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CLINICAL ASPECTS AND TREATMENT OF PATIENTS WITH OCULAR WALL INJURIES WITH REGARD TO VISUAL FUNCTION

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Objective: to study clinical aspects and tactics of treatment of patients with orbital wall lesions with regard to visual function

Methods: analysis of a comprehensive clinical examination of 62 patients with cranioorbital injuries, of which orbital wall reconstruction was performed in 47 patients, 15 patients had isolated injuries of the orbital walls, who were under inpatient treatment in the departments of maxillofacial surgery of the dental clinic of Tashkent State Dental Institute and 2 - clinic of Tashkent Medical Academy in the period from 2018-2022.

Results: Thus, the "inferiority complex" that forms soon after trauma in most patients with posttraumatic defects and deformities of the orbital base is exacerbated if treatment proves ineffective and its duration is prolonged.

Conclusions. Our results confirm the fact that the pledge of optimum functional and esthetic results of treatment is a full-fledged diagnostics and adequate complex restoration of soft tissue and bone structures in patients with pathology**.**

Keywords: eye socket, visual function, cranio-orbital injuries, post-traumatic defects

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КЛИНИЧЕСКИЕ АСПЕКТЫ И ТАКТИКА ЛЕЧЕНИЯ БОЛЬНЫХ С ПОВРЕЖДЕНИЕМ СТЕНОК ГЛАЗНИЦ С УЧЕТОМ ЗРИТЕЛЬНОЙ ФУНКЦИИ

АННОТАЦИЯ

Цель: изучить клинические аспекты и тактика лечения больных с повреждением стенок глазниц с учетом зрительной функции

Методы: анализ комплексного клинического обследования 62 пациентов с краниоорбитальными повреждениями, из них реконструкция стенок орбиты было проведено у 47 пациентов, у 15 пациентов было изолированные повреждения стенок глазниц, находившихся на стационарном лечении в отделениях челюстно – лицевой хирургии стоматологической клиники Ташкентского государственного стоматологического института и 2 - клиники Ташкентской медицинской академии в период с 2018-2022 г.

Полученные результаты: Таким образом «комплекс неполноценности», формирующийся вскоре после травмы у большинства больных с посттравматическими дефектами и деформациями основания орбиты усугубляется, если лечение оказывается неэффективным и сроки его удлиняются.

Выводы. Наши результаты подтверждают то что, залогом оптимальных функциональных и эстетических результатов лечения является полноценная диагностика и адекватное комплексное восстановление мягкотканых и костных структур у больных с патологией.

Ключевые слова: глазница, зрительная функция, краниоорбитальные повреждения, посттравматические дефекты

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KO'Z DEVORI SHIKASTLANGAN BEMORLARNI VIZUAL FUNKTSIYAGA NISBATAN KLINIK JIHATLARI VA DAVOLASH USULLARI

ANNOTATSIYA

Maqsad: ko'z devori shikastlangan bemorlarni klinik jihatlarini va visual funktsiyasiga nisbatan davolash taktikasini o'rganish

Usullari: kranioorbital shikastlangan 62 nafar bemorni kompleks klinik ko'rikdan o'tkazish tahlili o'tkazildi, shundan 47 nafar bemorda orbital devor rekonstruksiyasi amalga oshirildi, 15 nafar bemorda esa orbital devorlarining izolyatsiyalangan shikastlanishi kuzatildi, Ular Toshkent davlat stomatologiya instituti stomatologiya klinikasining yuz va jag' jarrohligi bo'limlarida va 2-klinika 2018-2022 yillarda Toshkent tibbiyot Akademiyasida statsionar davolangan.

Natijalar: shunday qilib, travmadan keyingi nuqsonlar va orbital bazaning deformatsiyalari bo'lgan bemorlarning ko'pchiligida ko'p o'tmay hosil bo'ladigan" pastlik kompleksi", bundan tashqari davolash samarasiz bo'lsa va uning davomiyligi uzayishi kuzatilardi.

