

STOMATOLOGY

TEXTBOOK

IN 2 BOOKS

BOOK
2

Edited by
Professor **M.M. ROZHKO**

APPROVED by
the Ministry of Health of Ukraine
as a textbook for doctors
attending postgraduate education
establishments (faculties) of the
Ministry of Health of Ukraine
specialising in dentistry

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In the textbook, main problems of dental service, therapeutic and surgical dentistry are elucidated. Sections of the textbook correspond to the curriculum and program of training in the internship on the specialty of "Stomatology". Basic principles of delivering dental care for population, clinical picture, methods of diagnosis and treatment of hard dental tissues, periodontal tissues and mucous membrane of the oral cavity are stated. Problems of clinical picture, diagnosis and treatment of surgical pathology of the maxillofacial area are considered.

Text of the textbook is accompanied by rich original illustrative material.

It is intended for interns-stomatologists of faculties of postdiploma education, students of the Master's course, postgraduates, resident physicians, doctors-stomatologists.

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PREFACE

The reform of postgraduate education is a part of the national reform of medical education. For its implementation a modern system of high-quality medical service should be provided. Transition to dentists of general practice training requires creation of a modern high informative textbook on this specialty.

The first publication of the Dentistry textbook creates the necessary conditions for a effective and efficient educational process of intern dentist training. The second edition of the Dentistry textbook is a logical continuation of the first one, which should contribute to further reform of postgraduate education and should provide each intern doctor with reliable methodological and scientific basis for mastering the internship program.

The second book covers in detail the organizational issues of dental service; therapeutic dentistry and oral and maxillofacial surgery materials; the material required for dentists during organization and functioning of dental offices, departments, clinics; the principles of staff ratio formation; the method of determining the dentist and dental technician workload; accounting documentation forms; the methods of evaluating the effectiveness of dental schools.

The questions of differential diagnosis in dental diseases, new treatment techniques and materials are considered in detail in the chapter of preventive dentistry. Particular attention is paid to the clinical presentation, treatment and prevention of oral mucosa diseases as independent manifestations of certain pathological conditions.

The chapter of oral and maxillofacial surgery presents problems which dentists face every day in their practice. The problems of anesthesia, tooth extraction and complications for each type of surgery, as well as the main measures in case of traumatic injuries of the maxillo-facial areas, emergency conditions in dental surgery clinic are considered in particular.

The accent is put on new methods of treatment in clinical oral and maxillofacial surgery, and new drugs used in certain cases.



PART 1

THERAPEUTIC DENTISTRY

CHAPTER 1

MODERN METHODS AND MATERIALS FOR DENTAL FILLING

The avalanche-like appearance on the market of new filling materials, such as glass ionomer cements, composites, compomers, ormocers, nanomaterials, the improvement of adhesive systems, the development of modern treatment technologies have opened fundamentally new possibilities for dentists in their clinical practice.

Nowadays, doctors can not only stop the carious process and replace the affected hard tissues, but also restore their anatomy, colour and transparency. A new direction has appeared in dentistry — esthetic dentistry, and the term *the esthetics of smile* has spread among esthetic restoration specialists.

Modern recovery materials make it possible to carry out:

- esthetic restoration of the hard dental tissues;
- reconstruction of teeth;
- visual recovery of the gingival margin.

Esthetic dental restoration includes restoration and, if necessary, correction of the anatomical shape, colour and transparency of the hard dental tissues, recovery of aged elements and an input of the teeth to form a harmonious occlusion.

Indications for teeth restoration:

- treatment of carious cavities of the I—IV classes (according to Black);
- non-carious lesions of the hard dental tissues;
- removal of stained hard tissues;
- elimination of effects of acute and chronic injuries;
- removal of stained hard tissues of depulped teeth and colour changes after root canal filling.

Indications for teeth reconstruction:

- correction of the form and position of the tooth;
- closure of diastema and gaps between teeth;
- change of the size and shape of narrow-edged teeth;
- extension of the central and lateral teeth for “rejuvenation” of the patient’s appearance in case of age-related dental attrition;
- restoration of teeth with pathological forms of attrition;

THERAPEUTIC DENTISTRY

- adjusting the width and shape of the central upper incisors to the face shape.
- indications for visual recovery of the form of the gingival margin:
- visual elimination of inconsistencies of tooth length in case of failure of surgical correction of the gingival margin;
- visual elimination of gingival retraction (also after periodontal surgery);
- treatment of dental root caries.

