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FORENSIC DIAGNOSIS OF DENTAL INJURIES

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Annotation

The article presents the results of forensic medical analysis of dental bone injuries. Among the examined individuals, the majority were male individuals of working age. Information is provided on complete, incomplete, unilateral and bilateral fractures of dental bone injuries. Information is provided on the factors of injury, mechanism, complications and criteria for assessing their severity of dental bone injuries.

Key words

forensic medical examination, alveolar, molar and premolar tooth fractures, mechanism.

Annotatsiya

Maqolada tish suyaklarining shikastlanishlari sud tibbiy taxlili natijalari keltirilgan. Tekshirilgan shaxslar orasida, ko‘pchilikni mexnat layoqatli erkak jinsli shaxslar tashkil qilgan. Tish suyaklarining shikastlanishlari sinishlari to‘liq, noto‘liq xamda bir va ikki tomonlama sinishlariga doir ma’lumotlar keltirilgan. Tish suyaklari shikastlanishlarining shikastlanish omillari, mexanizmi, asoratlari va ularning og‘irlik darajalarini baholash me’zonlari kabi ma’lumotlar keltirilgan.

Kalit so‘zlar

sud tibbiy ekspertiza, alveolyar, molyar va premolyar tish sinishlari, mexanizmi.

Аннотация

В статье представлены результаты судебно-медицинского анализа повреждений зубных костей. Среди обследованных преобладали мужчины трудоспособного возраста. Приведены сведения о полных, неполных, односторонних и двусторонних переломах зубных костей. Приведены сведения о факторах повреждения, механизме, осложнениях и критериях оценки тяжести повреждений зубных костей.

Ключевые слова

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Судебно-медицинская экспертиза, переломы альвеолярных, молярных и премолярных зубов, механизм.

Relevance: In forensic medical examination practice in general, and especially in the examination of corpses and living individuals, mechanical injuries occupy a leading position. According to the World Health Organization (WHO), the number of mechanical injuries is growing, and in 2015, about 5 million people were injured, leading to death. The global prevalence of injuries to teeth (primary and permanent) in the structure of maxillofacial trauma is approximately 20%. In peacetime, the frequency of maxillofacial injuries in the total number of bone injuries is from 3.2% to 3.8%. The proportion of patients with facial injuries among inpatient dental patients varies according to individual authors and ranges from 21% to 40%. According to researchers, dento-alveolar injuries account for up to 50% of all injuries to the hard tissues of the maxillofacial region in children. Among maxillofacial injuries, data are provided on 0.9-3.9% of dental injuries. The clinical course of jaw injuries is aggravated in the presence of combined injuries with simultaneous dislocation and fracture of the jaw. Severe injuries are reflected in fractures of the alveolar process of the jaw, in which several teeth are injured. Scientifically based expert assessment of the severity of damage to human health is today a complex interdisciplinary problem. This, in turn, means that there is a need to conduct research on forensic medical examination of injuries of the dental bones.

The purpose of the study. Study of several aspects of periodontal bone injuries.

Methods and objects of inspection. For the study, the conclusions of forensic medical examinations on the examination of living persons conducted in the outpatient department of the Tashkent city branch of the Republican Scientific and Practical Center of Forensic Medical Examination of the Republic of Uzbekistan in the period from 2022 to 2024 served as materials, and they were retrospectively analyzed.

Using the card questionnaires developed by us, in accordance with a special computer program, including classification parameters (state of the case, location, nature, cause, mechanism, duration and its impact on the outcome), 237 conclusions of forensic medical examinations were studied, including 225 (94.9%) primary, 8 (3.37%) additional and 4 (1.68%) repeated (group 1).

Inspection results: The research objects taken for examination were studied and analyzed by the relevant years. (Table 1)

Table 1

Years	Number of objects

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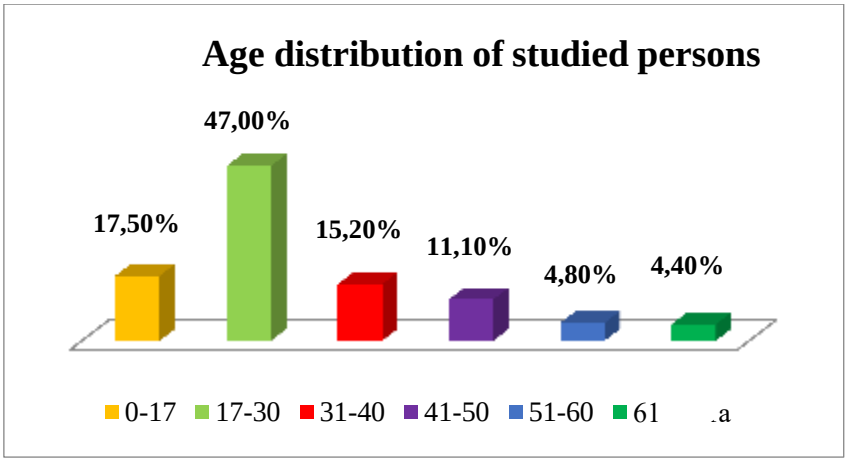
2022	62 (26,2±0,84%)*
2023	80 (33,75±7,17%)*
2024	95 (40,1±1,16%)*
Total	**237**

The table shows that the number of forensic medical examinations related to dental bone injuries has increased significantly year by year.

