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# COMBINED TRAUMA OF THE ALVEOLAR PROCESS AND TEETH OF THE UPPER JAW

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**Abstract**
Injuries to teeth and alveolar processes of the jaws are among the most common types of traumatic injuries encountered in their clinical practice by dentists working with both children and adults. The upper jaw is most often subject to traumatic injuries in the anterior region due to the peculiarities of the anatomical structure of the face. Dentoalveolar anomalies increase the likelihood of injury to the anterior upper teeth (lack of anatomical splinting of the dentition and local concentration of impact load in case of dental dystopia). According to various literary sources, this type of injury accounts for 1.5 to 3.9% of the total number of injuries to the maxillofacial region [2–5].

**Keywords**: periodontal pathology, orthodontics, complex treatment.

## Introduction

### Relevance

As a rule, damage to the alveolar processes is accompanied by some damage to the teeth, and vice versa - damage to the teeth can cause trauma to the alveolar processes of the jaws. WHO classification of dental injuries: Class I. Contusion of a tooth with minor structural damage. Class II. Uncomplicated fracture of the crown of the tooth. Class III. Complicated fracture of the crown of the tooth. Class IV. Complete fracture of the crown of the tooth. Class V. Crown-root longitudinal fracture. Class VI. Fracture of the root of the tooth. Class VII. Incomplete dislocation of the tooth. Class VIII. Complete dislocation of the tooth. Thus, patients with injuries to the teeth and alveolar processes of the jaws can be divided into the following groups according to the severity of the injury: a) patients with dental injuries; b) patients with traumatic injuries of the alveolar processes of the jaws; c) a combination of dental and alveolar process trauma in patients [1, 3, 6]

**Study Results**

Clinical example (Fig. 1–10) Patient A., 35, came to the Department of Orthopedic Dentistry of the Belarusian Medical Academy of Postgraduate Education in March 2010 complaining of mobility of the upper anterior teeth on the right. The teeth became mobile as a result of hitting the dashboard during a car accident that occurred 7 days ago. The patient did not seek medical attention at other facilities. Objectively: post-traumatic edema of the soft tissues of the upper lip on the right, abrasions of the vermilion border of the upper lip on the right. In the oral cavity: bruises, ruptures of the mucous membrane in the area of the alveolar process and the upper fornix of the oral cavity vestibule at the top on the right. Mobility of teeth 11 and 13 with a section of the alveolar process is noted. The X-ray image shows a line of enlightenment in the area of the alveolar process of the upper jaw on the right in the projection of teeth 11–13, corresponding to the fracture line. The integrity of the roots of the upper anterior teeth is preserved. Upper jaw teeth: 18, 17 are intact; tooth 13 is covered with an artificial crown with titanium nitride coating. An artificial tooth with a facet is soldered to the crown; tooth 11 is covered with a temporary filling material; teeth 21, 22, 23 are intact; the crown of tooth 24 is restored with filling material; the crown of tooth 26 is destroyed down to the gum; teeth 27, 28 are intact; teeth 16, 15, 14, 12, 24 are missing. Mobility of teeth 13, 11 together with the alveolar process of the upper jaw is determined. Lower jaw teeth: 38, 37 - intact; in tooth 35 on the vestibular surface there is a class 5 cavity communicating with the tooth cavity, probing of the anastomosis is painful; teeth 34, 33, 32, 43, 44, 45, 47, 48 - intact; teeth 36, 46, 31, 41, 42 - missing. Diagnosis: partial secondary adentia of the upper and lower jaws, class 3 according to Kennedy; open traumatic complete fracture of the alveolar process of the upper jaw on the right with displacement; traumatic incomplete dislocation of teeth 11, 13.

**Treatment options:**

1. Removal of the loose fragment together with teeth 13 and 11, fabrication of an immediate denture and further orthopedic treatment.
2. Removal of the loose fragment together with teeth 13 and 11, augmentation of the alveolar process and further orthopedic treatment.
3. Fabrication of a splint for the upper jaw to immobilize the fragment of the alveolar process, and if the alveolar process has consolidated, further orthopedic treatment as indicated. Patient A. was diagnosed with a combination of incomplete dislocation of teeth 11 and 13 with a fracture of the alveolar process of the upper jaw. According to the severity of the injury, he belongs to the third group. Considering the patient's young age, absence of concomitant general somatic pathology, preserved connection of the alveolar process fragment with surrounding tissues, absence of local inflammatory phenomena and good oral hygiene, preference was given to the most gentle and cost-effective treatment method for the patient. It was decided to immobilize the fragment with a splint and subsequently carry out orthopedic treatment.

Treatment The patient underwent endodontic treatment of teeth 18, 17, 21, 25, 26, 35, 33, 32, 43. Post and core inlays were made in teeth 17, 13, 11, 21, 25, 26, 35 using the clinical method. Temporary plastic bridge prostheses supported by the teeth were made. Then the temporary bridge prostheses were replaced with permanent metal-ceramic dentures. The exception was the bridge prosthesis of the upper jaw on the right. The manufacture of a permanent metal-ceramic bridge prosthesis supported by 18, 17, 13, 11, 21 was delayed for 3.5 months in order to meet the patient's rehabilitation deadlines after the fracture. The final stage is the final restoration of teeth 22, 23, 34



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using composite material. Recommended: follow-up examinations twice a year, follow-up X-ray examination and occlusal correction once a year.

## Conclusion

The results we obtained allow us to recommend the use in clinical practice of a basic-type splint with wire ligatures for fixing fragments of the alveolar process in traumatic fractures and the absence of a significant number of teeth on the jaw.

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