

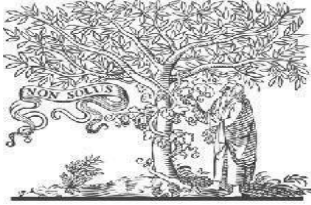


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## IMPROVING THE TREATMENT AND REHABILITATION STAGES IN LOWER JAW FRACTURES

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**Abstract:** The lower jaw is an unpaired mobile bone, horseshoe-shaped, consisting of two symmetrical halves, in each of which a body and a branch are distinguished. The body of the lower jaw has a base and an alveolar part. In the thickness of the body, in the mandibular canal, the inferior alveolar nerve, artery and vein are located. The mandibular canal begins on the inner surface of the branch and ends with the chin foramen, which is located in the region of the apex of the small molars.

**Keywords.** m.temporalis, temporomandibular joint, osteomyelitis, articular

The ramus of the lower jaw has external and internal surfaces, anterior and posterior edges, passing into the coronal and condylar processes, which are separated by a notch. The front edge of the branch passes into the coronoid process, to which the temporal muscle is attached. The condylar process has a base, a neck, a head and serves to form the temporomandibular joint.

Muscles are attached to the lower jaw that raise and lower it. The muscles that lift the lower jaw are the masseter muscle (m.masseter), which is attached to the masticatory tuberosity of the outer surface of the lower jaw branch; temporal muscle (m.temporalis); the medial pterygoid muscle (m.pterygoideus medialis) is attached on the inner surface of the angle of the lower jaw to the pterygoid tuberosity; and the lateral pterygoid muscle (m.pterygoideus lateralis) is attached to the articular bag and the articular disc of the temporomandibular joint.(3)

The muscles that lower the lower jaw, this is the anterior abdomen of the digastric muscle (m.digastricus) attaches to the great horn of the hyoid bone; the maxillary-hyoid muscle (m.mylohyoideus) is attached with a tendon suture from the inner surface of the chin to the body of the hyoid bone, the sublingual muscle (m.geniohyoideus) is attached to the body of the hyoid bone, the sublingual muscle (m.genioglossus) is attached to the fascia the back of the tongue and the hypoglossal muscle

(m.hyoglossus) is attached to the lingual fascia along the edges of the tongue and its back.(5)

With a fracture of the mandible, the function of these muscles largely determines the nature of the displacement of the fragments. All muscles are paired and attached at symmetrical points. The muscles that lower the lower jaw are weaker than the muscles that raise it.(1)

The lower jaw combines the lifting and lowering muscles into a single system. Synchronicity in its work disappears when the integrity of the mandibular arch is broken and two fragments of unequal size are formed. The chewing muscles of each side (posterior group) act on unequal fragments in isolation. At the same time, the muscles that lower the lower jaw (anterior group) are practically not separated. They overcome the resistance of the muscles attached to the large fragment and move its end downward. The displacement of the fragments is the more significant, the larger the area of muscle attachment on each of the fragments.

### **Etiology and pathogenesis.**

Fractures of the mandible resulting from the force acting on the intact bone are traumatic. Pathological processes arising as a result of bone damage (tumors, cysts, osteomyelitis, etc.) are called pathological.

Traumatic fractures, as a rule, are associated with domestic trauma (fights, falling from a height, etc., often in a state of alcoholic intoxication) - 48, 9%; transport injuries - 20, 5%;

industrial injury - 15, 2%; sports injury - 10, 3%; gunshot fractures - 5%; iatrogenic - 0.1%.

Fractures of the lower jaw, which are accompanied by rupture of the soft tissues of the face and / or the mucous membrane of the oral cavity, are open, since in the event of displacement of the fragments, the mucous membrane of the alveolar part is torn together with the periosteum, while the fracture gap communicates with the oral cavity.(10) Also, if the fracture passes through the dentition, the periodontal rupture occurs, which leads to dislocation or fracture of the tooth root, thereby the bone wound always communicates with the oral cavity through the periodontal gap, therefore, fractures of the lower jaw body within the dentition are always open and primary infected. That is, fractures of the lower jaw within the dentition are always considered open, fractures in the region of the branches and processes are considered closed.

On the lower jaw, fractures can be direct and reflected. A direct fracture is understood as its occurrence at the site of application of force. An indirect or reflected fracture occurs due to the reflection of force in the area of greatest bend, where the mandibular bone is usually thinned or weakened: these are fractures base of the neck of the condylar process, fractures at the level of the mental foramen, angle or canine. In this case, a direct fracture of the lower jaw often occurs at the place of application of force in a narrow area, and an indirect one - if the force is applied over a large area of bone tissue.

