



Modern Approach to Surgical Treatment of Fractures of the Zygomatic Bone and Upper Jaw

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Abstract: The article is devoted to a detailed description of the methods of complex treatment of traumatic injuries of the zygomatic bone and arch, combined with fractures of the walls of the maxillary sinus. The results of a comparative evaluation of the traditional and proposed method of fixation of restored bone fragments using an expandable latex catheter with access through the maxillary sinus according to the method of the author Dubov are also presented. At the stage of development of maxillofacial surgery, the problem of introducing into practice new, more effective and less traumatic methods of immobilization of displaced fragments of the zygomatic-maxillary complex continues to be relevant to this day.

Keywords: fracture, zygomatic bone, zygomatic arch, maxillary sinus, upper jaw, reposition, immobilization of bone fragments, latex catheter.

Modern treatment of patients with injuries of the maxillofacial region continues to be one of the most pressing problems in the field of maxillofacial surgery. With the increase in injuries, there has been a tendency to increase the frequency and severity of maxillofacial and combined injuries. This is evidenced by numerous works of domestic and foreign authors. In the structure of surgical dental patients, victims with fractures of the facial bones account for up to 30%, and traumatic injuries of the zygomatic bone are recorded in 19% of patients with fractures of the facial skeleton [3, 6, 18]. Disability of victims, with an annual increase of 10% per year, and people under 45 years of age account for 50% of all disabled people [7, 12]. Most often, damage to the maxillofacial region is observed in people of working age from 18 to 50 years, accounting for 91% [1, 18].

The main etiological factors of injuries of the zygomatic bone, arch, orbit, and upper jaw include traffic accidents, household and sports injuries [2, 13]. There are the following types of fractures of the zygomatic bone and arch: open isolated with or without displacement; closed with or without offset; combined fractures with or without displacement; combined fractures with damage to other facial bones and maxillary sinus; traumatic defects of the zygomatic arch and bone with impaired mobility of the lower jaw and deformity of the face. According to the data given in various literature sources, fractures of the zygomatico-orbital complex among traumatic injuries of the maxillofacial region rank second in terms of their prevalence [9, 15]. To the close location of the brain and abundant vascularization, damage to the bones of the middle zone of the face poses a serious danger to the health and life of the victims [8, 16].

Depending on the time elapsed after the injury, fractures of the zygomatic bone and arch are divided into fresh, received within the last 10 days, old - with an injury prescription from 11 to 30 days, ununited and improperly fused - after 30 days have elapsed from the date of injury [10, 19].

Fractures of the zygomatic bone and arch without displacement of bone fragments, conservative methods of treatment are used, consisting in the appointment of rest, liquid food, anti-inflammatory drugs, applying an ice pack to the injury area and physiotherapy procedures on the 3rd day after the fracture [17].

In cases of fractures with displacement of fragments and the admission of victims in the first 3 days after the injury, they usually resort to a non-surgical (bloodless) method of surgical treatment, in which the reduction of the zygomatic bone and arch is carried out by the thumb or forefinger of the doctor. Also in such cases, reposition is recommended to be effectively carried out with a Buyalsky spatula or a medical spatula wrapped in gauze [4, 20].

With chronic fractures, surgery is indicated, in which the reposition of the zygomatic bone is carried out through an incision made behind the zygomatic-alveolar ridge using the Karapetyan elevator. In severe cases, with damage to the walls of the orbit and the maxillary sinus, it is necessary to resort to more extensive methods of surgical treatment with the installation of plates or a special fixator [14].

Considering the complexity and ambiguous outcomes of surgical treatment of post-traumatic deformities of the middle zone of the face, diagnosis, timely and qualified treatment of patients in the acute period are of great importance [5, 11]. Thanks to the progress of medical science at the present stage, the diagnosis and treatment of maxillofacial trauma are undergoing positive changes. This, in turn, made it possible to revise the indications for surgical treatment and change the technology of many maxillofacial operations.

Purpose of the study. To evaluate the method of complex treatment of fractures of the zygomatic bone and arch with displacement of fragments, access through the maxillary sinus through the use of a latex catheter.

