premolars on each side. Correct orientation of the occlusal plane in the lateral and frontal sections. The central incisors should protrude 1-2 mm from under the edge of the upper lip, and the artificial gums should not be visible when smiling.
2. Application of the prosthesis to the lower jaw	Visually	The borders of the prosthesis on the vestibular side should follow the transition fold, bypassing the frenum of the lower lip and movable buccal frena, completely covering the mucous tubercles in the retromolar triangles in distal areas. From the lingual surface, the borders in distal areas should follow the internal oblique line; in the frontal section – along the boundary of transition from the mucosa of the alveolar ridge to that of the floor of the mouth. The borders of the prosthesis are clarified using functional tests. Fixation and stabilization of the prosthesis are checked during various movements of the lower jaw.

3. Checking articulatory relationships	Visually, articulating paper	There should be a tight cutting-cuspid contact between the upper and lower jaw teeth in central occlusion, with an overlap of frontal teeth by 1-2 mm; blocking contacts during lateral movements of the lower jaw are eliminated using grinding wheels and articulating paper.
4. Checking accuracy in determining central jaw relationships	Visually	The height of occlusion should be 2-4 mm less than the height of the lower third of the face in a state of physiological rest; during a conversational test (asking to pronounce several words), the distance between dental arches should reach 5-6 mm.
5. Control over pronunciation of sounds	Visually	Correct positioning of teeth in the frontal section is determined by pronouncing sounds "t, d, n, s, sh." When pronouncing sounds “s” and “z,” the distance between cutting edges of upper and lower teeth should be 1-1.5 mm. Clear pronunciation of sound "i" determines correct positioning of frontal teeth in the lower jaw. Clear diction of sounds "g, k, h" determines correctness of prosthesis base construction in distal areas.
6. Educating patients on using prostheses	Visually	Rinse mouth with water and clean prostheses with a brush after each meal. At night, remove prostheses and store them in a container with water; antiseptic soluble tablets can be added or kept dry after thorough cleaning with a toothbrush. For the first day, it is recommended not to remove prostheses at night. If pain occurs, remove prostheses and reapply them 2-3 hours before visiting a doctor.
7. Doctor's tactics after applying the prosthesis	Visually	Patients are scheduled for daily appointments during the first days for examination and adjustment, and then as needed. Observation continues until the doctor is convinced that the patient has adapted to the prosthesis, uses it constantly, and that the tissues of the prosthetic bed are in good condition.

METHOD FOR CORRECTING COMPLETE REMOVABLE PROSTHESES

Patients are scheduled for correction the day after the prostheses are placed. They are advised that the prostheses should be inserted into the oral cavity 2-3 hours before their appointment with the doctor. After determining complaints and examining the mucous membrane, areas where trauma occurs (hyperemia, damage to the mucous membrane) are identified. The area of mucosal trauma is marked with a special marker, dentin powder, or plaster, and the dried prosthesis is then applied. The prosthesis is then removed from the oral cavity, and part of the plastic is milled away with a metal bur where there are imprints from the marker, plaster, or dentin. Care must be taken when removing plastic in the area of the transitional fold and the distal (posterior) border of the palate. Excessive removal of plastic in these areas can compromise the retention of the prostheses.

ADAPTATION TO COMPLETE REMOVABLE PROSTHESES

The term "ADAPTATION" (from Latin adaptatio — adjustment) in orthopedic dentistry refers to the process of a patient getting used to using prostheses. Dental prostheses are perceived by the organs and tissues of the oral cavity as foreign bodies, acting as irritants to nerve endings.

According to V.Yu. Kurlandsky, the process of adaptation to prostheses can be considered a manifestation of cortical inhibition of irritation reactions, occurring within a period of 10 to 33 days. In cases of repeated prosthetic treatment, the time for full adaptation to new prostheses is significantly reduced (to 3-5 days).

V.Yu. Kurlandsky distinguishes three phases of adaptation to dental prostheses:

1. Phase of Irritation, observed on the day of prosthesis placement:

• Characterized by fixed attention of the patient to the structural features of the prosthesis;

• Increased salivation;
• Sharp changes in diction and phonation, lisping;
• Loss or significant decrease in chewing efficiency;
• Possible onset of nausea;
• Hypertonicity of masticatory muscles;
• Tension in the perioral tissues (lips, cheeks, etc.).

2. Phase of Partial Inhibition, occurring from day 1 to day 5:

• Normalization of salivation and disappearance of the gag reflex;
• Restoration of diction and phonation;
• Gradual increase in chewing efficiency;
• Disappearance of tension in perioral tissues.

3. Phase of Complete Inhibition, occurring from day 5 to day 33:

• The prosthesis is no longer perceived as a foreign body by the patient;
• The patient feels discomfort without the prosthesis;
• Complete adaptation of the neuromuscular state is observed;
• Restoration of chewing efficiency reaches its maximum.

RECOMMENDATIONS TO FACILITATE CHEWING ADAPTATION

In the initial stages of adaptation to prostheses, patients should be advised to:

• Consume relatively soft, non-sticky foods;
• Eat slowly;
• Eat food cut into relatively small pieces;
• Try to chew food with both sides' molars simultaneously, with chewing being more prevalent than biting.

RECOMMENDATIONS TO FACILITATE PHONETIC ADAPTATION

In the initial stages of adaptation to prostheses, patients should be advised to:

• Try to talk more;
• Slowly count aloud to 10, focusing on diction;
• Read text slowly, trying to emphasize "difficult" sounds and sound combinations, repeating them until pronunciation becomes "clearer."

REBASE OF DENTURES

Rebasing – is a method of recreating the internal surface of a complete removable denture to conform to the contours of the mucosal tissues of the denture base.

INDICATIONS for performing denture rebasing:

• Loss of retention and stabilization of the denture;
• Systematic accumulation of food debris under the denture;
• Partial fractures of the denture.

Necessary conditions for successful rebasing:

• Absence of lesions on the mucous membrane;
• Acceptable relationships between opposing teeth in centric occlusion and lateral occlusions;
• Correctly determined height of physiological rest and vertical component of occlusion;
• Compatibility of the peripheral borders of the denture with the topography of the border area.

MATERIALS FOR REBASING COMPLETE REMOVABLE DENTURES

Temporary:

• Silicone materials for hot polymerization (long-term – more than 30 days);
• Silicone materials for cold polymerization (long-term – more than 30 days);
• Plasticized acrylates (short-term – less than 30 days).

Permanent:

• Acrylic plastics for cold polymerization;
• Acrylic plastics for hot polymerization.

Soft (elastic):

• Silicone materials for cold polymerization;
• Silicone materials for hot polymerization.

Hard:

• Acrylic plastics for hot polymerization;
• Acrylic plastics for cold polymerization.

Therapeutic effect on the oral mucosa:

• Plasticized acrylates (tissue conditioners).

For clinical rebasing:

• Acrylic plastics for cold polymerization;
• Silicone materials for cold polymerization;
• Plasticized acrylates.

For laboratory rebasing:

• Acrylic plastics for hot polymerization;
• Silicone materials for hot polymerization;
• Plasticized acrylates.

COMPARATIVE CHARACTERISTICS OF ACRYLIC PLASTICS FOR DENTURE REBASING

LABORATORY REBASING	CLINICAL REBASING
▪ Hot polymerization plastics	▪ Self-polymerizing plastics
▪ More complete polymerization	▪ Less complete polymerization
▪ High molecular compound	▪ Low molecular compound
▪ Residual monomer 0.2-0.5	▪ Residual monomer 3-5%
▪ Water absorption 0.25%|	▪ Water absorption 3%
▪ Less porous|	▪ More porous
▪ Solubility 0.05 mg/cm²	▪ Solubility 0.2 mg/cm²
▪ Less prone to deformation	▪ More prone to deformation
▪ More durable	▪ Less durable
▪ Better color stability|	▪ Poorer color stability
▪ Less irritating to the mucosa of the denture base	▪ More irritating to the mucosa of the denture base

CLINICAL REBASING OF COMPLETE REMOVABLE DENTURES USING SOFT MATERIALS

Indications for the use of soft lining materials:

❖ Presence of areas in the denture bed covered with thinned mucosa (exostoses, sharp edges of sockets);
❖ Dry, non-compliant mucosa of the denture bed;
❖ Sharp and/or uneven atrophy of the alveolar ridge;
❖ Presence of chronic mucosal diseases;
❖ Intolerance to acrylic plastics (“denture stomatitis”);
❖ Immediate (immediate) prosthetics;

- ❖ Maxillofacial prosthetics and postoperative prosthetics;
- ❖ Presence of undercuts in the alveolar ridge (tubercles of the maxilla, bulbous type of alveolar ridge).

The optimal choice for long-term clinical rebasing using soft liners are materials based on VPS (vinylpolysiloxane, additional type silicone).

The advantages of using VPS-based lining materials include:

- ➢ Fabrication of the soft liner directly during the clinical appointment (one visit);
- ➢ Materials are easy to use and do not require additional equipment;
- ➢ Affordable cost of the material;
- ➢ Availability of a special adhesive that provides a strong bond between the soft liner and the denture base;
- ➢ Materials are compatible with any acrylic-based denture base plastics;
- ➢ Spatially stable;
- ➢ Have good rheological properties;
- ➢ Biocompatible (do not contain methyl methacrylate);
- ➢ Have a neutral taste and odor;
- ➢ Characterized by stable color and do not significantly disrupt the aesthetics of the denture;
- ➢ Resistant to everyday denture care products;
- ➢ Can also be used for laboratory fabrication of elastic liners.