When analyzed by age, it was noted that the majority of victims were of working age (78.1% (n=185). Among them, almost half were aged 17 to 30 (111) (n=47.0%), 31-40 (36) (n=15.2%), 41-50 (26) (n=11.1%). Also, 41 (n=17.5%) were registered in the juvenile group, 11 (n=4.8%) in the older age group (51-60) and 10 (n=4.4%) in the 61 and older age group (diagram 1).

Diagram 1



In all cases studied, information on injuries was obtained from the decision to order a forensic examination and from the initial medical documents. The results showed that in most cases, injuries occurred in fights (123 cases, 51.89%), in motor vehicle accidents (54 cases, 22.78%), and as a result of falls (19 cases, 8.02%), as well as during sports, tooth extraction, and other situations.

Diagram 2

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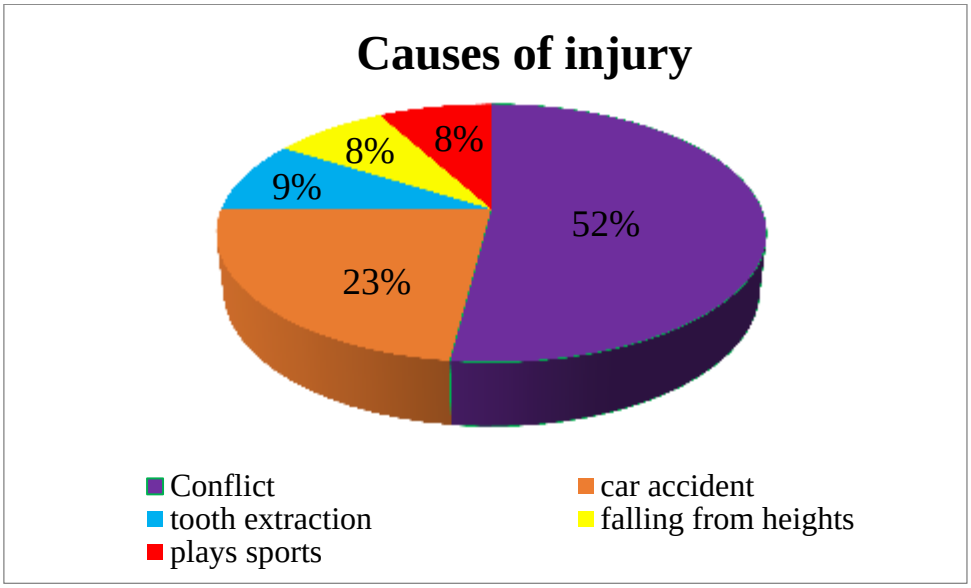

Complications of lower jaw injuries were as follows: mainly periodontitis 31.84% (114), in rare cases pulpitis 9.5% (34), periostitis 6.42% (23), phlegmon 2.79% (10), osteomyelitis of the jaw 1.96% (7), as well as complications such as chewing function disorders 35.2% (126), bite disorders 5.87% (21) and speech disorders 6.42% (23) were detected. As can be seen from Table 2, periodontitis and chewing function disorders were absolutely predominant. Although the percentage of pulpitis and periostitis was high, a certain number of people with bite disorders, as well as phlegmon and osteomyelitis of the jaw, were also found (Table 2).

Table 2

Complications of dental injuries

Types of injuries	**Number of objects**
Periodontitis	114 (31,84%)
Pulpitis	34 (9,5%)
Periostitis	23 (6,42%)
Phlegmon	10 (2,79%)
Osteomyelitis of the jaw	7 (1,96%)
Masticatory disorders	126 (35,2%)
Disturbances of the bite	21 (5,87%)
Speech disorders	23 (6,42%)
Total	**358**

During the study, an analysis was conducted to determine the damage to the dental bones. In this case, only tooth enamel fractures (enamel fragmentation) were

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detected in 45.76% and tooth crown fractures without pulp injury were detected in 20.3%.