Materials and methods of research. At the clinical base of the Department of Surgical Dentistry of the Bukhara State Medical Institute, among patients admitted with injuries of the zygomatic bone and arch, 26 patients with displacement of bone fragments and damage to the walls of the maxillary were included in the contingent of the examined sinus. The age range of the examined patients of the Department of Maxillofacial Surgery ranged from 19 to 48 years, of which 21 were male and 5 were female. Depending on the method of complex treatment used, the patients were divided into two groups: the main group, in which fragments of the zygomatic bone and arch after reposition were immobilized with a latex catheter, and the comparison group, in which patients were treated with traditional methods of fixation bone fragments. The first group included 15 victims, of which 12 were men and 3 were women; the second group consisted of 11 patients, of whom there were 9 men and 2 women.

Both groups included patients with displacement of bone fragments of the zygomatic bone and arch. On the basis of a clinical examination, the presence of the following symptoms of injury was noted: pain in the middle third of the face, aggravated by opening the mouth; deformation of the face due to tissue damage, the development of post-traumatic edema and displacement of bone fragments; nose bleed due to damage to the walls of the maxillary sinus; limited mobility of the lower jaw; chewing muscle injury, manifested in the form of edema of the zygomatic region, swelling, hemorrhage, wounds; numbness of soft tissues in the area of the wings of the nose, upper lip, infraorbital region; retinal hemorrhage eyes, blurred vision as a result of damage to the eyeball, diplopia - double vision.

All patients underwent such radiation examination methods as: x-ray of the skull in direct and axial-chin projections, CT, MSCT, orthopantomography, etc. When analyzing the obtained images, attention was focused on the degree and direction of displacement of bone fragments, the location and nature of the fracture line in the region of the boundaries of the maxillary sinus, the presence and size of bone defects and fragments, the volume of soft tissues penetrating the maxillary cavity sinus from the defect of its bone walls. Conducted a study of computed tomograms in 3D reconstruction

and three projections: frontal, axial and sagittal, which made it possible to obtain more accurate data on the nature of the traumatic fracture of the bones of the facial skull. This method of X-ray examination made it possible to carry out measurements with a high degree of accuracy necessary to select an adequate method for further surgical treatment. The distance to the most important anatomical structures of the middle zone of the face - blood vessels and nerve fibers - was revealed. In order to obtain 3D image processing, the study was carried out on a Samsung CT scanner with a special software application.

The victims of the main group with fractures of the zygomatic bone, arch and walls of the maxillary sinus underwent reposition of bone fragments according to the Dubov method - access through the maxillary sinus with fixation of the fragments with a latex Foley catheter. Indications for the use of a Foley catheter for better fixation of bone fragments were damage to the lateral wall of the maxillary sinus when Bish's fat lump penetrated into the sinus cavity, prevention of traumatic sinusitis and restoration of nasal breathing.

Obtained results. After intravenous general anesthesia, a trapezoidal or oval incision of the mucous membrane is performed along the transitional fold in the range from the lateral incisor to the second molar of the corresponding half of the upper jaw. Using a raspator, the anterior and lateral wall of the maxillary sinus, the zygomatic-alveolar ridge are exposed, the fracture line is found, the presence or displacement of fragments of the sinus walls, their number, size, and penetration into the sinus are noted. In the presence of diplopia and infringement in the line of fracture of the infraorbital nerve and motor muscles of the eyeball, after osteotomy, they are decompressed. A trepanation hole is formed in the region of the anterior wall of the maxillary sinus, an audit of the sinus cavity is carried out, if necessary, material is taken for histological examination, the sinus is washed with antiseptic solutions, small free-lying ones are removed with a Folkman surgical spoon bone fragments, hemorrhagic discharge or clots, foreign bodies and altered sinus mucosa. Subsequently, under the lower edge of the zygomatic bone on the corresponding side, the skin and subcutaneous fat 1 cm long are cut with a scalpel, and the zygomatic bone and arch are repositioned using a single-toothed Limberg hook. In order to isolate the fatty lump of the cheek, prolapsed into the sinus, it is removed laterally with a thin and narrow spatula and the reduced fragments of the sinus wall are introduced into the formed tunnel. then, a Foley catheter is inserted into the cavity of the maxillary sinus through a previously created nasooantral fistula in the lower nasal passage and the cuff is inflated with saline (up to 10 ml) or orally until the maxillary sinus is almost completely filled. Soft tissue wounds in the area of extra- and intraoral surgical approaches are sutured in layers. The residence time of the catheter fixing the bone fragments in the maxillary sinus varied from 20 to 24 days, depending on the timing of the formation of a full-fledged callus between the reduced fragments.