TISSUE CONDITIONERS
(plasticized acrylic plastics)

Chemical structure:

Powder:

• *Polyethylmethacrylate [PEM];*

• *Dye.*

Liquid:

• *Plasticizer - aromatic esters (dibutyl phthalate, phthalyl butyl glycolate);*

• *Alcohol (ethyl/butyl/methyl) up to 30%.*

Tissue conditioners do not contain acrylic monomer. It is important to remember that from 3 to 6000 ppm of plasticizer is released into the oral cavity environment over 14 days (risk of sensitization). The curing process of tissue conditioners is not polymerization but rather a so-called "gel formation," as the alcohol component of the liquid prevents the aggregation of PEM particles into long polymer chains.

Characteristic features: possess good flowability, remain plastic for a relatively long time, and deform in areas of increased pressure. They harden as the alcoholic base evaporates.

Areas of application:

• To eliminate chronic inflammation of the mucosa of the denture bed caused by mechanical or chemical irritants, infections, and other reasons;

• To form the relief of the denture bed when fabricating immediate dentures;

• As a soft lining material for short-term (1-2 weeks) rebasing;

• To obtain delayed functional impressions during rebasing of complete dentures or re-prosthetics with complete removable dentures.

SITUATIONAL TASKS

1. A 60-year-old female patient presented with complaints of inability to chew, pain in the masticatory muscles, and temporomandibular joints. The pain occurs when using complete removable dentures. The dentures were made a month ago. The lower third of the face is enlarged. When smiling, the base of the upper denture is exposed. When opening her mouth, the anterior teeth protrude 4-5 mm beyond the upper lip. Speech is impaired. The complete removable dentures were

made without conducting a clinical stage to check the wax reproduction of the complete removable dentures.

What mistake was made in the fabrication of the complete removable dentures? At what stage of production? How can this mistake be corrected for this patient?

2. During the fitting and placement of complete removable dentures, there is a decrease in the lower third of the face, pronounced nasolabial folds, and the corners of the mouth are downturned. During a conversational trial, the distance between the upper and lower teeth is noted to be 8-9 mm.

What mistake was made during prosthetics? At what stage of production of the dentures? How can this mistake be corrected for this patient?

3. The patient has been using complete removable dentures for 3 days. She complains about poor retention of the upper denture during eating and speaking. Upon examination of the oral cavity, the borders of the denture encompass the alveolar ridges and are located within the transitional fold. Blind pits are clearly visible along the posterior border of the hard palate.

What is the cause of the unsatisfactory retention of the upper denture? How can this error be corrected?

4. During the fitting and placement of the dentures, it was noted that they have a thick base. The lower third of the face is enlarged. In a state of physiological rest, there is no distance between the teeth. The upper teeth protrude 3-4 mm beyond the upper lip, while the lower teeth are 2-3 mm above the red margin of the lower lip. During a conversational trial, a "clacking" sound of teeth is heard.

What mistake was made in the fabrication of the denture? What should the doctor do to correct this mistake?

5. The patient visited the clinic with complaints about unsatisfactory retention of the complete removable denture on the lower jaw. The denture was made 5 years ago. Upon examination of the oral cavity, a distance of 2 mm is found between the vestibular edge of the denture and the transitional fold.

What is the cause of the poor retention of the denture? What is the doctor's approach?

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 9

Subject: Prosthodontic treatment of patients with complete adentia of one jaw. Re-prosthetics in complete adentia

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students methods of correction of complete removable plate dentures. To study the features of prosthetics of patients with complete adentia of one jaw and the features of repeated prosthetics.

OBJECTIVES OF THE LESSON:

1. To study the features of prosthetics in the case of complete absence of teeth on one jaw.
2. Learn about the methods of manufacturing complete removable reinforced dentures and dentures with a metal base.
3. Learn about the technique of manufacturing complete removable dentures with a two-layer base.
4. To acquire practical skills in performing correction of complete removable plate dentures.
5. To become familiar with the technique of duplicating complete removable plate dentures during repeated prosthetics of patients with complete adentia.

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Carrying out correction of a removable denture.

Form of control of practical skills**:** interview; electronic tests; solving situational problems.

The place where the practical skill is performed is at the patient's dental chair.

Practical skill assessment criteria – according to the assessment sheet (checklist) for monitoring practical skills in the academic discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

To fully understand the topic, the student needs to repeat:

-from anatomy: anatomical structure of the dentition, jaws and organs of the oral cavity;

-from general dentistry: modern technologies and modern construction materials in the manufacture of complete removable plate dentures;

-from orthopedic dentistry (fixed prosthetics): principles of transferring chewing load by different types of dental prostheses;

-from surgical dentistry: what is the special surgical preparation of the oral cavity for prosthetics of the PSPP;

-from dermatovenereology: diseases of the mucous membrane of the cavities and mouth.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Anatomical structure of the upper jaw.
2. Anatomical structure of the lower jaw.
3. The structure of the oral mucosa.
4. Basic construction materials for the production of complete removable plate dentures.
5. Auxiliary materials for the production of complete removable plate dentures.

CONTROL QUESTIONS:

1. Features of prosthetics in case of complete absence of teeth on one jaw.
2. Indications and timing of repeated prosthetics in case of complete loss of teeth.
3. Breakdowns of complete removable plate dentures. Doctor's tactics and methods of their elimination.

4. Methodology for manufacturing reinforced complete removable dentures and dentures with a metal base.

5. Method for manufacturing complete removable plate dentures with a two-layer base.

6. Duplication of complete removable dentures during repeated prosthetics of patients with complete edentia. Indications, advantages, methodology of implementation.

PROSTHETICS OF PATIENTS WITH COMPLETE ADENTIA ONE OF THE JAWS

Orthopedic treatment of patients with complete absence of teeth on one of the jaws has some features that are expressed in the power advantage of the antagonist teeth, and are also determined by their condition. When drawing up an orthopedic treatment plan, it is planned to manufacture fixed denture structures first, then removable dentures. Taking into account the power advantage of the antagonist teeth, it is important to align the occlusion curve, using both crown and bridge denture structures and grinding of the tubercles of natural teeth. This will lead to an even distribution of the chewing load on the complete removable denture, normalize the articulation of the lower jaw. Correct planning of the entire complex of measures will contribute to the restoration of the chewing efficiency of the dental system, an increase in the service life of the complete removable denture, since frequent fractures of the base in similar cases require replacement of the denture at an earlier date.

REPAIR OF REMOVABLE PLATE DENTURES

According to L. A. Pashkovskaya (1967), V. P. Grossman (1967), already in the first year of using acrylic plastic prostheses, the frequency of breakages ranges from 10 to 40%.

The reasons for the breakage of removable plate dentures can be divided into five groups:

1) insufficient strength of the base plates;

2) breakdowns associated with errors made by the doctor at certain stages of work;

3) breakdowns associated with errors made by the technician;

4) breakdowns associated with the patient’s careless attitude towards the prosthesis;

5) failures associated with the non-compliance of the prosthetic bed with the prosthesis base as a result of jaw atrophy (if the recommended service life is exceeded).

Plate dentures with a complete absence of teeth on both the upper and lower jaws most often break along the midline. This is facilitated by the weakening of the denture bases due to the deep notch for the frenulum of the lip, as well as the balancing of the upper denture on the torus with insufficient insulation of the latter. Clinical observations show that the area of greatest surface tension is located on the palatal part of the plate denture for the upper jaw, directly behind the central incisors. In addition, breakage can be caused by internal stresses in the denture base, which arise due to a violation of the polymerization mode or rapid cooling of the denture, as well as in the presence of various types of inclusions.

Repair of plastic dentures is performed as follows. The fracture line is lubricated with dichloroethane glue, the parts of the denture are aligned along the fracture line and held for 3-4 minutes. A plaster model and a counter-model are cast on the glued denture. After this, the denture is removed from the model and separated. Along the gluing line, the fracture line is widened with a milling cutter by 1-2 mm in each direction and chamfers are made along the edges. The model and counter-model are lubricated with insulating varnish "Izokol", then the parts of the denture are installed on the model, and the correctness of the installation is checked with a counter-model.

The plastic dough is prepared from self-hardening plastics "Protacryl" or "Redont". The prepared plastic dough (in the "stretching threads" phase) is placed with a slight excess along the fracture line and pressed with a counter model . Polymerization of the plastic is completed in 8-10 minutes, after which the prosthesis is processed.

The above repair method can be used if it is necessary to add artificial teeth to the prosthesis. For this purpose, a cast of the jaw with the prosthesis and a cast of the antagonist teeth are taken. After casting the models, artificial teeth are selected by color and size, then the edges of

the prosthesis are refreshed with a milling cutter, plastic dough is applied and the teeth are packed in it. After 8-10 minutes, the prosthesis is processed.

Repair of plastic dentures can also be done in a laboratory .

In this case, the technician glues the prosthesis and casts the model using the method described above . After widening the fracture line, the resulting gap is filled with melted wax and smoothed out at the level of the prosthesis. Then the model with the prosthesis is plastered in a cuvette and the wax is replaced with plastic using the generally accepted method.