In some cases, patients can refuse from teeth restoration or reconstruction. Relative contraindications for the restoration and reconstruction of the hard dental tissues and causes of failure in esthetic restoration include:

- bite pathology;
- bruxism;
- increased dental attrition;
- bad habits;
- professional pathology;
- periodontal pathology;
- unsatisfactory oral hygiene of the patient.

If these causes are eliminated (for example, removal of parafunctions of the chewing muscles with the help of mouth guards or by quitting bad habits), esthetic restoration can be performed.

In clinical practice, the terms *conventional treatment* or *dental treatment without guarantee* are used. Treatment is “conditional” in the following situations:

- in case of destruction of more than a half of the hard dental tissues (in such cases it is necessary to strengthen the restoration by intra-root or parapulpal constructions);
- destruction of the hard tissues located under the gums;
- metal-ceramic dentures on the opposing teeth;
- the lack of teeth in the lateral parts (you can delay front teeth restoration till prosthetics).

DENTAL FILLING QUALITY CRITERIA

In clinical practice, there are certain criteria by which the quality of work can be checked.

1. The absence of postoperative sensitivity.

Postoperative sensitivity is checked in a few hours after treatment or on the next day.

2. The presence of rhythmical occlusal contacts after restoration on the tissues of the restored and neighbouring teeth.

The occlusal contacts are checked with the help of the articulation paper. These contacts should be equal after restoration on the tissues of the restored and neighbouring teeth. The points of occlusion are compulsory on boundary bridges, basic tubercles, in the centre of fissures, and should be equal in intensity. Only if these conditions are satisfied, restoration will be functional.



3. The absence of the white line on the edge of restoration.

The white line on the edge of restoration may occur due to:

- polishing with roughly-dispersed diamond burs;
- disadvantages of application of the adhesive system (a thick layer of the adhesive substance which is undistributed by air). To avoid this problem, the adhesive system should be well distributed by air until the “wave” disappears and a thin film is formed;

— formation of microcracks between the composite material and tooth enamel. Its appearance is caused by poor adaptation of the last layer of the composite to the tooth enamel. During grinding and polishing the crack is filled with composite shavings and painted white. To avoid such complications, the final movements of the tool on the material during restoration modelling are performed in such a way that the composite contacts the tooth enamel.

The white line often appears in inaccessible places, for example, in the area of lateral sides, when the matrix system is installed.

4. Colour match of the restoration and the restored tooth is determined in 2—3 days.

Compliance with these conditions is easy while working with composite materials that have a sufficient colour scale. Before the beginning of surgical treatment of the cavity it is necessary to determine the colour of the hard tissues and restoration (the shades of the buccal and palatal tubercles on the molars, medial and distal surfaces on the front teeth can vary).

The universal method of achieving a good esthetic effect of restoration has been developed. It is necessary to cover the restoration with a 0.5—1 mm layer of composite material of the universal shade of the tooth edge. The transparent shade creates the esthetic appearance of the surface layer of transparent enamel, so the restoration will be invisible. However, this technique does not provide the desired effect in patients with severe pathological attrition of the hard dental tissues.

5. “Dry” lustre of the restoration (is determined immediately).

During drying with a stream of air the restoration should be lustrous. “Dry” lustre is not determined if the filling is made of a chemical-cure glass ionomer cement and composite materials. While working with photopolymer materials “dry” lustre guarantees quality grinding and polishing. Microfilled composite materials have a quick and bright lustre, microhybrid composites have a less bright lustre.

Nanocomposites also have a good polishability and a stable lustrous surface. Over time, the lustre disappears, so patients should visit the doctor at least once a year for polishing of the restoration.

6. Lack of pores in the filling material.

The absence of pores in the filling material characterises the uniformity and durability of the restoration. Prevention of pore formation can be achieved by keeping to the following rules:

- making small layers of composite material;