

ALGORITHM FOR THE TREATMENT OF MANDIBULAR FRACTURES WITH DOMESTIC MINIPLATES

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Abstract For several years, the fixation of broken fragments of the bone of the lower jaw was carried out mainly by tooth splints. [4,5]. Fixation in this method has its own positive qualities, as well as shortcomings that are well known to experts. Disadvantages of tooth splints: Injury of periodontal tissue; exacerbation of gastrointestinal diseases in the patient due to long-term eating disorders; violation of oral hygiene; it takes a long time for the patient to recover from cocktail activity. [1,2]. Treatment of lower jaw bone fractures without dental braces provides several conveniences for the patient. [6].

Keywords: osteosynthesis, fracture, lower jaw bone, 3D modeling, titanium miniplate, minivint, row of teeth, treatment.

Importance of the theme. Lower jaw fractures are the most common type among fractures of the jaw and face (from 77% to 95%). [1, 2]. In recent years, not only has the number of patients with facial fractures increased, but, due to traffic accidents, there has also been an increase in the number of injuries to several areas of the body and in the aggravation of the general condition of patients. Patients with facial bone injuries account for 30% of dental patients. The history of the treatment of lower jaw fractures dates back several hundred years ago. [3]. Since that time, several methods of treatment and fixation devices have been developed, and drugs as well as physiotherapeutic methods that accelerate bone tissue regeneration have been proposed. [3,4]. A review of the several sources suggests that significant progress has been made in recent years on the issues of lower jaw fracture and of its treatment. A few years ago, permanent fixation of the pieces was carried out mainly through tooth splints [4,5]. Fixation in this way has its own advantages, as well as disadvantages that are well known to experts. Modern treatment of jaw fractures is based on creating optimal conditions for reparative regeneration, which ensures the initial healing of bone injuries. Principles developed for osteosynthesis of jaw bones are as follows: precise repositioning of fragments; ensuring that the broken surfaces of the pieces are connected to each other; achieving a stable fixation of the pieces. Following these principles can ensure primary bone healing at an early stage. According to what manufacturers say, titanium plates and minivints meet all these requirements [6,7,8].

Morphological observation

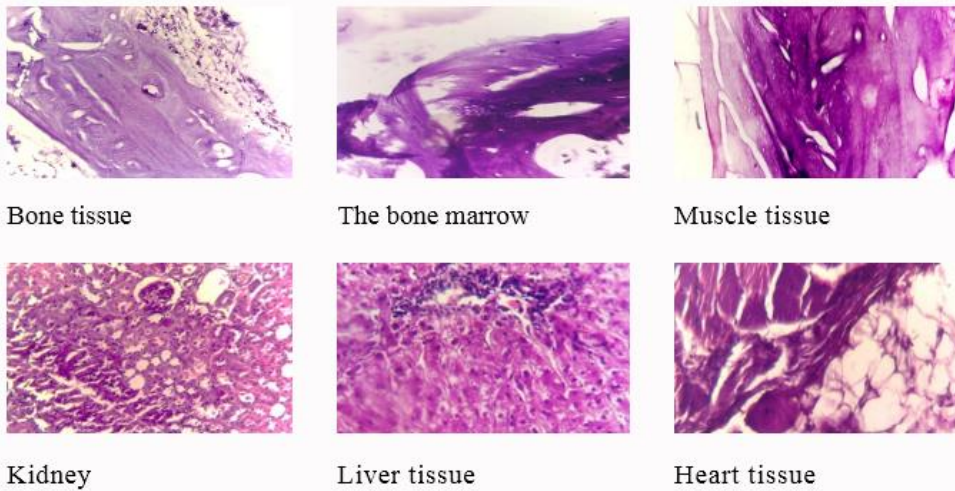


Figure 3. The rabbits were anesthetized by decapitation on the 28th day after surgery. Morphological examination was conducted by taking incisions from the tissues of local and internal organs.

In the second stage, 129 patients, with fractures of the lower jaw starting from the other parts of body and corner areas, were treated using traditional and proposed methods. The results of the treatment were analyzed and compared. Sixty-one of the patients (control group) were treated with the traditional method, which means that a bimaxillary splint was implanted and the fracture fragments with an external incision were osteosynthesized using titanium miniplastin and screws. In 68 patients (main group), the optimal location for fixation of the plate and screws based on biomechanics of the lower jaw was determined before surgery using 3D modeling. Fractures with oral incision were osteosynthesized using titanium manipulates and screws.

