

안와내벽의 단독외향골절 86례에서의 골절용적에 따른 안구함몰과의 관계 분석

부산 메리놀병원 이비인후과

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A Correlation between the Volume of Herniated Orbital Tissues and the Degree of Enophthalmos : Analysis of 86 Isolated Blowout Fracture Cases of the Medial Orbital Wall

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—ABSTRACT—

Background and Objectives : Blowout fractures of the medial orbital wall with persistent diplopia, eyeball movement disorders and enophthalmos require a surgical treatment. Nevertheless, it is often difficult to measure the degree of enophthalmos due to periorbital edema in the early post-traumatic period. It would be quite useful if we could forecast the extent of enophthalmos in accordance with the volume of herniated orbital tissues observed in the computerized tomography images. Accordingly, this study investigated for any correlation between the volume of herniated orbital tissues and the extent of enophthalmos in the isolated blowout fractures of the medial orbital wall. **Materials and Methods** : 86 cases with an isolated blowout fracture of the medial orbital wall, which were confirmed by computerized tomography scans, were evaluated. The volumes of herniated orbital tissues were determined by the computerized tomography images using the simple linear measurement technique. The degree of enophthalmos was measured by exophthalmometry. Each calculated volume of the herniated orbital tissues was compared with the degree of enophthalmos in order to determine whether there was any significant correlation between them. **Results** : The extent of enophthalmos was proportional to the volume of herniated orbital tissues ($p < 0.05$). The volume of herniated orbital tissue associated with 2 mm of enophthalmos as calculated by the regression curve was 1.15 ml. **Conclusion** : Enophthalmos of 2 mm or more, which is a frequent indication for surgery, could be expected if the volume of herniated orbital tissue were 1.15 ml or more. (*J Clinical Otolaryngol* 2003;14:100-104)

KEY WORDS : Blowout fracture · Medial orbital wall · Enophthalmos · Volume of herniated orbital tissue.

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가 가 .²⁻⁴⁾

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Hertel⁵⁾⁶⁾

(exophthalmometry)

2~3 mm 86

7)8)

Hertel

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7~14⁹⁾

10 (Table 1).

(axial) (cor-

Table 1. The degree of enophthalmos

Enophthalmos (mm)	Number of the patient
0 - 1.0	37 (43.0%)
1.0 - 2.0	34 (39.5%)
2.0 - 3.0	10 (11.6%)
3.0 - 4.0	5 (5.9%)
Total	86 (100%)

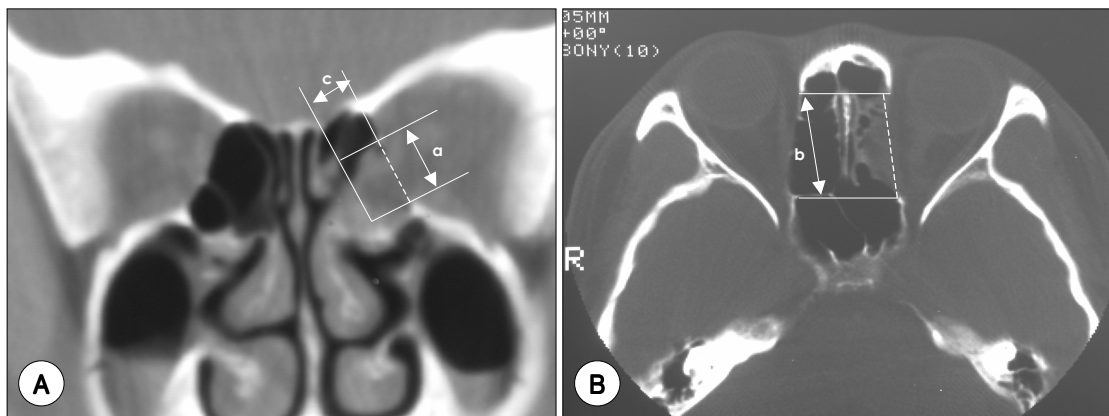


Fig. 1. The volume of herniated orbital tissue are calculated from measurements on coronal (A) and axial CT scans (B) (a : height of the medial wall defect, b : length of the medial wall defect, c : degree of medial displacement of the herniated orbital tissue, volume of herniated orbital tissue= $ABC/6$).

onal) 5 mm

regression method)

p<0.05

(A)

(B)

결 과

(C)

(Fig. 1).

10

(Fig. 2).

$$E^* = 1.45 + 0.48 \times \text{Volume}(E^*)$$

dinal axis)

(longitu-

Volume

ABC/6

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(Ta-

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ble 2).

1.14 ml , 3 mm

2 mm

3.23 ml

(generalized linear

2 mm

1.14 ml

1.14

Table 2. The volume of herniated orbital tissue in blowout fractures of the medial orbital wall

Volume (ml)	Number of the patient
0 - 1.00	27 (31.4%)
1.00 - 2.00	32 (37.2%)
2.00 - 3.00	12 (14.0%)
3.00 - 4.00	7 (8.1%)
4	8 (9.3%)
Total	86 (100%)

ml

57

4 가

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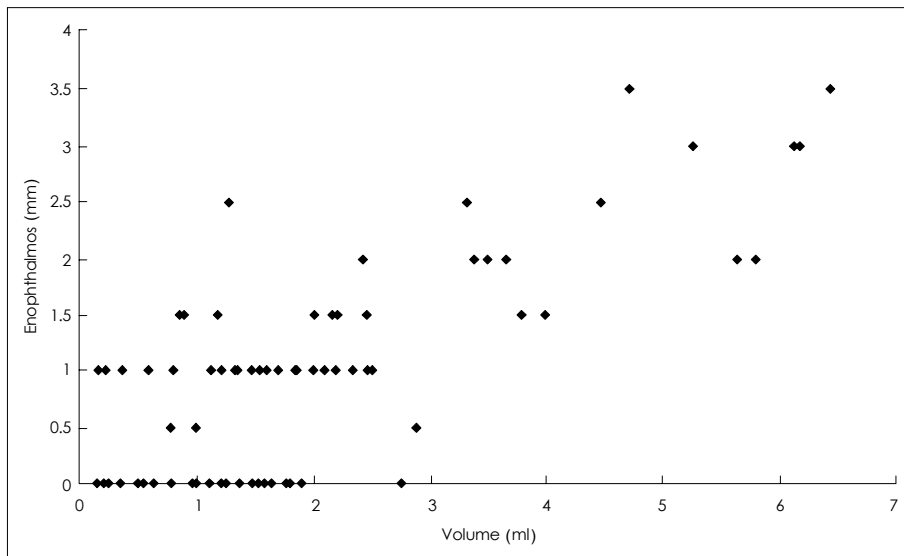


Fig. 2. The correlation between the volume of herniated orbital tissue and the degree of enophthalmos was high ($r = 0.888$) with a regression line slope of 1.

: 86
 , 3 mm 7%, 12%
 가
 2.5 mm, 4 mm , 3
 0.5 mm, 1.0 mm mm 2 mm (17)
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 S-
 가 (11)
 0.5 ml 가
 가 1 mm (18) , 9
 (11-13)
 (2)-4(14)
 1 , 6
 가
 가 , 2 mm , 2 0.9 ml , 3 mm 2.1 ml
 (10) 86
 5)6)
 ,
 1.14 ml , 3 mm 2 mm 3.23 ml
 (7)8)
 가
 , 가 가
 7 가 가
 14 (9) , 7~14
 Manson
 (displacement)
 (15)16)
 , 5 mm
 가
 가 가 ,
 가 가 ,
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 가 가
 가 2.8% 가
 1 mm