According to the number of fracture lines, single, double and multiple fractures are distinguished, which can be located on one side of the jaw - one-sided or on both sides - bilateral.

The mechanism of occurrence of fractures of the lower jaw is kink, shift, compression, separation and gunshot wound. The lower jaw on impact testing There is high stress in the most curved and thinnest areas. In these "weak" places, it breaks due to bending.

Depending on the direction of the fracture gap, they are divided into longitudinal, transverse, oblique and zigzag. In addition, the fracture can be large and finely splintered.(2)

A longitudinal fracture of the branch of the lower jaw occurs when struck from the

bottom up to the area of the base of the lower jaw, anterior to the angle, in a narrow area in the projection of the coronoid process. This section is shifted relative to another section of this bone, which has support, thereby a fracture occurs according to the shear mechanism.(4,9)

When striking from the bottom up to the base of the body of the lower jaw in the area of the angle over a wide area, the branch of the lower jaw is compressed. The acting and the opposing forces are directed towards each other, thus, a fracture occurs in the transverse direction according to the compression mechanism.(5)

When the blow is directed from top to bottom in the chin area and when the teeth are tightly clenched, there is a reflex contraction of all the chewing muscles. The powerful temporal muscle, which is attached to the coronoid process, can tear it off the branch of the jaw, that is, a fracture will occur by the tearing mechanism.

Displacement of fragments of the lower jaw occurs due to:

- contraction of the chewing muscles attached to the fragments;
- continued action of the applied force;
- own severity of the fragment.

### **Clinical picture.**

With fractures of the lower jaw, the complaints of patients are determined by the nature and location of the fracture.

Patients complain of edema in the peri-maxillary tissues, increasing pain in the lower jaw when opening and closing the mouth, and improper closure of the dentition. Biting and chewing food is painful or impossible. In some cases, patients report a feeling of numbness in the chin and lower lip.(6) Also, patients may notice dizziness, headache, nausea or vomiting, in the presence of a concussion, bruise.(7)

Taking a history, the doctor must find out when, where and under what circumstances the injury was received. According to clinical signs (preservation of consciousness, contact, the nature of breathing, pulse, blood pressure), the general condition of the patient is assessed. It is necessary to exclude damage to other anatomical areas, pay special attention to concomitant injury to the jaw and brain, which may impede the initiation of care according to these clinical guidelines.

During the examination, a violation of the configuration of the face is determined due to



edema of soft tissues, hematoma, displacement of the chin away from the midline.(10,8) There may be abrasions, bruises, wounds on the skin of the face. Palpation of the lower jaw reveals a bony protrusion, a bone defect or a painful point, often in the area of the most pronounced swelling of soft tissues or hematoma. There are two symptoms: a symptom of direct stress - pain during stress in the fracture area and a symptom of indirect stress - the appearance of pain in the fracture area when pressure is applied to the chin along the axis of the mandible.

If, as a result of damage to the jaw and displacement of fragments, there is a rupture or injury to the inferior alveolar nerve, then on the side of the fracture in the area of the skin of the lower lip and chin, there will be no pain sensitivity to palpation and tingling.

To establish a fracture of the condylar process, the volume of movement of the head in the glenoid cavity is studied.(11) The heads are palpated during the movement of the jaw, while the presence or absence of synchronous movement of the heads, the lack of its amplitude will indicate a fracture of the condylar process. During the opening and closing of the mouth, a decrease in the amplitude of movement of the lower jaw, pain and displacement of the chin away from the midline (towards the fracture) are determined.(11) With a bilateral fracture of the branch and condylar process, non-closure of the frontal group of teeth is possible.

In the oral cavity, the occlusal relationship is violated due to the displacement of the fragments. In this case, the teeth of a small fragment will be in contact with antagonists, and on a larger fragment, contact of teeth with antagonists will be absent almost throughout, except for molars. Percussion of the teeth in the area of the fracture, painful.

A special diagnostic sign of a fracture of the lower jaw body is the formation of a hematoma not only on the eve of the mouth, but also on the lingual side of the alveolar part. When soft tissues are bruised, it is determined only from the vestibular side. On the mucous membrane of the alveolar part, a lacerated wound can be visualized, which extends into the interdental space (projection of the fracture gap). An absolutely reliable sign of a fracture is a positive symptom of the mobility of the jaw

fragments.(12)

## Conclusion.

Clinical data must be confirmed by the results of X-ray examination. Radiographs make it possible to clarify the topography of the fracture, the severity of the displacement of fragments, the presence of bone fragments, the ratio of the roots of the teeth to the fracture line. X-ray examination is carried out in projections (direct and / or lateral) orthopantomography, if necessary, computed tomography.

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