Xulosalar. Bizning natijalarimiz davolashning optimal funktsional va estetik natijalarining garovi patologiyaga ega bemorlarda to'liq diagnostika va yumshoq to'qima va suyak tuzilmalarini etarli darajada kompleks tiklash ekanligini tasdiqlaydi.

Kalit so'zlar: ko'z kosasi ko'rish funktsiyasi, kranioorbital shikastlanish, shikastlanishdan keyingi nuqsonlar

Introduction. Orbital fractures are one of the most common midface injuries, second only to nasal injuries. According to P. Siritongtaworn et al. fractures of the orbit make up 40% of all fractures of the facial skeleton. In addition, the number of injuries to the orbit containing fractures of the orbital cavity walls is increasing steadily. Three quarters of all victims are male. Particularly high is the rate of binocular vision impairment with fractures of the lower orbital wall, and this is the most common type among all orbital fractures. Current statistics indicate an increase in the number of victims with fractures of the facial skeleton bones. Fractures of the orbital walls are most common in the zygomatic, maxillary, frontal and naso-atmoidal complex bones; isolated orbital fractures are rare. In 39% of zygomatic bone fractures there is damage to the lower orbital wall, in 6.6% of cases there is a combination of fractures to the eyeball, in 25.5% of eyelid fractures, and in 72.2% of soft tissue fractures to the face.

Objective of the study: to investigate clinical aspects and tactics of treatment of patients with ocular wall damage with regard to visual function

Material and methods

The work is based on the analysis of the complex clinical examination of 62 patients with craniorbital injuries, including orbital wall reconstruction that was done in 47 patients, 15 patients had isolated orbital wall injuries who were hospitalized in the maxillofacial surgery department of the dental clinic of Tashkent State Dental Institute and 2 - clinic of Tashkent Medical Academy during 2016-2019. 38 patients had fracture with displaced bone fragments and 9 patients had the fracture of the eye sockets in the dental clinic of Tashkent State Dental Institute. Patients with unconsciousness and damage to vital organs were not included in our ongoing study. The most effective methods of surgical treatment of orbital base defects and deformations, complications due to each type of operation, number and kinds of repeated operations were revealed while analyzing clinical material.

Examination and treatment were preceded by informed voluntary medical consent signed by all patients with traumatic orbital injury.

Table 1.

Distribution of patients by age and sex in Group I.

Age/sex	Up to 20	21-30	31-40	41-60	Total
man.	18	10	12	6	46 people - 74,2%
Female.	2	7	5	5	16 people - 28.8%
Total:	20	17	17	8	62 persons -100%

All patients were divided into 3 groups:

Group I consisted of 30 patients who underwent closed zygomatic bone repositioning with Limberg hook fixation in order to eliminate the orbital wall deformity;

Group I consisted of 4 patients who used the Esfil endoprosthetic mesh to repair the deformity of the lower orbital wall;

Group III - 13 people who were treated with titanium mini plates to remove the deformation of the lower orbital wall.

The reasons for the defects and deformations of the orbital base are different. Figure 1 shows that the main etiological factor is motor vehicle accidents-64% (39 patients). Domestic trauma comes second: 30.7% (19 patients). In the third place was work-related injury: 6.4% (5 patients).

Results of the study and discussion

In the first place, patients put cosmetic defect in the list of their complaints, and functional disorders in the second place. Thus, the "inferiority complex" which develops soon after trauma in most patients with posttraumatic defects and deformities of the orbital base is exacerbated if treatment proves ineffective and its duration is prolonged. The main complaints are sufficiently characteristic, in Tables 3; 4; 5 they are divided into groups and presented in absolute numbers. The data in the tables show that ophthalmological symptomatology was present in almost all patients in the acute period of injury in the majority of patients with consequences of orbital injuries. Knowledge of the

main complaints allows the clinician to formulate a preliminary conclusion on the diagnosis, to specify which tactics of further examination and treatment should be determined.

