

# NEW EXPERIMENTAL MODEL OF CHRONIC TRAUMATIC OSTEOMYELITIS FOR LOWER JAW

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## Introduction

Problem of inflammatory complications prophylaxis and treatment for lower jaw remains one of actual in maxillofacial surgery [3,6,8]. Wide application of modern methods for osteogenesis, allowed to reduce terms of treatment and improve results, found new perspectives for lower jaw fractures as well as for face multitrauma treatment. When analyzing results of osteosynthesis, we noted frequent complications (2-18,5%) during operations for patients went for surgical treatment at once after injury [4]. Treatment of lower jaw fractures complicated by traumatic osteomyelitis makes great problem and met in 8-41% of cases. It extends considerably terms of incapacity for work and common terms of rehabilitation [5,7], what has social and economic importance.

Further experimental examinations for improvement of modern and elaboration of new methods of surgical treatment and postoperative rehabilitation are important.

The aim of work is to generate model of chronic traumatic osteomyelitis of lower jaw.

## Objects and methods

We examined 10 experimental animals (outbred dogs). Taking into consideration anatomico-topographic and functional characteristics of teeth and jaw, dog is an optimal animal for experimental models of surgical pathological processes for jaw making and for treatment effectiveness with new methods [1,2]. All animals underwent surgical treatment. Operation performed under intravenous anaesthesia of 10% water solution of thiopental sodium, 40-45 mg per 1 kg of animal weight. This method of anaesthesia allowed to perform operation on the lower jaw during 1,5-2 hours without additional anaesthesia preparations. When operating dogs were injected with 15 ml of 10% solution of thiopental sodium. We succeeded to avoid complications during anaesthesia preparations application and after operation due to this anaesthesia method. During the operation, the surgeon have done the following incision performed with scalpel parallel to the lower edge of the lower jaw. Skin, subcutaneous fat, platysma were also cut. Than we performed periostomie, skeletonization of horizontal segment of the jaw with dental drilling machine under the angle of 80-90° in the region of 36 and 36 teeth cutting neurovascular fascicle what disturbed bone trophism, so had negative influence on the jaw parts consolidation. No cooling applied during drilling machine functioning what provoked bone burn and osteomyelitis development. Than, alveolar process of mucous membrane was broken in order to form additional seepage of the wound.

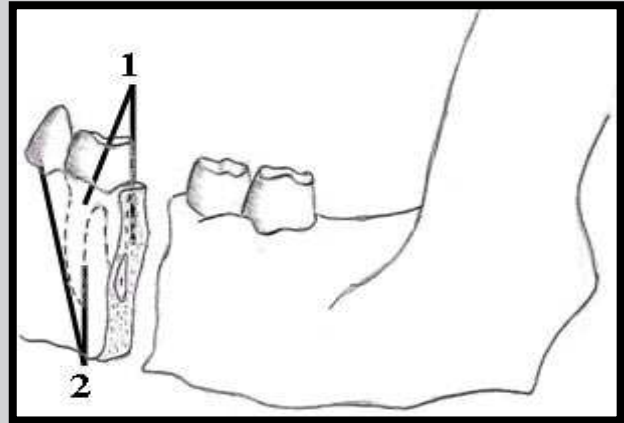


FIG. 1. Experimental model of chronic traumatic osteomyelitis formation, 1 - fragment of lower jaw, 2 - fang in the line of osteotomical cut.

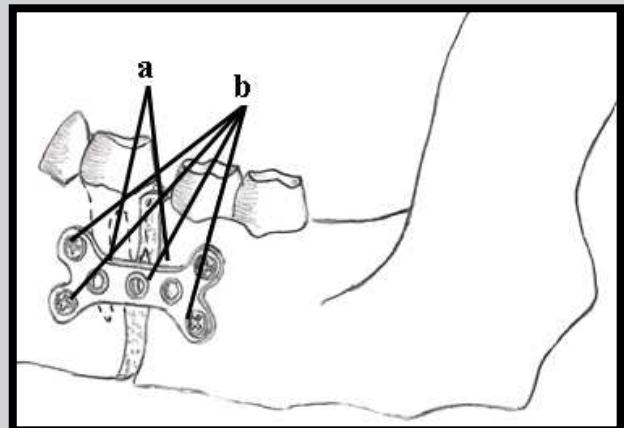


FIG. 2. Model of osteosynthesis when forming experimental model of chronic traumatic osteomyelitis of lower jaw, a - system of titanium miniplates, b - screws for fixation.

