



ANALYSIS OF FUNCTIONAL DISORDERS IN FRACTURES OF THE MEDIAL WALL OF THE ORBIT IN HOSPITALISED PATIENTS

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Abstract: Modern statistics shows an increase in the number of victims with fractures of bones of the facial skeleton. Orbital wall damage occurs most often in fractures of the zygomatic, maxillary, frontal bones and bones of the naso-ethmoidal complex; isolated fractures of the orbital cavity are rare. In fractures of the zygomatic bone in 39% of cases there is damage to the lower wall of the orbit, in 6.6% of cases fractures are combined with damage to the eyeball, eyelids - in 25.5% and soft tissues of the face - in 72.2%.

Key words: fractures of the medial wall of the orbit, eyeball, facial bones of the skull.

Introduction. Orbital fractures are one of the most common injuries of the midface, second only to injuries of the nasal bones. According to P. Siritongtaworn et al (2001), orbital fractures account for 40% of all fractures of the facial skeleton. The number of orbital injuries accompanied by fractures of its walls is steadily increasing, and three quarters of the victims are men. The volume of ophthalmological examination of victims with orbital injuries plays a significant role in assessing the severity of visual function impairment in case of traumas of this area. In clinical practice there are not rare "mild" forms of orbital wall fractures, in which there is no complex of basic symptoms and having a favourable functional outcome. Nevertheless, a number of authors state that trauma of the orbital cavity with involvement of the eyeball and its auxiliary organs among all traumas of the facial skeleton makes from 36 to

64%. The level of binocular vision impairment is especially high in fractures of the lower wall of the orbit, and this is the most common type among all orbital fractures. Reconstruction of the orbital cavity is a very complicated problem that has not been completely solved so far, and surgeons of different specialities - neurosurgeons, maxillofacial surgeons, ophthalmologists - are engaged in it. The presence of significant anatomical structures and the proximity of vital organs create serious problems both in acute trauma and in the development of posttraumatic deformity: changes in the configuration and volume of the orbit and associated en- and hypophthalmos, leading to diplopia, aesthetic and functional disorders, and in some cases to severe disability of patients.

At present, there are a number of controversial issues in the Russian literature due to the lack of

a unified approach to the treatment of traumatic fractures of the orbital walls, to the use of this or that method of orbital plasty. There are many different modern auto- and allogenic grafts and implants for orbital reconstruction: autografts, titanium plates and meshes, synthetic implants made of porous polytetrafluoroethylene, porous titanium nickelide, and polypropylene silicone. Many surgical rehabilitation techniques are often technically complex or require expensive consumables. There is no unified approach to the treatment of traumatic fractures of the eye socket, to the application of this or that method of endoprosthesis, which would meet the optimal conditions of the eyeball functioning. Thus, due to the urgency of the problem, there is an acute need for further study of it: systematisation and analysis of the accumulated clinical experience and search for rational methods of examination and treatment using modern medical achievements.

Aim of the study: Optimisation of surgical tactics in patients with medial orbital wall trauma on the basis of minimally invasive surgical accesses.

Materials and methods of the study: The work is based on the analysis of complex clinical examination of 62 patients with cranio-orbital injuries, including elimination of orbital wall deformity in 62 patients, 42 patients had an isolated injury of the medial wall of the orbit, who were hospitalised in the departments of emergency maxillofacial surgery of the Tashkent State Dental Institute and the Clinical Emergency Hospital in the period from 2017-2022. Patients with lack of consciousness and damage to vital organs were not included in the ongoing study. When analysing the clinical material, the most effective methods of surgical treatment of defects and deformities of the orbital base, complications for each type of surgery, and the number and types of reoperations were identified.

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

All patients were divided into 3 groups:

Group I - 30 patients who were treated with ioddicerin-containing swab when deformity of

the inferior wall of the orbit was repaired by intranasal access.

Group II - 24 patients, who under the deformity elimination of the medial wall of the orbit were treated with endoprosthetic mesh installation with the traditional surgical access;

III group - 8 people, in order to eliminate the deformity of the medial wall of the orbit a titanium mini prosthesis was used.

RESULTS: External examination of patients with traumatic injury of the orbit revealed haematoma, haemorrhage in eyelid tissues, localisation and extent of wounds of the para-orbital region.