In patients of the comparison group, reposition of displaced fragments of the zygomatic bone, arch and walls of the maxillary sinus was carried out in a similar way of surgical treatment. The only exception was the method of immobilization of the reduced bone fragments, which consists in the traditional dense tamponade of the maxillary sinus with a turunda with iodoform.

Evaluation of the results of surgical treatment was carried out on the basis of subjective feelings of patients, data of clinical examination and radiation diagnostics. In addition, according to the indications, some patients underwent endoscopic examination of the paranasal sinuses. when the victims were admitted to the department of maxillofacial surgery and in the dynamics after surgical treatment, all patients were consulted by related specialists (ophthalmologist, neurologist, neurosurgeon). In order to prevent the development of post-traumatic complications, adequate complex drug therapy was carried out, including the appointment of anti-inflammatory drugs, analgesics, vitamins, rest, local application of cold to the area of injury, daily sanitation of the oral cavity, physiotherapy procedures.

In patients of the main group, the consolidation of bone fragments was 2-3 days ahead of the healing of injured areas in patients of the comparison group, which was confirmed by the data of radiation methods of examination. In the postoperative period, patients of the main group did not show any complaints, with the exception of hypoesthesia of the soft tissues of the infraorbital region. Withdrawal of the catheter, after draining the fluid, was a simple, painless procedure and was

performed after the end of the entire period of consolidation. In patients of the comparison group, due to adhesion of the iodoform turunda to the walls of the maxillary sinus and the possibility of displacement of bone fragments, as well as damage to the newly formed granulation tissue, it was necessary to remove the turunda from the sinus gradually. For this, patients of the second group came to the procedures every 2-3 days and small fragments of turunda, after being removed from the azukha, were cut with sterile scissors. this was accompanied by painful sensations of patients and forced them to repeatedly visit the attending physician in the postoperative period.

Conclusions. Methods of immobilization of fragments of the zygomatic bone, arch and maxillary sinus after their reposition using an expandable latex catheter located inside the maxillary sinus, due to the convenience and ease of use, has great advantages over traditional methods of fixation of reduced bone fragments of the zygomatic-maxillary complex, which is widely used in the practice of maxillofacial **surgeons**.

References

1. Kamalova M.K., Fomenko, I. V., Dmitrienko, D. S., Matvienko, N. V., Arjenovskaya, E. N., Gevorkyan, A. G., Maslak, E. E. (2020). Reasons for 1-17-year-old children to visit A dentist during the Covid-19 pandemic. *European Journal of Molecular and Clinical Medicine*, 7(7), 546-558. Retrieved from www.scopus.com
2. Maslak E. E., V. Naumova., Kamalova M.K. (2020). Relationship between General and Oral Diseases: Literature Review // *American Journal of Medicine and Medical Sciences*. - Америка, - Vol.10(9). - P. 690-696. Retrieved from www.scopus.com
3. Kamalova M. K., E.E. Maslak., I.V. Fomenko., A.L. Kasatkina., T.N. Kamennova., T.G. Khmizova., K.V. Nikitina. (2020). Reasons for primary teeth extraction in children aged 1-14 years: a retrospective study // *Palarch's journal of archaeology of egypt*. - Нидерланды, - Vol.17. - No6. - P. 13947-13964. Retrieved from www.scopus.com
4. Kamalova M.K., Komilov H.P. (2019). Maktabgacha yoshdagi bolalarda tish kariesini oldini olish va davolashni optimallashtirishning klinik-iqtisodiy tahlili [Clinical and economic analysis of the optimization of prevention and treatment of dental caries in preschool children]. *Biologiya va tibbiyot muammolari xalkaro ilmiy jurnali*.- № 4.2 (115). 53-56.
5. Kamalova M.K. (2019). Maktabgacha yoshdagi bolalarda tish kariesini davolashda stomatologik yordamni tashkil qilish [Organization of dental care in the treatment of dental caries in preschool children]. *Biologiya va tibbiyot muammolari xalkaro ilmiy jurnali*. - № 4.2 (115). 221-224.
6. Камалова М.К., Маслак Е.Е., Каменнова Т.Н., Осокина А.С., Афонина И.В., Огонян В.Р., Результаты лечения очаговой деминерализации эмали временных резцов у детей раннего возраста // «Тиббиётда yangi kun» научно - реферативный, культурно - просветительский журнал. - Бухара, 2020. - №3(31). - С. 355-357.
7. Kamilov H.P., Kamalova M.K. The use of laser therapy in the treatment of chronic recurrent herpetic stomatitis in children // *Scientific journal European science review Vienna*, 2018. - No. 7-8.- pp. 120-121.
8. Маслак Е.Е., Камалова М.К. (2020). Проблемы организации стоматологической помощи детям дошкольного возраста // *Biomeditsina va amaliyot jurnali*. - Tashkent, - No. 1. - pp. 26-32.
9. Vokhidov U.G., Kamalova M.Q. The use of various techniques in the treatment of traumatic injuries of the oral mucosa in children // *European Journal of Molecular & Clinical Medicine*. - England, 2020. - Vol. 7. Issue 7. - P. 3743-3748.
10. Камилов Х.П., Камалова М.К. Современные подходы в лечении хронического рецидивирующего герпети-ческого стоматита у детей // «Достижения науки и образования» Международный научный журнал. - Москва, 2018. - №3 (25). - С. 46-48.
11. Kamalova M.K., Maslak E.E. Can Dental Screening of Preschoolerswith or without Education of