When studying the anamnesis, special attention is paid to identifying the causes of injury, the timing of initial referral to a specialized medical facility, and the nature and extent of primary medical and specialized care. The zygomatic-orbital- mandibular complex is considered to be the most complex deformity of the midface. The deformity is manifested by flattening of the zygomatic-orbital region with downward and backward displacement of the mandibular margin and the eyeball, resulting in diplopia. The inner corner of the eye is rounded, somewhat swollen and displaced downwards and forwards due to a fracture of the medial orbital wall. The deformation of the aperture can be aggravated by the ptosis of the upper eyelid.

The ophthalmic symptomatology is discussed in more detail, as it leads to the greatest number of functional disorders in this group of patients. This examination is performed to determine the condition of the eye, its position in the orbit and the function of the oculomotor muscles. The simple and accessible methods used in our department usually make it possible to assess the degree of pathology and choose a treatment tactic. For a more precise and detailed assessment of the visual organ and its appendages, special instruments and devices are used; if this examination is necessary, the patient is referred to the ophthalmology departments of other clinics.

The position of the eyes in the orbit (exophthalmus, enophthalmus, lateral dislocation) is determined by a simple examination (width of the eye slits, protrusion or recession, axial position). If unilateral exophthalmus was present, translocation was measured with the comparative method, i.e. by measuring the difference of one eye stand in comparison with the other in mm, by putting a ruler in horizontal position to the bridge of nose and mentally finding the distance from it to the cornea apex of each eye. Exophthalmometers are used to estimate the degree of displacement more accurately; the simplest is a Hertel exophthalmometer. Diplopia is determined by moving an object (pencil, pen) in different directions at a distance of 1 m in front of the examinee's eyes. If doubling is present, find out where it intensifies and disappears (when looking straight ahead, vertically, horizontally, to the right, to the left). Quantification of diplopia is done by the Madzox method. Restriction of eyeball movements: the patient is asked to close one eye with the hand and follow the movement of an object in different directions with the other eye. This is used to visually determine the deficit in the amplitude of movement of each eye. Quantitative determination of eye movements is done with an ophthalmic instrument-perimeter. The visual acuity of each eye is checked separately with a standard distance test using the Golovine-Sivtsev tables, maximum visual acuity is carried out. The condition of the anterior, posterior eyeball and ocular fundus (haemorrhages, examination of the papilla, etc.) is evaluated by ophthalmoscopy. Special treatment may be prescribed to reduce inflammation and prevent scarring of the visual organ. The ophthalmological examination consisted of visual acuity and field measurements, fundus examination, and the detection of haemorrhages and the presence of diplopia. Computed tomography data was used to measure exophthalmos and enophthalmos. Traction test, an important diagnostic method, assesses eyeball motility. To perform it in conditions of ophthalmic anesthesia the base of inferior rectus muscle was grasped with ophthalmic forceps and the eyeball was moved to all sides. The test was negative if passive eyeball movement was performed to the full extent, limited movement indicates possible impingement of the oculomotor muscles. This test was also carried out in conditions of surgical intervention.

Changes in the structural features of the retina and optic nerve were studied using OCT, a modern technique for qualitative and quantitative assessment of the optic nerve disc, retinal nerve fiber layer and retinal ganglion cell layer. The lesions in all cases we studied were unilateral. Concomitant severe trauma to other organs, including moderate and severe traumatic brain injury (severe and moderate cerebral contusion, intracranial hematomas, penetrating fractures of the skull vault and skull base) were exclusion criteria for OCT.

Ocular ultrasound revealed signs of oculomotor contusion in 8 (12.8%) patients, such as increased thickness and heterogeneity of their echo structure.

