

ESTABLISHING THE MECHANISM OF MANDIBULAR FRACTURES

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Article history:	Abstract:
Received: January 22 nd 2024 Accepted: March 20 th 2024	The article covers the characterization of the mechanisms of mandibular fractures. According to the results, it is established that the mandible, having an arc-shaped form, under mechanical impact experiences bone tissue stress in the most curved or thinnest parts of the mandible. Such areas within the mandible are the base and neck of the condyle, the angle, the area of the chin opening and canine, and the chin section. It is in these most
	"weak" places that the mandible breaks due to its bending. Various variants of
	mandibular fracture are possible
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INTRODUCTION. Oral and dental injuries are impact injuries to the teeth and/or other hard or soft tissues in and around the mouth and oral cavity [5]. The global prevalence of trauma to all teeth (deciduous and permanent) is about 20% [6]. Causes of oral and dental injuries can include oral conditions (improper bite, in which the upper jaw significantly overlaps the lower jaw); environmental factors (e.g., unsafe playgrounds and schools); high-risk behaviors; and violence. Treatment of such injuries is expensive and time-consuming and can sometimes result in tooth loss with consequences for facial formation, psychological development, and quality of life [2,3,8,9].

According to forensic medical practice, jaw injuries account for an average of 2.4% of maxillofacial trauma, and mandibular fractures account for 70 to 85% of all facial fractures of non-gun origin [1,4,7]. 246 forensic medical examination reports, including (88.9%) primary, (5.8%) additional, and (5.2%) repeated (Group I), were investigated using a special computer program with the use of questionnaire cards developed by us, including classification parameters (case circumstances, localization, nature, cause, mechanism, duration and its impact on the outcome). Introduction. Oral and dental injuries are impact injuries to the teeth and/or other hard or soft tissues in and around the mouth and oral cavity [5]. The global prevalence of trauma to all teeth (deciduous and permanent) is about 20% [6]. Causes of oral and dental injuries can include oral conditions (improper bite, in which the upper jaw significantly overlaps the lower jaw); environmental factors (e.g., unsafe playgrounds and schools); highrisk behaviors; and violence. Treatment of such injuries is expensive and time-consuming and can sometimes result in tooth loss with consequences for facial

formation, psychological development, and quality of life [2,3,8,9].

According to forensic medical practice, jaw injuries account for an average of 2.4% of maxillofacial trauma, and mandibular fractures account for 70 to 85% of all facial fractures of non-gun origin [1,4,7].

THE AIM OF THE STUDY was to establish the mechanisms of mandibular fractures.

MATERIALS AND METHODS OF RESEARCH. The materials for the study were the conclusions of forensic medical examinations on the examination of living persons, conducted in the outpatient department A retrospective analysis of 146 case histories and outpatient records of patients with jaw injuries, who were on inpatient and outpatient treatment in the department of maxillofacial surgery of the clinic of the Tashkent Dental Medical Institute (group II) was also conducted.

Logical, dialectical, comparative methods, as well as collection and study of single facts, monographic description and statistical methods were used in the comprehensive multifactorial analysis of the obtained data.

When examining the patients who were treated in the hospital, clinical methods of research (study of the history of the disease, life, examination, palpation, functional tests) and paraclinical methods review and targeted radiography, computed tomography of the jaws, hematologic and biochemical analyses of blood and urine) were used.

Results of the study. When determining the mechanism of jaw injuries, there was a clear predominance of impact in the jaw region in both groups 94.7% (in group I - 95.1%, in group II - 94.3%).



Although detachment 8 (2.2%), dislocation 5 (1.4%), compression 4 (1.1%), and kinking 2 (0.6%) were noted in some cases.