DUPLICATION TECHNIQUE
COMPLETE REMOVABLE PLATE DENTURES

Repeated prosthetics with complete removable plate dentures along with primary ones in the clinic of orthopedic dentistry is one of the urgent problems of modern dentistry. At the same time, this type of prosthetics in many cases turns out to be ineffective or ineffective, although, at first glance, the treatment is carried out with the same designs of prostheses. In such cases, patients continue to use old prostheses and new repeated prosthetics is even more difficult.

The human masticatory apparatus is a complex, polystructural, multilevel system, the specificity of which is not limited to the features of its constituent elements, but is associated, first of all, with the nature of the relationship between them. Removal of all teeth deprives the masticatory system of its most important component, as well as the ability to independently compensate for impaired functions. Therefore, the methodological basis for orthopedic treatment of patients with a complete absence of teeth and the study of the masticatory apparatus should be a systematic approach. Its principles formed the basis for the development of a promising direction for the rehabilitation of this category of patients - the manufacture of complete removable dentures, using the technique of duplicating old dentures.

Indications for the use of this method are:

- elderly patients who have used complete removable dentures on the upper and lower jaws for a long time and were satisfied with them, but now note poor fixation of the dentures or their wear;
- a patient with a history of poor adaptation and problems with the use of removable dentures, if he is shown the production of copies of the most successful of the previous dentures with the introduction of controlled changes to the design;
- previously manufactured immediate dentures, in cases where their replacement is necessary due to bone resorption after tooth extraction;
- production of new prostheses with restoration of the interalveolar height and preservation of the previous shape of the base and size of the teeth;
- manufacturing a new prosthesis in case of frequent breakages of the old one (cracks, fractures of the base);
- the patient's desire to have several absolutely identical prostheses.

The duplication technique consists of the following stages.

Clinical stages : 1) study of previously manufactured dentures in the oral cavity and outside it, direct duplication of previously manufactured dentures, correction of the boundaries of the bases of duplicated dentures, obtaining functional impressions in the position of the central relationship of the jaws and under chewing pressure, 2) checking the placement of teeth, 3) fitting and application of dentures in the oral cavity.

Laboratory stages: 1) casting models and installing them in the articulator, constructing dental arches, 2) final modeling of denture bases, replacing wax with plastic.

The **advantages** of this technique include:

- reduction in the duration of treatment due to the reduction of clinical and laboratory stages of manufacturing complete removable dentures;

- rapid adaptation to complete removable dentures by making a denture similar to the one previously made;
- reduction in the cost of treatment due to the reduction of stages and time of treatment in the orthopedic dentistry clinic.

The method of duplicating complete removable dentures that we propose allows us to minimize the differences in the design of old and new dentures, which allows patients with complete tooth loss to quickly adapt to newly manufactured dentures and use them successfully.

SITUATIONAL TASKS

1. Patient 63 years old, upper dental arch intact, complete loss of teeth on the lower jaw. Examination revealed that the chewing surface of teeth 17, 16, 25, 26, 27 is located 3 mm below the chewing surface of adjacent teeth. Teeth are stable. The teeth on the lower jaw were removed a month ago. Previously, he did not use removable dentures.

What will it consist of? what is the specificity of managing this patient?

2. Patient H., 60 years old. Has been using a denture for over 7 years. Complaints of frequent fractures of the complete removable denture of the upper jaw. Examination of the oral cavity revealed: moderate degree of alveolar process atrophy, maxillary tubercles are not pronounced, the palate is of medium depth with a pronounced torus. The previously manufactured denture of the upper jaw shows traces of multiple repairs. The denture is balanced on the jaw.

Specify the doctor's tactics.

3. Patient Yu., 67 years old. Complaints about poor fixation of the denture on the upper jaw. Has been using the denture for 3 years. Examination of the oral cavity revealed that the denture of the upper jaw balances on the transitional fold of the alveolar process in the area of teeth 16, 15, 14, where remnants of cream for fixing dentures and food residues are visible. There are areas of hyperemia with a violation of the integrity of the epithelial layer.

Specify the cause of this pathology. Your tactics for treating the patient.

4. The patient came to the clinic complaining of a broken prosthesis on the upper jaw. He has been using the prosthesis for more than 5 years and notes poor fixation. During the examination, a fracture of the prosthesis base along the torus line was found.

What is the doctor's tactic?

5. The patient came to the clinic the day after the repair of complete removable dentures with complaints of pain, increasing with chewing, in the area of the alveolar process of the upper jaw on the left. During the examination it was established that there was an area of hyperemic and edematous mucous membrane in the area of the transitional fold at the level of teeth 16, 17.

Specify the diagnosis. What will be the doctor's tactics?

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

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5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 10

Subject: Periodontal diseases, classification, examination methods, differential diagnostics

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To study the etiology, pathogenesis, classification and clinical picture of periodontal diseases. To teach students methods of diagnostics and differential diagnostics of periodontal diseases, deontological rules for the admission of patients of this category, methods for determining the reserve forces and endurance of the periodontium, the technique of filling in and analyzing the odontoparodontogram for periodontal diseases.

OBJECTIVES OF THE LESSON:

1. To study the structure of periodontal tissues.
2. To study the etiology, pathogenesis and clinical presentation of periodontal diseases.
3. Study the classifications of periodontal diseases by WHO and VNOS.
4. To master practical skills in examining patients with periodontal diseases (clinical, radiological and laboratory examination methods).
5. Master the technique of filling out an odontoparodontogram for periodontal diseases.
6. To study and master the method of determining the endurance and reserve forces of the periodontium.

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Interpretation of examination data of patients with periodontal diseases.

Form of control of practical skills**:** interview; electronic tests; solving situational problems.

The place where the practical skill is performed is at the patient's dental chair.

Practical skill assessment criteria – according to the assessment sheet (checklist) for monitoring practical skills in the academic discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

To fully understand the topic, the student needs to repeat:

- from anatomy and morphology: anatomical structure of teeth and dental arches, structure of the "tooth-periodontium" complex;
- from orthopedic dentistry (fixed prosthetics): principles of transferring chewing load by different types of dental prostheses;
- from periodontology: structure of periodontal tissues, terminology in periodontology, diagnostics of periodontal diseases, classification of periodontal diseases.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Periodontium, structure, function.
2. Factors influencing the condition of the periodontium. Concepts of the development of periodontal diseases.
3. Periodontal resistance to load. Reserve forces.
4. Methods of examining patients in the clinic of orthopedic dentistry.
5. Deontology in the clinic of orthopedic dentistry.

CONTROL QUESTIONS:

1. Classification of periodontal diseases by WHO and VNOS.
2. The role of local and general etiologic factors in the occurrence of periodontal diseases. Pathogenesis of periodontal diseases.
3. Clinical manifestations of periodontal diseases.
4. Clinical, radiological and laboratory methods of examination of patients with periodontal diseases and their diagnostic value.

5. Differential diagnostics of periodontal diseases.

6. Endurance and reserve forces of the periodontium. Their importance in orthopedic treatment of periodontal diseases. The relationship between changes in the reserve forces of the periodontium and resorption of the alveolar process.

7. Odontoparodontogram, the principle of its construction and structure. Analysis of the functional state of the periodontium based on the odontoparodontogram.

OOD SCHEME
"CLINICAL PICTURE IN PERIODONTAL DISEASES"

Signs of the disease	**Means and conditions of examination**	**Criteria and forms of self-control**
1	**2**	**3**
1. Gingivitis **Mild form:** An inflammatory process in the form of a thin border, capturing the cervical edge of the gum and partially the top of the interdental papillae. **Average form:** The inflammatory process extends to the entire interdental papilla. The border between inflammatory and non-inflammatory areas is visible in the gingival papilla. Minor bleeding when pressing on the interdental papilla. **Severe form:** Diffuse inflammation of the mucous membrane of the alveolar process, severe hyperemia and tissue edema, pain on palpation, significant bleeding of the gums, especially from the area of the interdental papillae. All periodontal tissues are involved in the inflammatory process.	Dental mirror, probe.	In generalized periodontitis, the inflammatory process affects the entire row of teeth; in localized periodontitis, it affects a separate area. Diagnosed at the initial stages of periodontal diseases. This degree corresponds to the initial and advanced stages of periodontitis. Only in severe cases of periodontitis.

2. Teeth mobility	Tweezers, angle probe	Pathological tooth mobility is clinically determined in four directions: medial, distal, lingual (palatal) and labial (buccal). The tooth may also have vertical mobility. The degree of tooth mobility is determined both before and after complex treatment. The remaining tooth mobility, in combination with other indicators, is an important factor in choosing the design of the prosthesis. I : slight displacement in one direction. II degree: displacement in 2 directions. III degree: displacement in horizontal and vertical planes.
3. Pathological periodontal pocket	Periodontal probe, Angle probe with millimeter divisions.	A pathological periodontal pocket is formed as a result of the destruction of the periodontal attachment. A gingival (false) pocket is formed due to hypertrophy and swelling of the gingival margin without disruption of the integrity of the gingival attachment. The pocket depth is measured using a periodontal probe, a dental angle probe with millimeter divisions on the working part. From the approximal surface, the depth and width of the periodontal pocket can be determined using an X-ray image.
4. Supra- and subgingival dental deposits	Straight and angled probes, dental mirror, set of instruments for removing dental plaque.	The presence of dental plaque is characteristic of all nosological forms of periodontal diseases.
5. Suppuration from a pathological periodontal pocket		With a protracted course of the inflammatory process, suppuration appears from the periodontal pockets, and the inflammatory process is distributed deeper into all periodontal tissues. When pressing on the interdental papilla, suppuration is observed.
6. Bad breath		Food debris accumulates in the spaces between teeth, decomposes, and causes bad breath.