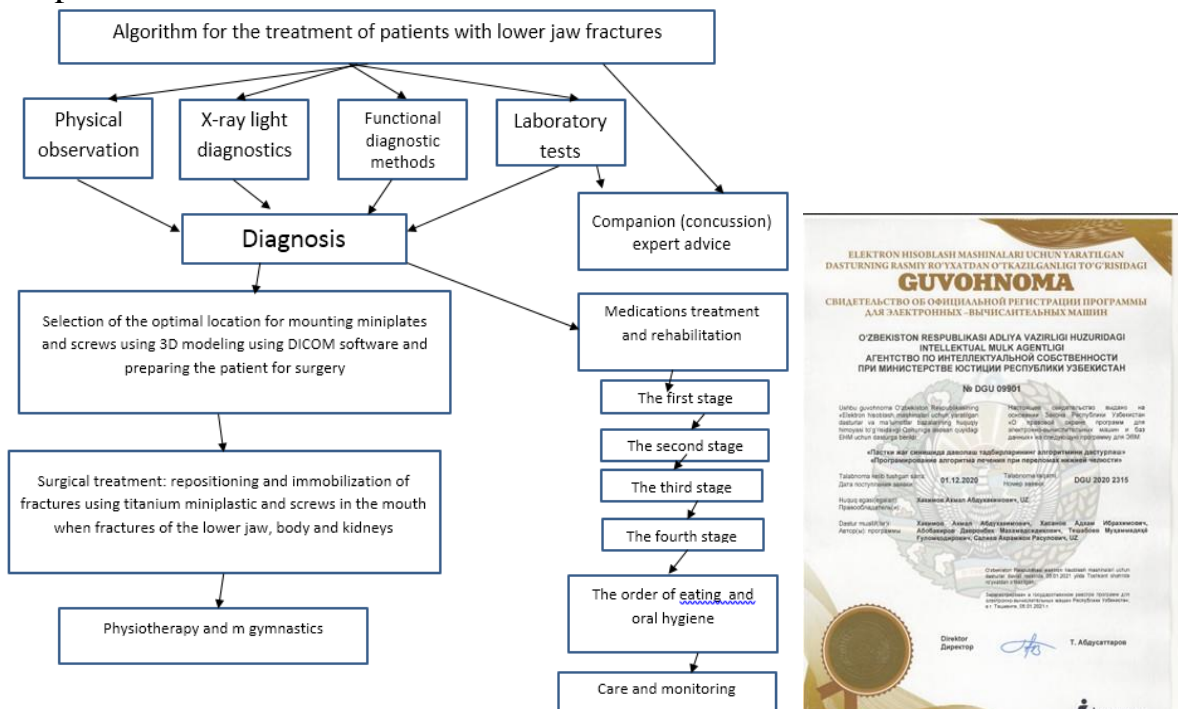
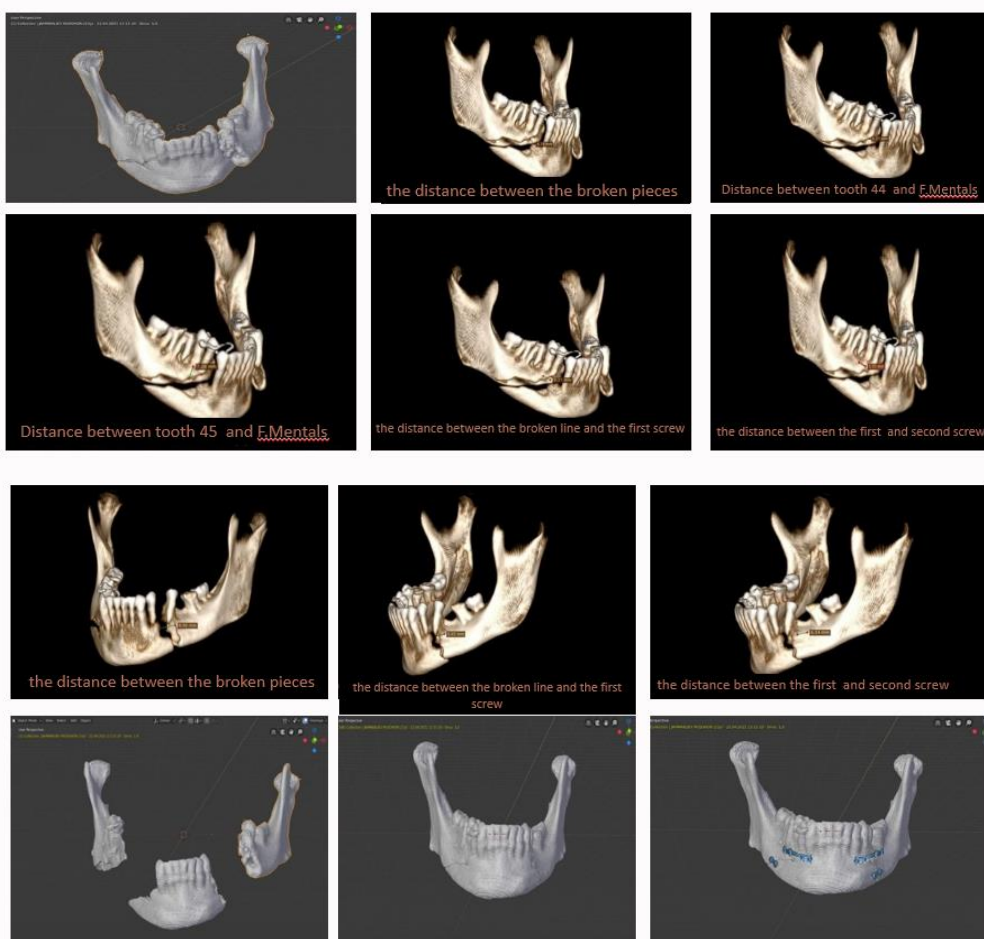


Figure 4. We have received a patent for the treatment algorithm and method we have proposed for fractures of the lower jaw bone from the row of teeth and corner branches.