Analysis of the visometry data showed that visual acuity was altered in 8 (12.9%) patients. Visual acuity (with maximum correction) equal to 1.0 was observed in 42 (67.7%) patients. In 15

(24,2%) patients visual acuity (with maximal correction) was insignificantly decreased to 0,7-0,9. Another 5 (8.1%) patients had visual acuity (with maximum correction) decreased to 0.5-0.6. Ophthalmoscopy revealed changes in fundus picture in 26 (41,9%) patients. The traumatic angioretinopathy was diagnosed in 14 (22,58%) patients, optic disc edema due to compression - in 5 (8,1%), anterior ischemic neuropathy - in 4 (6,5%), posterior ischemic neuropathy - in 2 (3,2%), retinal opacity in 1 (1,6%) patient.

Perimetry revealed changes of peripheral visual fields in 7 (11.3%) patients, including 1 (14.5%) with traumatic optical neuropathy.

Intraocular pressure in all patients was within normal values and averaged 17.5±1.3 mmHg. In the study of hydrodynamic parameters, intraocular fluid secretion index and Becker's coefficient were within normal values in all patients.

We also carried out OCT examinations and studied morphometric parameters of the retina and optic nerve. In the analysis of retinal thickness in three regions - fovea, parafovea, perifovea, as well as retinal nerve fiber layer (RNF) - the mean values of all parameters corresponded to normal. The analysis of the studied morphometric parameters of the retina and optic nerve in patients with orbital trauma showed that in the majority of patients (70%) all parameters were within normal limits. In 13 (20.9%) cases there were deviations of 1-2 indicators and in 6 (9.6%) cases there were deviations of more than 2 indicators. In all cases, the abnormalities were subtle.

As shown in Table 2, in this pathology, 100% of patients had a cosmetic defect expressed as a recession of the zygomatic and suborbital regions. Ophthalmological symptoms were evident in almost all patients in the acute period of trauma and in the majority of patients with consequences of orbital injuries.

Table 2 summarizes the clinical manifestations of orbital wall injuries. As can be seen from the data, all patients had a cosmetic defect (100%). Ophthalmological symptomatology was manifested in the form of oculomotor disorder in 25 (41.9%), ocular dystopia and limitation of ocular movements occurred in 18 (29%) cases.

In the study of eye position in the orbit, correct eye position was found in 29 patients (46.7%), in 18 (29%) cases the eyes were shifted downwards. Enophthalmos and exophthalmos occurred in 16.1 and 8.06% cases respectively. The results of surgical treatment of defects and deformities of the orbital complex prove the high efficacy of using iodoform tampons as a fixation material. Iodolicyne tampons were used in 13 patients of the group III under investigation. A good therapeutic effect was achieved in 88.4-89.2%. Among the complications of osteosynthesis, 2 cases of cold reaction were identified.

The use of such tampons allows performing the surgery quickly and of good quality and shortens the period of treatment of the patients and prevents the development of complications related to the tissue reaction to the cold exposure and the contouring of the implant.

Surgical interventions performed on the bones of the facial skull for deformities of the maxillary complex are accompanied by significant blood loss (500 to 1500 ml). The vast majority of patients with blood loss of more than 10% of circulating blood were compensated by transfusion of donor red cell mass or whole blood during surgery or in the immediate postoperative period.

Conclusions: Our analysis revealed that the majority of patients with this pathology were admitted to the hospital in the distant (first two days) period after injury - 56.2%. At late admission (two weeks and more) and delayed care, patients had already developed persistent segmental tissue displacements - 6.25%; scarring processes had developed at different levels (superficial, deep); structures acquired faulty memory, preserving deformity and neuromuscular function impairment. The elimination of these anatomical and functional phenomena presents significant difficulties. Among patients with early surgical intervention, diplopia and limitation of movement of the GS were transient and eliminated in the immediate postoperative period due to timely soft tissue plasty and restoration of the integrity of the orbital bone walls.

Thus, the key to optimal functional and aesthetic results of treatment is a complete diagnosis and adequate complex restoration of soft tissue and bone structures in patients with pathology.

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