7. Changes in the bone tissue of the alveoli and body of the jaw	X-rays, negatoscope	Changes in the jaw bone tissue are observed only in periodontitis and are absent in gingivitis. Characteristic radiological signs of periodontitis: - resorption of interdental septa (horizontal, vertical, mixed); - widening of the periodontal space; - foci of bone tissue destruction; - foci of osteoporosis; -changes in the loopiness of bone tissue; - presence of bone pockets.
8. Wedge-shaped defects (up to 75%)	Dental mirror, probe	
9. Hyperesthesia of hard dental tissues (up to 60%)		
10. Gum recession with exposure of the necks and then the roots of the teeth		One of the main symptoms of periodontitis.
11. Pathological traumatic occlusion	Carbon paper, wax bite plates, diagnostic models of jaws.	Very often, with periodontitis, migration of teeth is observed, especially the front ones. In this case, tremas appear between the teeth, the front teeth are arranged fan-shaped, moving not only in the horizontal but also in the vertical planes, sometimes a rotation of the tooth around the axis is observed. This is typical for generalized and localized periodontitis, but, to a greater extent, for generalized.
12. Electrical excitability of the pulp		Its change indicates damage to the vascular-nerve bundle. Initially 1-1.5 mA, then decreasing to 15-20 mA. With significant inflammatory and atherotrophic processes, it reaches 30-40 mA.
13. Chronic course of the disease		The disease is characterized by a long course, with alternating exacerbations and remissions.

CLASSIFICATION OF PERIODONTAL DISEASES XVI PLENUM OF THE ALL-UNION SCIENTIFIC SOCIETY OF DENTISTS (VNOS) 1983, YEREVAN

1. Gingivitis is an inflammation of the gums caused by the adverse effects of local and general factors and occurring without damaging the integrity of the periodontal junction.

FORM: catarrhal, ulcerative, hypertrophic.

SEVERITY: mild, moderate, severe. **COURSE:** acute, chronic, exacerbated.
PREVALENCE: localized, generalized.

2. Periodontitis is an inflammation of the periodontal tissues, characterized by progressive destruction of the periodontium and alveolar bone of the jaws.

HEAVYNESS: light, medium, heavy.
COURSE: acute, chronic, exacerbation, abscess, remission.
PREVALENCE: localized, generalized.

3. Periodontosis is a dystrophic lesion of the periodontium.
SEVERITY: mild, moderate, severe.
COURSE: chronic, remission.
PREVALENCE: generalized.

4. Idiopathic diseases with progressive lysis of periodontal tissues.

5. Periodontoma - tumors and tumor-like diseases.

INTERNATIONAL CLASSIFICATION OF DISEASES (ICD)
GUMS AND PERIODONTIUM

K05 Gingivitis and periodontal diseases
Includes: diseases of the edentulous alveolar ridge

K05.0 Acute gingivitis
Excludes: acute pericoronitis (K05.22),
acute necrotizing ulcerative gingivitis (Vincent's gingivitis) (A69.10),
herpetic gingivostomatitis (B00.2X)
K05.00 Acute streptococcal gingivostomatitis
K05.08 Other acute specific gingivitis
K05.09 Acute nonspecific gingivitis

K05.1 Chronic gingivitis
K05.10 Simple Marginal
K05.11 Hyperplastic
K05.12 Ulcerative
Excludes: ulcerative necrotic gingivitis (A69.10)
K05.13 Desquamative
K05.18 Other chronic specific gingivitis
K05.19 Chronic nonspecific gingivitis

K05.2 Acute periodontitis
K05.20 Periodontal abscess (periodontal abscess) of gingival origin without fistula, and *excluding:* acute apical periodontitis of pulpal origin (K04.4), acute periapical abscess of pulpal origin (K04.6, K04.7)
K05.21 Periodontal abscess (periodontal abscess) of gingival origin with fistula, and *excluding:* acute apical periodontitis of pulpal origin (K04.4), acute periapical abscess of pulpal origin (K04.6, K04.7)
K05.22 Acute pericoronitis
K05.28 Other acute specific periodontitis
K05.29 Acute nonspecific periodontitis

K05.3 Chronic periodontitis
K05.30 Simple

K05.31 Complex
K05.32 Chronic pericoronitis
K05.33 Follicle thickening
K05.38 Other chronic specific periodontitis
K05.39 Chronic nonspecific periodontitis

K05.4 Periodontosis
Juvenile periodontitis

K05.5 Other periodontal diseases

K06 Other lesions of the gingiva and edentulous alveolar ridge
Excludes: atrophy of the edentulous alveolar ridge (K08.2),
gingivitis (K05.0, K05.1)
K06.0 Gum recession
Including: post-infectious, post-operative
K06.00 Localized
K06.01 Generalized
K06.09 Non-specific gingival recession

K06.1 Gingival hypertrophy
Including: tuberosity
K06.10 Gingival fibromatosis
K06.18 Other specific gingival hypertrophy
K06.19 Nonspecific gingival hypertrophy

K06.2 Lesions of gingiva and edentulous alveolar ridge associated with trauma
K06.20 Due to traumatic occlusion
K06.21 As a result of brushing teeth
K06.22 Frictional (functional) keratosis
K06.23 Dental hyperplasia
K06.28 Other specific lesions of gingiva and edentulous alveolar ridge associated with trauma
K06.29 Nonspecific lesions of gingiva and edentulous alveolar ridge associated with trauma

K06.8 Other specific lesions of gingiva and edentulous alveolar ridge
K06.80 Gingival cyst in adults
Excludes: gingival cyst of newborn (K09.82)
K06.81 Peripheral giant cell granuloma (giant cell epulis)
K06.82 Fibrous epulis
K06.83 Pyogenic granuloma
Excludes: pyogenic granuloma of other gingival areas and edentulous alveolar ridge
K06.84 Dangling comb
K06.88 Others

ODONTOPARADONTOGRAM

An odontoparodontogram provides a clear picture of the state of the dental arches of the supporting apparatus of the remaining teeth, the antagonistic relationships of the dental arches, the functional state of the dental system and the course of the process (when comparing dynamic records).

The odontoparodontogram is obtained by entering information about each tooth and its supporting apparatus into a special drawing. The drawing contains designations for each tooth. Two rows of cells above the dental formula are intended for recording data on the state of the supporting apparatus of the teeth of the upper jaw, and two rows of cells below the dental formula are intended for recording data on the state of the supporting apparatus of the teeth of the lower jaw.

The obtained data on the condition of the tooth and its supporting apparatus are entered into the drawing using symbols.

The following symbols are used:
N – no pathological changes;
0 - the tooth is missing;
¼ - degree I atrophy;
½ - degree II atrophy;
¾ - third degree atrophy;
grade IV atrophy;
Ø – the tooth or root is present, but must be removed.

The odontoparodontogram is filled in the presence of the patient. The recording is made sequentially: from the right wisdom tooth of the lower jaw to the left wisdom tooth of the lower jaw and from the left wisdom tooth of the upper jaw to the right wisdom tooth of the upper jaw.

The resistance of the tooth support apparatus to pressure is determined ***by a gnathodynamometer.*** With socket atrophy, the resistance of the periodontium decreases, and the more the atrophy, the lower the resistance. Usually, simultaneously with the atrophic processes in the socket, significant changes occur in the receptor apparatus of the periodontium. In this regard, as well as due to the pathological mobility of the tooth caused by atrophy, it is not possible to establish the actual resistance of the periodontium to pressure. Therefore, the resistance of the periodontium to load during atrophy is calculated using conditional coefficients. These coefficients are based on proportional relationships of the resistance of the periodontium of different teeth to load, which was determined by ***gnathodynamometry*** with an unaffected periodontium. The coefficient of resistance of the periodontium to load is correspondingly reduced with different degrees of socket atrophy in different teeth.

IV atrophy, the periodontium does not have the ability to withstand the load (the tooth is subject to extraction).

In practice, it is generally accepted that an intact periodontium of a tooth is able to withstand a load twice as large as the load during food processing. With atrophy of bone tissue by 1/2 of the root height, there are no reserve forces left, therefore, the periodontium of a tooth is no longer able to respond with an adequate reaction if irritation during food crushing turns out to be higher than average. With the third degree of atrophy, there is a pronounced functional insufficiency of the periodontium. Clinical observations show that with the preservation of reserve forces in the periodontium, pathological processes characterized by periodontal dystrophy are asymptomatic. After the disappearance of reserve forces, pathological processes are especially acute.

