Orbital Volume Restoration Surgery of the Inferomedial Blow-out Fracture

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Abstract

Background: The goals of surgically managing orbital blow out fractures are to restore the function and cosmesis of pre-traumatic status, as closely as possible. Conventionally, the orbital wall is often reconstructed with synthetic material without bony reduction. In contrast, the fractured orbital wall was restored to the pre-traumatic position with the assistance of transnasal reduction by passing the elevator through the ethmoidal or maxillary sinuses (It’s called ‘Orbital volume restoration surgery’). The aim of the present study was to compare the outcomes between orbital volume restoration surgery (Group A) and surgery without volume restoring procedure (Group B) in inferomedial orbital wall fractures.

Methods: Thirty patients with pure inferomedial orbital wall fractures who underwent surgical reconstruction from March 2007 to August 2012 were enrolled. Patients were categorized into two groups depending on surgical technique. The orbital volume and the orbital volume ratio were prospectively measured before and 6 months after the surgery with the use of three dimensional CT scans, and Hertel scale was measured with a Hertel exothalmometer.

Results: The orbital volume ratio was decreased by average of 11.49% in group A, compare with 3.66% in group B (p<0.05).(Table 1) The changes in Hertel scale were 0.23mm in group A, and 0.20mm in group B. However, it was statistically insignificant the difference in Hertel scale (p>0.05).

Table I. Preoperative and Postoperative Orbital volume Expansion in Each Group

<table>
<thead>
<tr>
<th></th>
<th>Unaffected orbit</th>
<th>Affected orbit</th>
<th>Volume change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Preoperative</td>
<td>Postoperative</td>
</tr>
<tr>
<td>Group A</td>
<td>15</td>
<td>21.96</td>
<td>26.31/119.93</td>
</tr>
<tr>
<td>Group B</td>
<td>15</td>
<td>20.89</td>
<td>25.07/121.46</td>
</tr>
<tr>
<td>A–B</td>
<td>1</td>
<td>1.07</td>
<td>1.24/-1.53</td>
</tr>
</tbody>
</table>

Conclusions: The orbital volume restoration surgery results in better outcome than surgery without volume restoring procedure. Therefore, orbital volume restoration surgery can be considered as a useful method in inferomedial blow out fractures.
References


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