Mainly, the crown of the tooth was fractured without pulp injury and tooth root fracture was detected in 9.77%, tooth luxation was detected in 5.4%, tooth crown fracture with pulp injury was detected in 4.11%, complete tooth eruption was detected in 3.86%, and multiple tooth fractures were detected in 3.34%. Tooth root and crown fractures were detected in 2.83%, tooth intrusion or extrusion was detected in 2.31%, and unspecified tooth fractures were detected in 1.8%.

By localization, 49.1% of the injuries were in the upper jaw, 33.93% in the lower jaw, and 16.97% in both. By tooth type, 65.55% of the teeth were damaged, 12.6% were incisors, 9.0% were small incisors, and 4.88% were large incisors, and milk teeth were damaged in 7.97% of cases (Table 3).

Table 3

Types of dental injuries

Types of injuries	**Number of objects**
Injury to the enamel only	114 (48,1%)
(fracture of the enamel).	49 (20,67%)
Fracture of the crown of the tooth without injury to the pulp	9 (3,79%)
Fracture of the crown of the tooth with injury to the pulp	25 (10,55%)
Fracture of the root of the tooth	6 (2,53%)
Fracture of the crown and root of the tooth	5 (1,97%)
Fracture of several teeth	5 (1,97%)
Unspecified fracture of the tooth	11 (4,64%)
Luxorosis of the tooth	5 (1,97%)
Intrusion of the tooth	8 (3,37%)
Total	**237**

Most often, the fracture is oblique, involving the medial corner of the crown, rarely the distal corner, and rarely the fracture line runs parallel to the incisal edge or the axis of the tooth. Depending on the size of the fractured part of the crown, the pulp is located at different distances from the fracture line (picture 1).

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Picture 1. Fracture of the crown of 21 teeth at the dentin border without pulp injury

Pulp-impacted crown fractures are very common. According to various sources, they rank fourth among all types of dental injuries. Typically, patients seek help on the same day or the next day after the injury. Pulp eruption can be spotty or complete.

Picture 2. Fracture of the crown of tooth 11 at the dentin border with pulp injury.

Root fractures are a rare and serious consequence of dental trauma. Such injuries affect the cementum, root dentin, pulp, and periodontium. Most often, such injuries occur after adolescence, when the roots of the incisors are formed, because at an early age the alveolar bone is more elastic and absorbs this shock.

When examining individuals with root fractures, it is necessary to take into account the patient's health, age, tooth group, location of the fracture line, presence

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or absence of displacement of fragments, pulp condition, periapical tissues, bite type, as well as the time elapsed since the injury (Picture 3).

Picture 3. Root fracture of teeth 11 and 21

The severity of dental bone injuries was assessed by forensic medical criteria. The main part was 32.91% (78) of minor injuries with short-term health impairment, 37.13% (88). A separate group was formed by moderate-severe injuries, 24.89% (59) and severe injuries, 5.06% (12) (Table 4).

Table 4

Severity of injury

Level	**Number of objects**
Light	78 (32,91%)
Health disorders in the short term	88 (37,13%)
Middle	59 (24,89%)
Heavy	12 (5,06%)
Total	**237**

When assessing the severity of bodily injury, the criterion of duration of health impairment prevailed (78.06% (185), permanent loss of general working capacity (19.83% (47), and life-threatening conditions 2.11% (5) (Table 5).

Table 5

Criteria for determining severity

Type of criteria	**Number of objects**
Health hazard	5 (2,11%)
Duration of health impairment	185 (78,06%)

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Persistent loss of working capacity, %	47 (19,83%)
Total	**237**

The criteria used to determine severe injury were life-threatening and permanent loss of general working capacity of more than 33% (Table 6).

Table 6

Criteria for serious bodily injury

Type of criteria	**Number of objects**
Health hazard	5 (41,67%)
Persistent loss of general working capacity of more than 33%	2 (16,67%)
Total	**7**

Forensic medical criteria were used, such as moderate to severe injuries, permanent loss of 10-33% of total work capacity, and health impairment lasting more than 21 days but less than 4 months (Table 7).

Table 7

Criteria for moderate bodily injuries

Criteria	**Number of objects**
Permanent loss of 10-33% of total work capacity	30 (50,85%)
Duration of health impairment more than 21 days but less than 4 months	29 (49,15%)
Total	**59**

Conclusion: It was noted that dental bone injuries are observed in people of different ages and are most often observed in men aged 18-40, most often as a result of fights, car accidents and falls. The criterion for forensic assessment of the severity of injuries in the structure of injuries is mainly the duration of health impairment. Most injuries are assessed as minor injuries based on the duration of health impairment. It is necessary to develop an algorithm for conducting forensic medical examinations in cases of dental bone injuries and recommendations for improving the practice of organizing such examinations.

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