Дата_____ Фамилия, имя, отчество_____

№ истории болезни_____ Подпись врача_____

пародонтограмма

	(11,5)					(7,5)						(11,5)					
Более ¾	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	СУММА
¾-0,75%	0,5	0,75	0,75	0,45	0,45	0,4	0,25	0,3	0,3	0,25	0,4	0,45	0,45	0,75	0,75	0,5	
½ -,05%	1,0	1,5	1,5	0,9	0,9	0,75	0,5	0,6	0,6	0,5	0,75	0,9	0,9	1,5	1,5	1,0	
¼-0,25%	1,5	2,25	2,25	1,3	1,3	1,1	0,75	0,9	0,9	0,75	1,1	1,3	1,3	2,25	2,25	1,5	
И	2,0	3,0	3,0	1,75	1,75	1,5	1,0	1,25	1,25	1,0	1,5	1,75	1,75	3,0	3,0	2,0	30,5
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	
И	2,0	3,0	3,0	1,75	1,75	1,5	1,0	1,0	1,0	1,0	1,5	1,75	1,75	3,0	3,0	2,0	СУММА
¼-0,25%	1,5	2,25	2,25	1,3	1,3	1,1	0,75	0,75	0,75	0,75	1,1	1,3	1,3	2,25	2,25	1,5	
½ -,05%	1,0	1,5	1,5	0,9	0,9	0,75	0,5	0,5	0,5	0,5	0,75	0,9	0,9	1,5	1,5	1,0	
¾-0,75%	0,5	0,75	0,75	0,45	0,45	0,4	0,25	0,25	0,25	0,25	0,4	0,45	0,45	0,75	0,75	0,5	
Более ¾	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30,0
	(11,5)					(7,0)						(11,5)					

Заключение:

План лечения: 8 7 6 5 4 3 2 1 1 2 3 4 5 6 7 8

RELATIONSHIP BETWEEN PERIODONTAL RESISTANCE AND THE DEGREE OF RESORPTION (ATROPHY) OF TOOTH SOCKET WALLS

Degree of resorption		Periodontal endurance
There are no signs of resorption.		The endurance of the periodontium is 100% (with 50% being the physiological reserve)
I degree of resorption (up to 1/4)		The endurance of the periodontium decreases by 25% (75% of the norm remains), the physiological reserve is 25%.
II degree of resorption (up to 1/2)		The endurance of the periodontium decreases by 50% (50% of the norm remains). The physiological reserve is completely absent, but there is no functional insufficiency in the periodontium.
III degree of resorption (up to 3/4)		The endurance of the periodontium is 25%, functional insufficiency is 75% of the endurance.
IV degree of resorption (more than ¾)		The resistance of the periodontium disappears completely.

The importance of periodontal reserve forces:

1. The possibility of using teeth as supporting elements in fixed and removable prosthetics; in the absence of reserve forces, any defect in the dental row could only be restored by plate removable prostheses.

2. Preservation of the functional value of teeth under the influence of excessive (non-functional) loads.

3. Preservation of the functional value of teeth in periodontal pathology, when the effect of normal functional loads does not lead to overloading of teeth with initial (up to 1/2) loss of bone tissue.

SITUATIONAL TASKS

1. The patient, 23 years old, came to the clinic complaining of bleeding and swelling of the gums, pain when eating. He had not previously sought help for this reason.

External examination is unremarkable, TMJ movements are full and painless. Teeth 18, 17, 28, 38, 48 are missing. Teeth 16, 15, 24, 25, 26, 36, 37, 45 have fillings.

Examination of the oral cavity reveals hyperemia, swelling of the gums in the area of the frontal teeth of the lower jaw, crowding of the teeth in the frontal area of the lower jaw. On the orthopantomogram, no resorption of the bone tissue of the alveolar process of the upper and lower jaws is noted.

Make a diagnosis. Conduct differential diagnostics.

2. Patient K., 27 years old, came to the clinic with complaints of bleeding gums while brushing teeth on the upper and lower jaws, pain when eating in the frontal part of the lower jaw.

External examination is unremarkable. Movements in the TMJ are full and painless. Teeth 18, 16, 15, 26, 28, 36, 37, 45, 46, 48 are missing. Teeth 13, 12, 24, 25, 34, 35, 38, 47 have fillings.

Examination of the oral cavity reveals hyperemia and swelling of the mucous membrane in the area of the teeth of the upper and lower jaws. There is no pathological mobility of the teeth. The orthopantomogram shows horizontal resorption of the interdental septa in the area of the front teeth of the lower jaw and the lateral teeth of the upper jaw by 1/3.

Make a diagnosis. Conduct differential diagnostics.

3. Patient L., 38 years old, came to the clinic with complaints of periodic swelling of the gums and bleeding, and mobility of the teeth in the frontal area of the lower jaw.

External examination is unremarkable. Movements in the TMJ are full and painless. Teeth 16, 27, 38, 46, 48 are missing. Teeth 12, 11, 21, 22, 28, 36, 37, 34, 44, 43 have fillings.

Examination of the oral cavity reveals hyperemia, swelling of the mucous membrane in the area of teeth 31, 32, 33, 41, 42, 43, pathological periodontal pockets up to 4 mm deep, pathological tooth mobility of 1-2 degrees is noted. Radiologically, resorption of the alveolar process in the area of teeth 31, 32, 33, 41, 42, 43 from 1/4 to 1/2 is noted.

Make a diagnosis.

4. Patient K, 45 years old, came to the orthopedic dentistry clinic with complaints of partial absence of teeth on the upper and lower jaws, impaired chewing function, and mobility of the remaining teeth. He had not been treated before.

External examination is unremarkable, movements in the TMJ are painless and in full. Teeth 16, 15, 11, 21, 24, 25, 28, 31, 32, 34, 38, 41, 44, 45, 48 are missing. Teeth 17, 14, 12, 22, 26, 27, 33, 36, 37, 47 have fillings.

On examination, hyperemia of the mucous membrane and 1-2 degree tooth mobility are noted. Defect of the dental arch of the upper and lower jaws of class 3 according to Kennedy. On

the radiograph, bone tissue resorption in the area of 12, 14, 18, 22, 26, 27, 42, 47 up to 1/2, in the area of 13, 17, 23, 33, 33, 35, 36, 37, 43, 46 by 1/4.

Make a diagnosis. Assess the functional state of the teeth, make a treatment plan.

5. Patient F, 40 years old, came to the clinic complaining of partial absence of teeth on the upper jaw and impaired chewing function. She had not sought orthopedic help before.

External examination is unremarkable, TMJ movements are full and painless. Teeth 18, 17, 15, 25, 26 are missing. Teeth 16, 12, 11, 21, 22, 24, 33, 34, 41, 42, 44, 45, 46 have fillings.

Examination revealed: the mucous membrane is in a satisfactory condition, mobility of 24, 28, 41 is of the 1st degree. Defect of the dental arch of the upper jaw is of class 3 according to Kennedy. The radiograph shows bone resorption in the area of teeth 16, 27, 41 up to 1/4, in the area of teeth 24, 28 up to 1/2. No resorption is observed in the area of the remaining teeth.

Make a diagnosis. Assess the functional state of the teeth, make a treatment plan.

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 11

Subject: The role of occlusal trauma in the development of periodontal diseases. Selective grinding as the first stage of orthopedic treatment of periodontal diseases. Direct prosthetics as a means of preventing periodontal overload.

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: teach students to determine the causes of dental overload, teach methods of diagnosing occlusal trauma, the method of selective grinding and prevention of complications; study the goals and objectives of direct prosthetics, master the methods of manufacturing direct prostheses.

OBJECTIVES OF THE LESSON:

1. To consolidate knowledge about the influence of occlusal trauma in the etiology and pathogenesis of periodontal diseases.
2. To master practical skills in determining the presence of occlusal trauma in patients with periodontal diseases.
3. Master various methods of selective grinding.
4. To become familiar with various methods of manufacturing immediate dentures.
5. To teach students to give practical recommendations to patients on the rules of use and hygienic care of immediate dentures.

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Interpretation of examination data of patients with periodontal diseases.

Form of control of practical classes: interview, electronic tests, solving situational problems.

The place where the practical skill is performed is at the patient's dental chair.

Practical skill assessment criteria - according to the assessment sheet (checklist) for monitoring practical skills in the academic discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

To fully understand the topic, the student needs to repeat:

- from anatomy and morphology: anatomical structure of teeth and dental arches, structure of the "tooth-periodontium" complex;
- from orthopedic dentistry (fixed prosthetics): principles of transferring chewing load by different types of dental prostheses;
- from general dentistry: new technologies and modern construction materials in the manufacture of immediate dentures;
- from periodontology: structure of periodontal tissues, terminology in periodontology, diagnostics of periodontal diseases, classification of periodontal diseases.
- from normal physiology: the works of I.P. Pavlov on cortical inhibition for understanding the complex neuroreflex processes occurring in the patient's body after the application of a prosthesis.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Anatomical structure of the occlusal surfaces of the teeth of the upper and lower jaws.
2. Occlusion, articulation, bite.
3. Factors influencing the condition of the periodontium. Concepts of the development of periodontal diseases.
4. Periodontal resistance to load. Reserve forces.
5. Types of prosthetics (immediate, proximal, distant) and their features.
6. Clinical and laboratory stages of manufacturing immediate prostheses.

CONTROL QUESTIONS:

1. Causes of periodontal overload of individual teeth or a group of teeth. Occlusal trauma and its role in the pathogenesis of periodontal diseases.
2. Clinical and radiographic signs of occlusal trauma.
3. Selective grinding of teeth as the first stage of treatment of periodontal diseases.
4. Methods of selective grinding. Complications during selective grinding of teeth.
5. Immediate prosthetics. Clinical and biological principles of using immediate prosthetics at stages of orthopedic treatment of periodontal diseases. Indications for immediate prosthetics.
6. Method of manufacturing a direct prosthesis according to Sosnin.
7. Method of manufacturing a direct prosthesis according to Oxman.