Our treatment method for fractures of the lower jaw bone from the body and pelvic areas: before the surgery, the optimal location is determined for tightening the plate and screws based on the lower jaw biomechanics. This procedure is carried out using 3D modeling. An internal incision of the mouth and the broken pieces are tightened to the predetermined places, then osteosynthesis is carried out. As a result, the tooth roots and canals mandibulars are not damaged and treatment is possible without bimaxillary splints.

We will analyze this in the example of Person 1

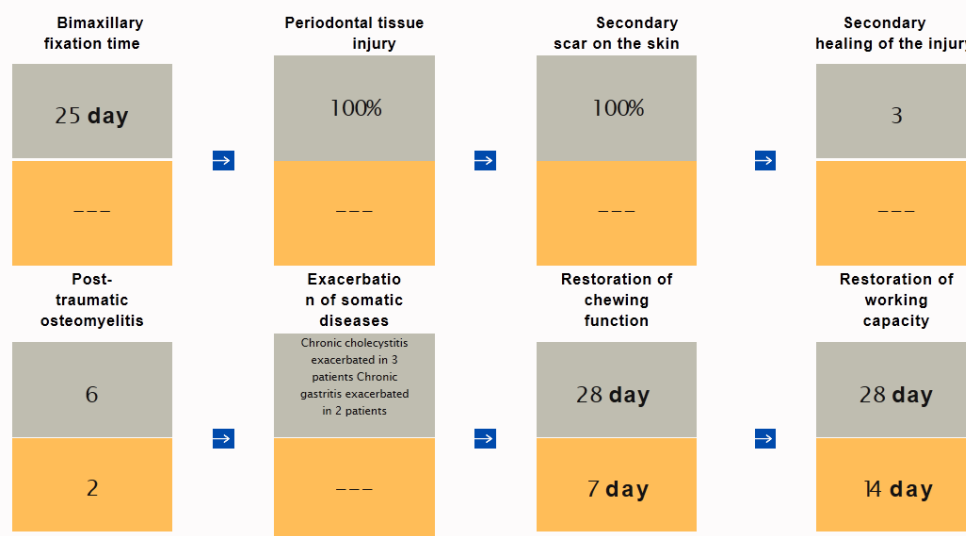
DIAGNOSIS: BREAKING AND MOVEMENT OF THE LOWER JAW BONE FROM 2 SIDES, 34,35 AND 43,44 TEETH





Results and conclusions. After the surgery, patients were assessed by the following criterias: time for bimaxial fixation, periodontal tissue injury, secondary scar on the skin, secondary healing of the injury, post-traumatic osteomyelitis, exacerbation of somatic diseases due to manipulation, restoration of chewing function, restoration of capacity to work.

The lower jaw bone is broken from the body and corner branches, treatment outcomes of patients treated with traditional (n = 61) and suggested (n = 68) methods



Conclusions

1. Biochemical examination of rabbit blood after attachment of miniplates and screws made in Uzbekistan to the lower jawbone of rabbits revealed no changes in intoxication. In conclusion, titanium miniplates made in Uzbekistan are toxicologically harmless to living organisms.

2. It was identified that when morphological examination of the operated bone and soft tissues was conducted after the 28 days of implantation of the Uzbek-made miniplate in the lower jaw bone of rabbits, the regeneration process was manifested by

primary termination. When the internal organs were morphologically examined, no adverse effects of titanium were seen.

3. Using the proposed 3D modeling method for the treatment of fractures of the mandible, body and corner areas of the mandible, modified the line proposed by Champy for treatment of the jaw fractures, allowing each area to choose the optimal site for osteosynthesis based on lower jaw biomechanics. This allowed the implantation of miniplastina and screws without damaging the tooth roots and canalis mandibularis.

4. The proposed treatment of patients with lower jaw fractures resulted in a 30-35% reduction in oral microflora compared to patients treated with the traditional method. This led to a reduction in inflammatory complications.

5. Treatment of patients, with fractures of the lower jaw bone from the body and corner areas, with the help of algorithm we proposed reduced the duration of traditional treatment of patients in hospital by 2 times. It doubled the recovery time of the capacity of people to work and of their chewing function.

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