

Conference paper

Solving Post-traumatic Effects of Eye Socket Bone Structure

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Abstract

Using implants of a porous titanium nickelid at traumatic lesions of the midface allows you to restore the bone structure of the lower edge and the bottom of the eye socket, avoid or significantly reduce the number of complications such as deformation, enophthalmos.

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1 Introduction

Traumatic lesions of the midface (SZL), which are accompanied by the destruction of the bottom edge and the bottom of the eye socket, occurs in 8-15% in the structure of the facial skeleton traumas. Surgical intervention should be aimed at the elimination of bone defects.

2 Experimental

To restore the destroyed bone structures of the eye socket, its bottom wall and infraorbital edge, we used a combined implants of a porous titanium nickelid. Which are isolated from the soft tissues of the eye socket by bone plates, which are formed of cheekbones alveolar crest or anterior wall of the maxillary outdoor sinus.

This method we have used for small defects, not exceeding 1 cm² in diameter, which are located in the middle and bottom of the front third of the eye socket. During surgery, with endoscopic support via under the ciliated or transconjunctival approaches we visualized the existing defects. Then, using the combined implants we replaced defective lower wall of the eye socket. When it was necessary at the same time eliminating defects infraorbital edge of eye socket, implants leans over the edge of eye socket on the magnitude of the defect. Then the combined implant fixed with screws or staples of titanium nickelid to the surviving areas of the lower edge of the eye socket (Fig. 1) [1-4].

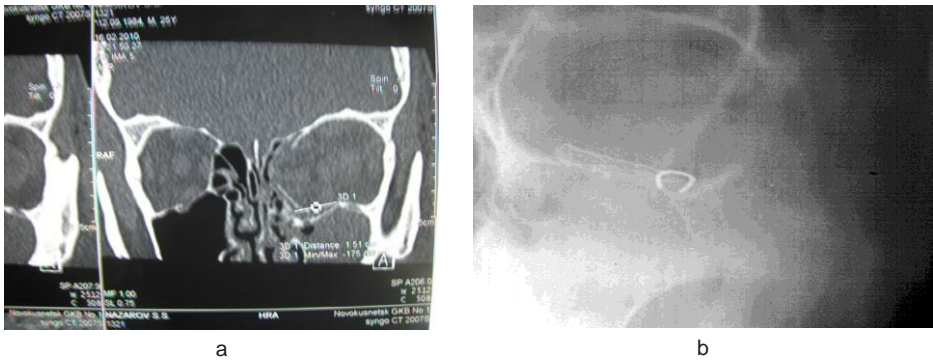


Figure 1 – Solving the bone defect, the lower wall of the eye socket

At the large defects of bone bottom wall and infraorbital edge (more than 1 cm²), appropriate to use porous titanium-nickelid plates, perforated titanium plates and titanium mesh. The patient’s N clinical case given as an example.

The victim N. was transferred from the neurosurgical department at the eighteenth day after the injury. Wounding projectile removed in the day of admission, performed primary surgical treatment. The patient complained of facial asymmetry, the displacement of the eyeball downward, numbness in the suborbital region and part of the upper lip (Fig. 2).

To correct the defect of the eye socket lower wall (2x3 cm), it infraorbital edge and the outer wall of the maxillary sinus made of a plate of porous titanium nickelid, was made implant in accordance with architectonic above areas. Has been made correction in the surgical wound and installed in the area of the defect via intraoral access (Fig. 3) [2, 5].

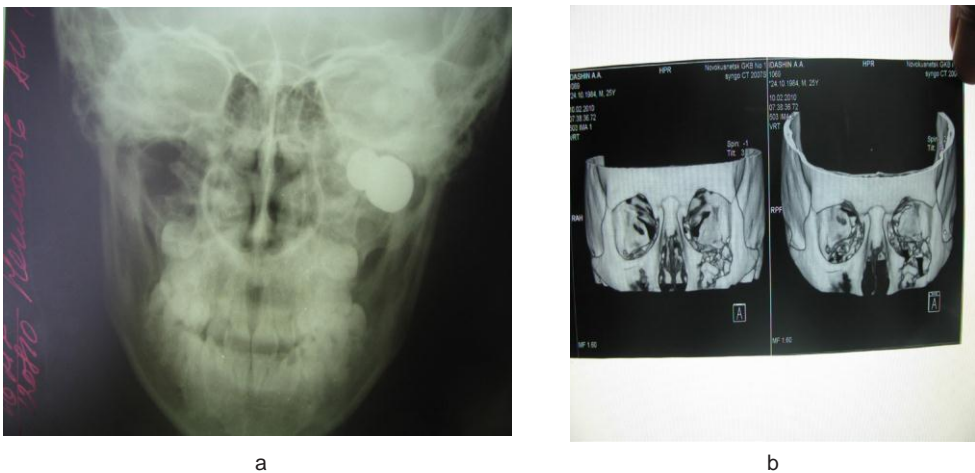


Figure 2 – The defect of the lower wall and infraorbital edge of the eye socket after use of traumatic weapons

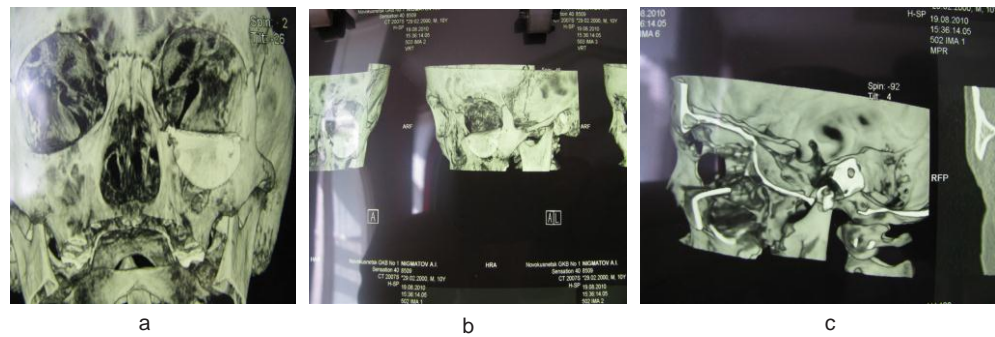


Fig 3. – Solving extensive bone defect of bottom edge and the bottom of the eye socket

3 Summary

Thus, the combined use of a porous permeable titanium nickelide implants, isolated from the periorbital tissue autobone, as replacement implants, allowed to achieve good aesthetic and functional results of treatment in 98.5% of patients with traumatic injuries of midface. Reduce the period of temporary incapacity in 1.5 -1.7 times, prevent the development of complications in the form eno- and exophthalmos, strabismus, binocular diplopia, compression neuritis of infraorbital nerve and posttraumatic deformities.

4 Acknowledgments

TiNi-based medical materials and implants (porous plates) were worked out and manufactured in the Research Institute of Medical Materials and Implants with shape memory (Tomsk).

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