INDICATIONS FOR SELECTIVE TEETH GRINDING

- ✓ malocclusion;
- ✓ secondary deformations of the occlusal surfaces of the dental arches;
- ✓ uneven wear of teeth;
- ✓ absence of physiological abrasion of the tubercles.

STAGES OF SELECTIVE TEETH GRINDING

Stage I	Preliminary grinding of teeth: elimination of unevenness of teeth while maintaining the original shape of the occlusal surface.
Stage II	Grinding in the central occlusion position: elimination of early contact of individual teeth.
Stage III	Grinding in anterior occlusion: ensuring contact between the upper and lower front teeth.
Stage IV	Grinding during forward movement of the lower jaw ensures free movement and uniform contact of the lower and upper frontal teeth.
Stage V	Grinding in lateral occlusion: prevents early contact of individual teeth.
Stage VI	Grinding during lateral movements of the lower jaw: ensures uniform contact between the sliding surfaces of the upper and lower teeth.
Stage VII	Smoothing and polishing of all ground surfaces of teeth.

TYPES OF PROSTHETICS:

- o direct: the prosthesis is made before surgery and is applied no later than 24 hours after the surgery;
- o the nearest: is carried out in the first 2 weeks, during the period of healing of the surgical wound and its epithelialization;
- o remote: performed at a later stage after complete healing of surgical wounds and completion of the formation of the alveolar process.

INDICATIONS FOR DIRECT PROSTHETICS:

- ❖ removal of the last teeth on the jaw;
- ❖ tooth extraction resulting in the loss of the last pair of antagonists;
- ❖ the threat of functional overload of the periodontium of teeth that cannot be removed;
- ❖ extraction of teeth resulting in bilateral terminal or large included defects that cannot be restored with temporary bridge prostheses;
- ❖ removal of front teeth resulting in defects that cannot be restored with temporary bridge prostheses;
- ❖ multiple, simultaneous tooth extraction;
- ❖ resection of the alveolar process and jaws together with teeth.

FUNCTIONS OF DIRECT PROSTHESES:

- ✓ restoration of speech, chewing, swallowing and aesthetic functions;
- ✓ preventing periodontal overload of the remaining teeth;
- ✓ maintaining a fixed interalveolar height, preventing TMJ pathology;
- ✓ prevention of secondary deformations of dental arches in three planes;
- ✓ protection of the wound surface, accelerating healing;
- ✓ retention of postoperative dressings;
- ✓ formation of the prosthetic bed.

As a result of generalizing the clinical experience of many dentists, two most rational methods of direct prosthetics have been developed.

The first method (G.P. Sosnin, A.A. Kotlyar, E.I. Gavrilov) is as follows. Before removing teeth, jaw impressions are taken. Then working and auxiliary models are cast and wax templates with bite rollers are prepared if it is impossible to make models in central occlusion without them. After that, the models are plastered in an articulator and specially prepared. It is as follows: the teeth to be removed are cut off on the models at the level of their necks. Then a thin layer of plaster (no more than 2 mm) is removed from the top of the alveolar process and given a rounded shape. In areas adjacent to the necks of the remaining natural teeth, retreating from them by 3-4 mm, the plaster should not be cut off. This is done to prevent the future prosthesis from detaching the gingival edge of the natural tooth. It is not possible to remove a lot of plaster from the lingual and especially from the palatal sides: there is a dense, poorly pliable mucous membrane here, which is not immediately retracted after the operation. The layer of plaster to be removed can be slightly increased if the teeth are removed due to periodontal diseases with atrophy of the socket by more than 2/3 of its length and swelling of the gum tissue.

When preparing the alveolar process of lateral teeth, a layer of plaster no thicker than 1 mm is removed from the top and its edges are slightly rounded. As a result of such preparation, a small plane is formed on the top of the alveolar ridge. In this case, it should not be shown that when processing the alveolar process, it is better to remove less plaster and after some time, rebase the prosthesis.

After the alveolar ridge is prepared, the teeth are set and the prosthesis is finished. Then comes the operation of tooth extraction and prosthesis application. Prosthesis application has its own peculiarities. Edema of the mucous membrane in and around the wound prevents the prosthesis from fitting precisely to the tissues of the prosthetic bed and often causes an increase in the interalveolar height on artificial teeth. Therefore, occlusion correction should not be done during the first session. This should be done in the following days, when the inflammatory edema disappears.

The second method of direct prosthetics **(I.M. Oksman, M.N. Shitova)** differs from the one described above in that the prosthesis is prepared in two stages. First, a base of the future prosthesis with normal borders is made of plastic using a wax template formed on the working model. Then it is checked in the oral cavity and an impression is taken together with the base. Upon receipt of the model, the base is transferred to the model and the latter is plastered in an articulator. After this, they begin to prepare the alveolar process. According to this method, the plaster teeth are cut so that a stump 1 mm high remains on the surface of the alveolar process. Then the usual setting of the teeth is performed and the manufacture of the prosthesis is completed, as in repair, when it is necessary to weld several new teeth. Since the base of the direct prosthesis takes part in the formation of the alveolar process, in direct prostheses the setting of the teeth is almost always done on an artificial gum.

The prosthesis made according to the described method does not adhere to the surgical wound with its base and does not disrupt the healing processes in it. Preliminary production of the base and its testing in the oral cavity facilitates the application of the removable prosthesis after the operation.

SITUATIONAL TASKS

1. Patient A., 52 years old, came to the clinic complaining of dental defects, difficulty chewing food, and mobility of all remaining teeth. He had not sought help before.

External examination is unremarkable, movements in the TMJ are painless and in full. Teeth 18, 17, 16, 14, 12, 21, 22, 23, 24, 25, 26, 28, 31, 32, 36, 37, 38, 41, 42, 44, 45, 46, 47, 48 are missing.

Examination revealed hyperemia of the mucous membrane in the area of teeth 15, 13, 11, 27, 33, 34, 35, 43, grade 1 mobility of teeth 13, 33, 34, 43; grade 2 mobility of teeth 11, 15, 27, 35. Orthopantomogram shows bone resorption from 1/4 to 1/2 in the area of teeth 13, 33, 34, 43 and by 3/4 in the area of teeth 11, 15, 27, 35 with widening of the periodontal spaces.

Make a diagnosis. Assess the functional state of the teeth, make a treatment plan. List the clinical and laboratory stages of manufacturing immediate dentures for the upper and lower jaws.

2. Patient F, 37 years old, came to the clinic complaining of mobility of the lateral teeth of the upper and lower jaws on the right, pain when eating. He had not had any prosthetics before.

External examination is unremarkable, movements in the TMJ are painless and in full. Teeth 18, 28, 37, 38 are missing. Teeth 11, 24, 25, 26, 27, 34, 35, 44, 45, 48 have fillings.

On examination: in the area of 15, 16, 17, 45, 46, 47, 48 the mucous membrane is slightly hyperemic, edematous, there are pathological periodontal pockets from 3 to 4 mm, tooth mobility of 1 degree. Delayed abrasion of the tubercles of the lateral teeth on the right is noted, the presence of premature contacts in lateral occlusions. On the radiograph, bone tissue resorption in the area of 15, 16, 17, 45, 46, 47 by 1/2, in the area of the remaining teeth there are no signs of resorption.

Make a diagnosis, indicate the possible cause of periodontal overload, and draw up a treatment plan.

3. A 34-year-old female patient came to the clinic complaining of vestibular displacement of tooth 12. According to the patient, visible displacement of the tooth appeared about 6 months ago.

External examination is unremarkable, movements in the TMJ are painless and in full range.

Upon examination of the oral cavity: tooth 12 is displaced from the dental arch vestibularly by 2 mm, gum recession by 1/4 of the root length. When checking the occlusion, premature contact was detected during protrusive movement of the lower jaw on tooth 12. The radiograph shows bone resorption in the area of tooth 12 by 1/2.

Make a diagnosis, indicate the possible cause of the disease, and make a treatment plan.

4. Patient Z, 48 years old, had a direct prosthesis made for the upper jaw after the simultaneous removal of all remaining teeth - 12, 11, 23, 25, 26. The installation of artificial teeth in the frontal area was carried out on the apex.

What mistake was made during the manufacture of the prosthesis and how can it be corrected?

5. Patient L., 34 years old, complained of hyperesthesia in the area of teeth 14, 15, 24, 25. According to the patient, selective grinding of teeth was performed a week ago.

What is the possible cause of the patient's complaints and what are the ways to eliminate them?

LITERATURE

Basic (relevant):

1. Lecture material.

2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);

3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.

5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 12

Subject: Indications for temporary splinting in periodontal diseases. Types and characteristics of temporary splints

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To teach students to determine the indications for temporary splinting in periodontal diseases. To study the design features of temporary splints and possible errors and complications in their manufacture. To teach students to determine the indications and contraindications for orthodontic treatment in periodontal diseases. To study the features of orthodontic treatment for this category of patients, possible errors and complications in orthodontic treatment.

OBJECTIVES OF THE LESSON:

1. To consolidate knowledge about the requirements for temporary splints.
2. To master the methods of manufacturing temporary splints of various designs.
3. To become familiar with the laboratory stages of manufacturing temporary splints.
4. To teach students to determine the indications and contraindications for orthodontic treatment for periodontal diseases.
5. To consolidate knowledge about possible errors and complications during orthodontic treatment in patients with periodontal diseases

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Determining indications for temporary dental splinting. Selecting a design.