- the Parents Improve Children's Oral Health? The Longitudinal Study Results // Integrative dentistry and maxillofacial surgery. - Tashkent, - 2022. - № 1(1). - P. 58-62.
12. Kamalova M.K., Sadullayeva N.A. Innovations in surgical treatment of fractures of the zygoma-maxilliarious complex // «British View» Journal. - London, - 2022. -Volume 7. - Issue 2. - P. 144-151.
 13. Камалова М.К. Оценка экономической эффективности программ профилактики лечения кариеса зубов у детей дошкольного возраста // «Tibbiyotda yangi kun» научно - реферативный, культурно - просветительский журнал. - Бухара, 2020. - №4(34). - С. 173-176.
 14. Камалова М.К. Медико-социальный и клинико-экономический анализ лечения и профилактики кариеса зубов у детей дошкольного возраста // «Tibbiyotda yangi kun» научно - реферативный, культурно - просветительский журнал. - Бухара, 2020. - №3(33). - С. 79-80.
 15. Камалова М.К. Социально-экономический эффективность программ профилактики и лечения кариеса зубов у детей дошкольного возраста // «Образование и наука в XXI веке» международный научно-образовательный электронный журнал. - Россия, 2020. - №9. - Т.3. - С. 149-155.
 16. Камалова М.К., Садуллаева Н.А. Современный подход к оперативному лечению переломов скуловерхнечелюстного комплекса // «Журнал Биомедицины и практики» - Ташкент, - 2022. -№ 4. - С. 246-251.
 17. Камалова М.К. Оценка результатов внедрения программ профилактики кариеса зубов у детей дошкольного возраста // «Журнал Медицина и инновации». - Ташкент, 2021. - №4. - С. 680-684.
 18. Камалова М.К. Сравнительная оценка клинико-экономической эффективности программ профилактики лечения кариозных поражений зубов у дошкольников // «Журнал стоматологии и краниофациальных исследований» междисциплинарный подход по заболеваниям органов головы и шеи. - Самарканд, 2021. - Специальный выпуск, - С. 83-87.
 19. Камалова М.К. Организация стоматологической помощи при лечении кариеса зубов у детей дошкольного возраста // «Биология ва тиббиёт муаммолари» международный научный журнал. - Самарканд, 2019. - №4.2 (115). - С. 221-224.
 20. Kamalova M.K., Komilov H.P. (2019). Clinical and economic analysis of the optimization of prevention and treatment of dental caries in preschool children. *Biologiya va tibbiyot muammolari xalkaro ilmiy jurnali.*- № 4.2 (115). 53-56.