



A new approach in management of orbital adherence syndrome



Hasanov F^{1.}, Ahmadov S^{1.}, Isgandarova S^{1.}

Introduction: Orbital walls are one of the most common sites of midface fractures and account for approximately 40% of traumatic injuries of this region. These fractures are often associating with changes in anatomy of orbital cavity and frequently affect orbital inferior wall, infraorbital groove and canal, and medial orbital wall which leads to changes in its pattern and volume as well. The gold standard in treatment of orbital walls fractures is surgical reconstruction, that in includes fracture site exposure, freeing tissue prolapsed into the fracture site, and re-approximating the orbital wall support, usually with an orbital implant

Objectives: However, their implementation could be associated to a number of postoperative complications, such as mispositioning and orbital adherence syndrome. Orbital adherence syndrome is a poorly described and understood phenomenon and appears to occur after the use of large-pored titanium mesh for orbital reconstruction¹. It is usually appearing as limited eye movement that appears 1-2 weeks after reconstructive procedure³. Prevention is possible through careful patient selection and the placement of a smooth interface medium in the initial surgery. The aim of current study is to present the outcomes of orbital reconstruction done by both orbital mesh and customized smooth-surfaced titanium orbital implants¹.

Material and Methods: The current study was performed in period of 2020-2023 in Department of Oral and Maxillofacial surgery of Azerbaijan Medical University on 19 patients with orbital wall fractures who were categorized into two groups: Group A - 11 patients (orbital mesh implants) and Group B - 7 patients (customized smooth-surfaced implants).

Results: Residual diplopia was recorded in 3 cases (27.7%) of Group A and was not recorded in Group B. From 3 diplopia cases 2 were associated to orbital adherence syndrome. In 1 case of single diplopia, observation chosen while diplopia was disappeared 6 months postoperatively. In 2 cases orbital adherence syndrome was managed by revision surgery and application of collagen resorbable membrane, placed on top of orbital mesh(fig 1.). The purpose here is to create smooth surface. In both cases listed symptoms were disappeared postoperatively. The implant withdraw was done in only one case in Group B, due to the wish of the patient 9 month postoperatively.

Discussions: Orbital wall fractures are one of the most common fractures among all midfacial factures and could be accounted up 40%. Recently increasing of incidence rates of these fractures was noted in literature data. These fractures lead to impair of orbital anatomy, including anatomical composition of orbital walls, their relationship to the oculomotor muscles, entrapment of these muscles as well as herniating of orbital components towards defect within orbital walls. Retrospective literature review showed orbital adherence syndrome to be found in 6% of cases of orbital reconstruction done by orbital mesh plates. In our study orbital adherence syndrome appeared in 3 patients in whom we used orbital mesh implants. In these cases, a vigorous fibrotic reaction had taken place between the orbital contents and the titanium mesh implant. We postulate that the fibrous reaction between the implant and the orbital contents caused the eye movement restriction and the lid retraction.

Conclusions: Orbital adherence syndrome is one of the possible complications of orbital walls reconstruction and could be related to usage of orbital mech plates. Unlike standard orbital mesh implants proposed customized smooth-surfaced titanium orbital implants has no pores on its surface, thus prevents development of orbital adherence syndrome. Application of this type implants could significantly improve postoperative outcomes in orbital reconstruction. However, in our opinion further investigations directed towards customization and standardization of these implants could become beneficial.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

Figure 1- our customade implants
Figure 2 and 3- during surgery and using our implants
Figure 4-eyeball movements before surgery
Figure 5- eyeball movements after surgery