Form of practical skill assessment: interview; electronic tests; solving situational problems.

Practical skill performance location – at the patient's dental chair.

Practical skill assessment criteria – according to the assessment sheet (checklist) for assessing practical skills in the academic discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

To fully understand the topic, the student needs to review:

- from anatomy and morphology: the structure and functions of periodontal tissues;
- from orthopedic dentistry (fixed prosthetics): principles of transmitting chewing load by different types of dentures;
- from general dentistry: new technologies and modern construction materials in the manufacture of temporary and permanent splints;
- from periodontology: the structure of periodontal tissues, terminology in periodontology, diagnostics of periodontal diseases, classification of periodontal diseases;
- from orthodontics: orthodontic devices, classification.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Occlusion, articulation, bite.
2. Features of examination of patients with periodontal diseases.
3. Radiographic examination methods in the clinic of orthopedic dentistry.
4. Factors affecting the condition of the periodontium. Concepts of the development of periodontal diseases.
5. Endurance of the periodontium to load. Reserve forces.
6. Odontoparodontogram and its role, structure and rules for filling.
7. Types and principles of operation of orthodontic devices.

CONTROL QUESTIONS:

1. Indications for temporary splinting.
2. Requirements for temporary splints.
3. Types of temporary splints and their characteristics.
4. Errors and complications in temporary splinting.
5. Indications and contraindications for orthodontic treatment for periodontal diseases.
6. Features of orthodontic treatment of patients with periodontal tissue damage.

INDICATIONS FOR TEMPORARY SPLINTING:

- Immobilization of teeth in acute and exacerbation of chronic periodontal diseases, accompanied by pronounced tooth mobility.
- Immobilization of teeth during therapeutic and surgical treatment of periodontal diseases.
- Consolidation of the results of orthodontic treatment.
- Determining the prognosis of the remaining teeth.

REQUIREMENTS TO TEMPORARY SPLINTS:

- securely fix all teeth included in the splint;
- evenly distribute chewing pressure on the supporting teeth;
- replace the defect of the dental arches if necessary;
- do not interfere with therapeutic and surgical treatment;
- do not injure the oral mucosa;
- be hygienic and do not have retention points for dental plaque;
- the splint should be easily and quickly corrected if necessary;
- manufacturing of splints should require minimal preparation of hard dental tissues;
- do not violate aesthetic and phonetic requirements;
- do not violate occlusal relationships;
- be easy to manufacture, easy to apply and remove from the dental arches.

TYPES OF TEMPORARY SPLINTS:

 plastic splint;
 multi-unit plastic splint;
 ligature splinting of teeth;
 ligature splinting of teeth with subsequent coating with composite material;
 adhesive fiberglass splint.

Stages of manufacturing a fiberglass splint in the oral cavity:

1) administering anesthesia;
2) preparing a groove in the hard tissues of the tooth;
3) fitting the fiberglass tape;
4) applying the etching gel;
5) applying the bond;
6) fixing the fiberglass tape to the photocomposite material;
7) grinding and polishing the splint.

FEATURES OF ORTHODONTIC TREATMENT IN CASE OF PERIODONTAL DISEASES:

 Orthodontic treatment is performed when the resorption of the socket walls is no more than 1/2 and tooth mobility does not exceed 1 degree.

 Strict dosing of the forces of orthodontic devices (small forces) to prevent dislocation and loosening of teeth.

 Creation of stable support
 More frequent visits to the orthodontist to prevent complications.
 Combination of orthodontic treatment with complex therapy of periodontal diseases.
 Maintaining ideal oral hygiene for the entire period of orthodontic treatment.
 In case of long-term treatment, X-ray monitoring of the bone tissue level is mandatory.
 Long retention period to prevent relapses.

SITUATIONAL TASKS

1. Patient S., 47 years old, complained of bleeding and swelling of the gums, bad breath, and tooth mobility on the upper and lower jaws. Examination revealed the following clinical picture: the height of the lower part of the face is reduced, the mucous membrane in the area of teeth 31, 32, 33, 34, 41, 42, 43, 44 is hyperemic, edematous, painful upon palpation, purulent contents are released from the periodontal canals when pressing on the gum. Tooth mobility of 1-2 degrees. A splint made of self-hardening plastic is broken between teeth 41 and 31. The radiograph shows bone atrophy by ½ the length of the roots in the area of teeth 31, 32, 33, 34, 41, 42, 43. The temporary plastic splint was made about six months ago.

Make a diagnosis. Your tactics. Name the possible errors in the previously performed treatment.

2. Patient H., 45 years old, contacted a doctor complaining of the presence of spaces between the teeth of the upper jaw and mobility of the teeth of the lower jaw.

External examination is unremarkable, movements in the TMJ are painless and in full. Teeth 18, 28, 37, 38 are missing in the oral cavity.

Clinically, grade 2 mobility of the lower jaw incisors was detected, on the upper jaw - fan-shaped divergence of teeth with the formation of spaces between teeth 13, 12, 11, 21, 22, 23. On the radiograph in the area of 11, 12, 13, 21, 22, 23, 41, 42, 31, 32, bone tissue atrophy is noted by 1/2 the length of the roots.

Make a diagnosis. Make a treatment plan.

3. Patient I, 38 years old, complained of bleeding and swelling of the gums, pain in the teeth when eating. According to the patient, she has been undergoing orthodontic treatment for about six months to correct distal occlusion.

External examination is unremarkable, movements in the TMJ are painless, in full.

A multibonding system is fixed on the teeth of the upper and lower jaws. The mucous membrane in the area of the front teeth of the upper jaw is hyperemic, edematous, painful on palpation. The radiograph shows widening of the periodontal gaps and atrophy of bone tissue more than 1/2 the length of the roots of the teeth in the area of 41, 42, 43, 31, 32, 33 teeth.

What mistakes were made at the previous stages of treatment, your actions to eliminate them.

4. Patient K., 35 years old, complained of trauma to the mucous membrane of the hard palate by the teeth of the lower jaw, the appearance of diastemas and tremas between the teeth of the upper jaw, and the appearance of cracks in the corners of the mouth.

According to the patient, orthodontic treatment with a multibonding system was started about 1.5 years ago. A positive result was achieved after a year of orthodontic treatment: the diastema and tremas were eliminated, the cracks in the corners of the mouth disappeared, after which the treatment was completed.

External examination revealed a decrease in the height of the lower part of the face by 3 mm, movements in the TMJ are painless, in full.

The mucous membrane in the area of the frontal teeth of the lower jaw is hyperemic, edematous, painful upon palpation, there are supra- and subgingival dental deposits. The

radiograph shows bone tissue atrophy over 1/4 of the length of the roots of the teeth in the area of 41, 42, 31, 32 teeth. There is chronic trauma on the palate, in the area of the necks of the front teeth of the upper jaw. Why did the relapse occur? What was not done to prevent it?

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

Additional:

4. Complete dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 32 с.
5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE

CLASS 13

Subject: Indications for tooth extraction in periodontal diseases. Permanent splinting in periodontal diseases

Total duration of the session – 6 academic hours (240 minutes).

Purpose of the lesson: To familiarize students with indications for tooth extraction in periodontal diseases; to study the goals and objectives of permanent dental splinting; to teach students to determine indications for permanent splinting in the treatment of periodontal diseases.

OBJECTIVES OF THE LESSON:

1. To consolidate knowledge about indications for tooth extraction in periodontal diseases
2. To master the skills of determining indications for the use of permanent removable and non-removable splints.
3. To study the design features and characteristics of permanent splints.
4. To become familiar with the features of manufacturing removable and non-removable splints and prosthetic splints.
5. To study the types of stabilization.
6. To teach students to give practical recommendations to the patient on the rules of use and hygienic care of removable and non-removable splinting structures.

Location of the class: Clinical base.

Practical skills to be developed during the lesson:

Determining indications for permanent dental splinting. Selecting a design.

Form of practical skill assessment: interview; electronic tests; solving situational problems.

Practical skill performance location – at the patient's dental chair.

Practical skill assessment criteria – according to the assessment sheet (checklist) for assessing practical skills in the academic discipline in points from 0 to 3.

REQUIREMENTS FOR THE INITIAL LEVEL OF KNOWLEDGE

- from anatomy and morphology: anatomical structure of teeth, dental arches and jaws; structure and functions of periodontal tissues;
- from orthopedic dentistry (fixed prosthetics): principles of transferring chewing load by various types of dentures; clinical and laboratory stages of manufacturing fixed orthopedic structures;
- from general dentistry: new technologies and modern construction materials in the manufacture of temporary and permanent splints and splint-prostheses;
- from periodontology: structure of periodontal tissues, terminology in periodontology, diagnostics of periodontal diseases, classification of periodontal diseases.

CONTROL QUESTIONS FROM RELATED DISCIPLINES:

1. Occlusion, articulation, bite.
2. Features of examination of patients with periodontal diseases.
3. Radiographic examination methods in the clinic of orthopedic dentistry.
4. Factors affecting the condition of the periodontium. Concepts of the development of periodontal diseases.
5. Parallelometry.
6. Endurance of the periodontium to load. Reserve forces.
7. Odontoparodontogram and its role, structure and rules for filling.