When examining the types of mandibular fractures, it was found that in unilateral fractures the picture was as follows - fracture in the lateral region of the mandibular body 28.8%(61), fracture in the angle region 40.1%(85), fracture in the jawline region 7.1%(15), fractures of the branch proper 24.1%(51). The following was noted by groups: In group I, fracture in the lateral aspect of the mandibular body 28.3%(34), fracture in the angle region 37.5%(45), fracture in the subchondral region 8.3%(10), fractures of the branch proper 25.8%(31); in group II, 29.3%(27) fracture in the lateral aspect of the mandibular body, 43.5%(40) fracture in the angle region, 5.4%(5) fracture in the jawline, 21.7%(20) fractures of the branch proper. Consequently, fractures in the region of the angle and in the lateral part of the mandibular body prevailed in both groups.

Practical center of forensic medical examination of the Republic of Uzbekistan in the period from 2018 to 2020.

246 forensic medical examination reports, including (88.9%) primary, (5.8%) additional, and (5.2%) repeated (Group I), were investigated using a special computer program with the use of questionnaire cards developed by us, including classification parameters (case circumstances, localization, nature, cause, mechanism, duration and its impact on the outcome). In bilateral mandibular fracture, the types were distributed as follows: fracture of the condyle on one side and of the mandibular body on the opposite side 27.0%(40), bilateral fracture in the jawline 6.8%(10), bilateral fracture of the lateral aspect of the mandibular body 37.8%(56), double fracture of the lateral aspect of the mandibular body on one side 30.4%(42). The group distribution was as follows: Group I - fracture of the condyle on one side and of the mandibular body on the opposite side 33.3%(32), bilateral fracture in the jawline 4.2%(4), bilateral fracture of the lateral aspect of the mandibular body 39.6%(38), double fracture of the lateral aspect of the mandibular body on one side 22.9%(22); in group II fracture of the condyle on one side and of the mandibular body on the opposite side 15,4%(8), bilateral fracture in the chin 11,5%(6), bilateral fracture of the lateral aspect of the mandibular body 34,6%(18), double fracture of the lateral aspect of the mandibular body on one side 38,4%(20). Thus, in Group I, bilateral fracture of the lateral aspect of the mandibular body and fracture of the condyle on one side and of the mandibular body on the opposite side prevailed, and in

Group II, double fracture of the lateral aspect of the mandibular body on one side and bilateral fracture of the lateral aspect of the mandibular body prevailed.

Thus, the mandible, having an arched shape, under mechanical impact experiences bone tissue stress in the most curved or thinnest parts of the mandible. Such areas within the mandible are the base and neck of the condyle, the angle, the area of the chin aperture and canine, and the chin section. It is in these most "weak" places that the mandible breaks due to its bending. Various variations of mandibular fracture are possible.

1) A blow to the chin over a wide area of the chin in a front-to-back direction, with the greatest stress occurring in the area of the condyles. An indirect fracture is also possible in the neck area on one side or both sides, but not at its base. Because in anteroposterior direction, the neck of the condyle is 3 times thinner than its base.

2) When force is applied to a small area of the lateral body of the mandible, a direct fracture is possible in the place of its application: most often in the area of the angle of the jaw (the bone is thinned in the area of the third molar's socket), the jawline (the area of the premolars is one of the thinnest parts of the mandible), in the area of the canine (the bone is weakened by the deep socket of the canine).

3) If the impact is applied to a small area of the lateral aspect of the mandibular branch (in the frontal plane), a direct fracture of the base of the condyle is possible, because its thickness is much less than in the neck area. 4) When a blow is applied over a wide area of the lateral part of the mandibular body, an indirect fracture is possible on the opposite side of the applied force in the area of the corner and base of the condyle, with a lesser degree of probability - its neck.

5) When a force is applied to a wide area of the mandibular angle from one side, i.e. asymmetrically, a direct fracture will occur in the area of the angle and an indirect fracture in the lateral part of the mandibular body chin.

CONCLUSION. Consequently, the mandible, having an arc-shaped form, under mechanical impact experiences bone tissue stress in the most curved or thinnest parts of the mandible. Such areas within the mandible are the base and neck of the condyle, the angle, the area of the chin aperture and canine, and the chin. It is in these most "weak" places that the mandible breaks due to its bending. Various variants of mandibular fracture are possible.

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