Furthermore, teeth in the line of osteotomy cut, were not extracted (FIG. 1), what also provoked chronic traumatic osteomyelitis development on the lower jaw. Than we performed osteosynthesis operation with titanium miniplates, fixed with screw by standard model (FIG. 2).

Operative wound was sew up layer by layer. Animals were feed by roughage postoperatively. Roughage was permanently traumatic factor brining to the mobility of miniplates which fixed fragments of the jaw, blocked there consolidation and formed conditions for chronic traumatic osteomyelitis of lower jaw formation.

## Results

Operated animals had sinus tract with purulent discharge in 100% of cases 1,5 months postoperatively. When doing second surgical operation, we noted:

- 1) bone sequestrum and big quantity of granulation tissue during skeletonization of horizontal segments of jaw in the region where osteosynthesis operation performed before;
- 2) mobility titanium plates and screws;
- 3) bared fangs in the wound.

Described above sings are typical symptoms and when we used them in diagnostics, it is easy to confirm chronic traumatic osteomyelitis of lower jaw.

Offered method for experimental model of chronic traumatic osteomyelitis of lower jaw formation:

- 1) allows to obtain the model of chronic traumatic osteomyelitis of lower jaw in 100% of cases;
- 2) gives possibility for human use of animals for experiments;
- 3) is economically effective.

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## COMPLEX APPROACH FOR DIAGNOSTICS AND TREATMENT OF MANDIBULAR JOINT DYSFUNCTION ACCOMPANIED WITH FACE PAIN

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### Introduction

Patients with mandibular joint diseases (arthritis, arthrosis) have mastication muscle injury in 75% of case. It is one of etiological factors for sensibility derangement development. Mentioned above pathology is named musculojoint dysfunction, all age groups are subjected to it. But women have this disease 2 times more, than men [4,8].

It is well known that long terms activity and permanent masticatory muscle tension can lead to the local ischemia development and provoke paroxysm of pain [2,7]. Special medical literature contains information that the main factor contributing to this pathological process development is occlusive disorder [3].

The aim of research is to specify complex approaches for rehabilitation of patients with face pains developed due to the musculojoint dysfunction and to determine complex rehabilitation effectiveness for those patients.

### Objects and methods

We have examined 11 patients with pain in maxillofacial area which were ill within 1-3 years.

All patients had passed treatment course of different doctors (stomatologist, neurologist, rheumatologist, otolaryngologist).

Patients were examined before and treatment course. Treatment course consisted of: questioning, objective studying of general and stomatological status of the patient, functional examination of teeth and maxillary system. Doing examination, we paid attention to the pain intensity, its localization, characteristics, terms and presence or absence of pain irradiation. Than we appreciated status of mandibular joint and mastication muscles. During examination of the mastication muscles we paid attention to the lower jaw mobility, consistence and volume of the muscles.

Functional testes of the teeth and maxillary system had aim to appreciate the bite and determine dental occlusion of the lower and upper jaws. Bite and occlusion teeth contacts were appreciated on the patients and on the jaws models [1,5].

All patients underwent complex treatment course taking into consideration etiological and pathogenetic factors. Orthopedic correction make the base of treatment. It consisted of two stages. First stage (preparation for prosthesis) consists of:

- levelling of occlusive teeth surface;
  - reconstruction of bite height and placement into the correct position of the lower jaw displaced into the ordinary occlusion;
  - elimination of the parafunction of muscles;
  - elimination of deformed teeth range.
- Second stage consisted of prosthesis procedures:
- teeth reconstruction;
  - keeping of the moved teeth and lower jaw in correct position;
  - formation of necessary occlusal space.

Optimization or correction of occlusion were performed with removable, fixed and splint orthopedic constructions. We also used methods of direct adhesive restoration of teeth with composite material.

During the orthopedic treatment patients were prescribed for treatment with antiphlogistic preparation, chondroprotectors according to the patient's indications. A part of patients 7 (64%) underwent treatment with Dia-DENS keeping indications and contra-indications for this treatment.

### Results

When palpating the mastication muscle, all patients had infiltration and hypertrophy of the temporal muscle.

Bruxism was evident for 50% of patients. The most of patients (9 persons (82%)) had possibility to open the mouth which was higher than physiologic standard. Distance between cutting edges of corner teeth of the lower and upper jaws was  $40 \pm 0,3$  mm. But when patient tried to