The sensitivity of the skin of the upper and lower eyelid, cheek was investigated by subjective sensations of the patient at the moment of needle tingling of the trigeminal and suborbital nerve exit points. Hypoesthesia indicated possible damage of the bone walls of the orbit.

Palpation of the forehead, eyelids, upper orbital edge, lower, outer edge of the orbit revealed crepitation of the eyelids - a symptom of subcutaneous emphysema, deformation of the orbital edge: the symptom of "step", "fossa".

The position of the eyes was determined in the primary direction of gaze, which made it possible to detect a violation of the position (dystopia) of the eyeball in the orbit:

1. Axial dystopia. The magnitude of protrusion (exophthalmos), depression (enophthalmos) of the eyeball on the side of trauma was determined by Hertel's exophthalmometer, which was placed tightly to the external bony edges of the orbits taking into account the distance between them. The lower mirror reflected the apex of the cornea, the upper mirror reflected a number indicating how far the apex of the cornea was from the point of application.
2. Vertical dystopia - displacement downwards (hypophthalmos) or upwards (hyperophthalmos) - vertical strabismus, was estimated by the position of the pupil centre relative to the horizontal line connecting the pupil centres on the side of injury and the contralateral eye. The magnitude of the

displacement was determined with a transparent ruler, which was placed directly in front. The angle of vertical strabismus was determined according to the standard Hirschberg method.

3. Lateral dystopia - lateral displacement of the eyeball. The magnitude of the eyeball displacement on the side of the injury in the frontal plane was determined with a transparent ruler by the difference in the distance from the middle of the back of the nose to the nasal part of the limbus. A similar distance was determined for the contralateral eye. The angle of horizontal strabismus was determined according to the standard G irshberg method.

The analysis of visometry data showed that visual acuity was changed 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 the visual acuity (with maximum correction) was insignificantly reduced to 0.7-0.9. In another 5 (8.1%) patients visual acuity (with maximum correction) was reduced to 0.5-0.6.

Ophthalmoscopy revealed changes in the ocular fundus picture in 26 (41.9%) patients. Traumatic angioretinopathy was diagnosed in 14 (22.58%) patients, optic disc edema due to optic nerve compression - in 5 (8.1%), anterior ischemic neuropathy - in 4 (6.5%), posterior ischemic neuropathy - in 2 (3.2%), Berlin retinal opacity - in 1 (1.6%) patient.

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

Intraocular pressure in all patients was within normal values and averaged 17.5 ± 1.3 mm Hg. When studying the parameters of hydrodynamics it was found that in all patients the index of intraocular fluid secretion and Becker's coefficient were within normal values.

According to the proposed method of therapeutic and diagnostic algorithm, the surgical tactics was carried out according to the analysis of retinal thickness in three areas - fovea, parafovea, perifovea, as well as retinal nerve fibre layer (RNFL) - the average values of all parameters

corresponded to the norm. 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 the normal range. In 13 (20.9%) cases there were deviations of 1-2 parameters, and in 6 (9.6%) cases - deviations of more than two parameters. In all cases the deviations were not pronounced. The fact of algorithm application in patients who underwent the operation "Repositioning of the medial wall of the orbit" to eliminate diplopia and enophthalmos by our proposed method, the postoperative period was observed without complications. Diplopia and enophthalmos were eliminated. Control examination 4 months after the operation: no pathological disorders of the visual organs. Patients were socially adapted and started their main activity. The method reduced the occurring inflammatory complications to 2%

Summarising the above-mentioned, the proposed therapeutic and diagnostic algorithm should be considered more optimal for diagnostics and effective treatment of patients with trauma of the medial wall of the orbit, this tactics has an advantage in comparison with the previously used one, because the percentage of inflammatory complications is much reduced from 18% to 2%.

Conclusions: The analysis of the materials of patients hospitalised in the surgical department of KBSMP for the period 2017-2022 showed that among the injuries of the maxillofacial region prevail injuries with fractures of the mandible-94%, and injuries of the middle zone of the face are 38-40%, among which fractures of the medial wall of the orbit and fractures of the nasal bones are equal to 25%, complicated by the clinical picture of diplopia and exophthalmos, the average bed-day from 14 -20 for each hospitalisation. When analysing the contingent of patients, the predominance of males under 40 years of age is noted, which dictates the need to use mainly surgical treatment techniques, with a minimum number of stages, allowing for maximum reduction of the patient's stay in hospital and the terms of his disability.

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