CONTROL QUESTIONS:

1. Indications for tooth extraction in periodontal diseases.
2. Goals and objectives of permanent splinting. Biomechanical principles of splinting.

3. Indications for the use of fixed and removable splints and prosthetic splints. Comparative characteristics of removable and fixed splints.

4. Requirements for permanent splints.

5. The importance of parallelometry in the manufacture of removable splints.

6. Stabilization. Definition, types of stabilization.

INDICATIONS FOR TOOTH EXTRACTION IN PERIODONTAL DISEASES:

1. Teeth with socket resorption of more than 3/4.

2. Teeth with socket resorption of 3/4 in cases of:

 II-III degree mobility;

 if temporary splinting and symptomatic treatment do not give a positive result;

 suspected chronic sepsis, especially in old age and with a weakened body;

 if the tooth is not of particular value in the design of the future splint, but, on the contrary, can have a negative effect on the entire structure and maintain periodontal inflammation when using a fixed splint.

CLINICAL CRITERION FOR PERMANENT SPLINTING OF TEETH

! resorption of alveolar bone tissue by 1/2 or more.

BIOMECHANICAL LAWS OF SPLINTING

 The splint reduces pathological tooth mobility. Teeth can move only together with the splint and in the same direction as it.

 The splinting effect increases with the number of teeth included in the splint.

 The chewing load in the splinting structure is primarily perceived by more stable teeth, which relieve the teeth with pathological mobility.

 The splints that combine teeth of different functional groups (frontosagittal, arc stabilization) most effectively reduce mobility.

INDICATIONS FOR THE USE OF FIXED SPLINTS AND PROSTHETIC SPLINTS:

o Splinting of a certain group of teeth to create frontal,

sagittal, fronto-sagittal stabilization and stabilization along the arc with resorption of the socket walls by 1/2 of the root length or more.

o Elimination of pathological tooth mobility in three directions.

o Creation of blocks from certain groups of teeth to balance the force ratios of the periodontal endurance of the antagonist teeth.

INDICATIONS FOR THE USE OF REMOVABLE SPLINTS AND PROSTHETIC SPLINTS:

• Horizontal mobility of teeth with or without defects in the dentition with uniform resorption of the socket walls within 1/2 of the root length or more. If there is no vertical mobility and the force ratios of the periodontal endurance of the antagonist teeth are in dynamic equilibrium.

• Resorption of the socket walls by 1/2 or more, combined with distally unlimited defects of the dentition and included defects that cannot be eliminated by fixed splints due to their size.

• The need to use removable splints in combination with fixed ones.

REQUIREMENTS FOR PERMANENT SPLINTS:

 ensure reliable immobilization of all teeth included in the splint;

 the splint must create a single block from a group of teeth that accepts and evenly distributes chewing pressure on the supporting teeth;

 if necessary, replace a defect in the dental arches;

 do not interfere with therapeutic and surgical treatment;

 do not injure the oral mucosa and marginal periodontium;

 be hygienic and do not have retention points for dental plaque;
 the splint must be firmly fixed on the splinted teeth (for permanent splints);
 the splint must be biologically compatible
 do not violate aesthetic and phonetic requirements;
 do not violate occlusal relationships;
 the production of splints should require minimal preparation of hard dental tissues;
 the splint should be easy and quick to correct if necessary.

The tasks of parallelometry in the manufacture of splints:

1. Rational distribution of the chewing load on all teeth included in the splint.
2. Determining the routes of introduction and removal of splinting devices and splint-prostheses, taking into account the increase in the extra-alveolar part of the tooth during bone resorption and gum recession.
3. Ensuring fixation and stabilization of splinting devices and splint-prostheses.
4. Achieving aesthetic standards.

TYPES OF STABILIZATION:

- ✓ frontal;
- ✓ sagittal;
- ✓ frontosagittal;
- ✓ parasagittal;
- ✓ arc stabilization.

SITUATIONAL TASKS

1. For patient M., 46 years old, during the treatment of generalized chronic periodontitis on the upper jaw, a one-piece removable splint with a multi-link oral clasp without vestibular processes was made to maintain aesthetics. Does the splint have a splinting effect in this case?

2. Patient S., 50 years old, came to the clinic complaining of bleeding and swelling of the gums, pain when eating, bad breath, and tooth mobility in the upper and lower jaws.

On examination of the oral cavity: teeth 18, 17, 16, 12, 21, 24, 25, 27, 28, 37, 38, 46, 48 are missing.

The gums in the area of all remaining teeth are swollen and hyperemic. Teeth 11, 15, 26, 31, 32, 41, 42, mobility - grade III, teeth 14, 22, 47 - mobility grade II, teeth 13, 23, 33, 34, 35, 36, 43, 44 - mobility grade I. The radiograph shows resorption of the socket walls by 1/2 in the area of teeth 13, 22, 23, 33, 34, 35, 43, 44, by 3/4 or more in the area of teeth 11, 14, 15, 26, 36, 31, 32, 41, 42. Make a diagnosis. Make a treatment plan. Determine the teeth to be removed.

3. Patient R., 42 years old, came to the clinic complaining of mobility of teeth 31 and 32. According to the patient, about 2 years ago a non-removable adhesive splint was made for him on the front teeth of the lower jaw. Objectively: the gums in the area of the front teeth of the lower jaw are swollen, bleed when probing. A cast adhesive splint is located on the oral surface of teeth 31, 32, 33, 41, 42, 43, teeth 31 and 32 are not fixed to the splint, mobility of the 2nd degree. There is no mobility of teeth 33, 41, 42, 43 together with the splint. On the radiograph - vertical resorption of sockets 31, 32 teeth by 3/4, resorption in the area of 33, 41, 42, 43 - by 1\2 of the socket height. There is a large amount of supra- and subgingival tartar on the teeth and splint.

Specify the reason for the unsuccessful outcome of dental splinting. Your tactics.

4. Female patient S., 55 years old, consulted a dentist a year ago complaining of bleeding gums and pain when eating, mobility of the lateral teeth on the upper jaw on the left and the lower jaw in the frontal section.

Objectively, 1 year ago (according to the outpatient card): mobility of teeth 24, 25, 26, 27, 31, 32, 33, 34, 41, 42, 43 - II degree. On the radiograph - resorption of the socket wall more than 1/2 in the area of 24, 25, 32, 33, 42, 43 teeth and by 3/4 of the root length in the area of 26, 27, 31, 41 teeth. Therapeutic treatment was performed and fixed crown splints were made for teeth 24, 25, 26, 27 and 31, 32, 33, 41, 42, 43.

Currently, the gums in the area of teeth 24, 25, 26, 27, 31, 32, 33, 41, 42, 43 are hyperemic, edematous, and there is pronounced mobility of the splints together with the teeth.

What is the reason for unsuccessful dental splinting? Your tactics.

5. A 55-year-old female patient complained of mobility of the lower jaw anterior teeth and bleeding gums. Examination of the oral cavity revealed mobility of teeth 41, 42, 43, 31, 32, 33 of grades I-II. The radiograph showed resorption of the socket walls by 1/2. The bite is orthognathic, the dental arches are intact. Make a diagnosis. Make an orthopedic treatment plan. What type of stabilization of the dental arch will provide relief of the lower jaw anterior teeth?

6. When checking the design of the cast frame of the removable splint in the oral cavity, its unsatisfactory fit to the splinted teeth, balance and poor fixation were revealed. Is it possible to continue further production of the removable splint? What should be done in this case?

7. Patient K., 65 years old, came to the clinic complaining of defects in the dental arches and tooth mobility.

Objectively, the following teeth are missing in the oral cavity: 18, 12, 21, 25, 28, 31, 36, 37, 38, 41, 45, 46, 47, 48.

Teeth 17, 16, 15, 14, 24, 26, 27, 34, 35, 44 have grade 1 mobility, teeth 32, 42 have grade 2 mobility. The radiograph in the area of all teeth shows uniform horizontal resorption of the alveolar walls by 1/2 the root height.

Make a diagnosis. What types of stabilization of the dental arches of the upper and lower jaws and with what kind of fixed or removable splints and splint-prostheses should be carried out?

8. Patient M., 40 years old, came to the clinic complaining of bleeding gums, inability to eat and mobility of the lateral teeth of the upper jaw.

Objectively: teeth 17, 16, 15, 14, 24, 25, 26, 27 - grade 1 mobility. On the radiograph in the area of 17, 16, 15, 14, 24, 25, 26, 27 teeth, uniform horizontal resorption of the alveolar walls is determined more than 1/2 the height of the roots, in the area of 32, 31, 41, 42 teeth - by 1/4 the height of the roots. All other teeth have no signs of damage to periodontal tissues.

Make a diagnosis. What types of stabilization of the dental arches of the upper and lower jaw and with the help of which, fixed or removable, splints and splint-prostheses should be carried out?

LITERATURE

Basic (relevant):

1. Lecture material.
2. «Removable Partial Dentures» A Practitioners' Manual, Editor : Olcay Şakar Book 2nd Edition (2024);
3. Michael P. Waliszewski «Brudvik's Advanced Removable Partial Dentures» Book of Prosthodontics 2nd Edition (2022) ISBN 978-1-64724-102-5.

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5. Removable partial dentures. Algorithm of producing : учебно-методическое пособие / С. А. Наумович [и др.]. – 3-е изд. – Мн. : БГМУ, 2018. – 16 с.

ELECTRONIC COURSEWARE