Available online at www.sciencedirect.com

ScienceDirect

British Journal of Oral and Maxillofacial Surgery 55 (2017) 363–366

BRITISH Journal of Oral and Maxillofacial Surgery

www.bjoms.com

Ophthalmic outcomes of fractured zygomas

R.J. McGalliard [a], J. Kimpton [a], N.M.H. McLeod [b,*]

[a] *Oxford University Medical School*

[b] *Department of Oral & Maxillofacial Surgery, The John Radcliffe, Headley Way, Oxford OX3 9DU, UK*

Accepted 20 October 2016

Available online 16 March 2017

Abstract

In patients with fractures of the zygomatic complex, computed tomography (CT) often identifies extensive defects in the orbital floor. Some surgeons recommend routine exploration and repair of these defects during repair of the zygoma, while others advocate a more selective approach, but there is a paucity of evidence either way. We report a retrospective case series of 50 patients who had open reduction and internal fixation of zygomatic fractures by a single surgeon in the maxillofacial department at the John Radcliffe Hospital, Oxford, between 2011and 2014. The orbit was repaired only in those with severe diplopia, or restriction or malpositioning of the globe. Patients were evaluated by age, sex, aetiology, preoperative findings including diplopia and ocular malpositioning, fracture pattern, and morbidity. A total of 14 had preoperative ophthalmic signs. In five these were minimal so treatment was conservative. Nine (eight with diplopia and one with a malpositioned globe) had exploration and seven of them had the orbit repaired at the same time as the zygoma. This was not possible in the remaining two because of the complexity of the defect. There were no postoperative ophthalmic signs in the 41 who did not have orbit explored, or in the seven who had it repaired, and residual signs resolved after planned secondary reconstruction in the remaining two. We recommend that the orbit is explored only in patients with severe diplopia, or restriction or malpositioning of the globe.

Keywords: Zygoma; Orbit; Diplopia; Hypoglobus

Introduction

The zygomaticomaxillary complex is crucial to the integrity of the orbit, as it forms most of its lateral wall and floor. In patients affected by maxillofacial trauma, computed tomography (CT) can clearly show extensive defects in the orbital wall, which can vary from a simple linear line in non-displaced fractures to complete disruption of one or more of the walls with prolapse of soft tissue. Some surgeons recommend routine exploration of the internal orbit and repair of the orbital floor during repair of the zygoma,[1–3] while others advocate a more selective approach,[4–10] but there is a paucity of evidence to support either.

At the Department of Oral and Maxillofacial Surgery at the John Radcliffe Hospital, Oxford, we have established a simple protocol based on preoperative clinical findings to decide whether orbital reconstruction with repair of the zygomaticomaxillary complex is necessary (Fig. 1). We explore the orbit in patients with clinical signs and repair small defects with polydioxanone (PDS®, Ethicon, Livingston, UK) sheets and large ones with titanium mesh. If CT shows that the defect is very large, typically involving three walls with displacement of the orbital plate of the palatine bone, we restore the orbital contents with a PDS sheet, and plan secondary definitive anatomical repair with customised implants.

* Corresponding author. Tel.: +44 1865743102.
E-mail address: niall.mcleod@ouh.nhs.uk (N.M.H. McLeod).

http://dx.doi.org/10.1016/j.bjoms.2016.10.026

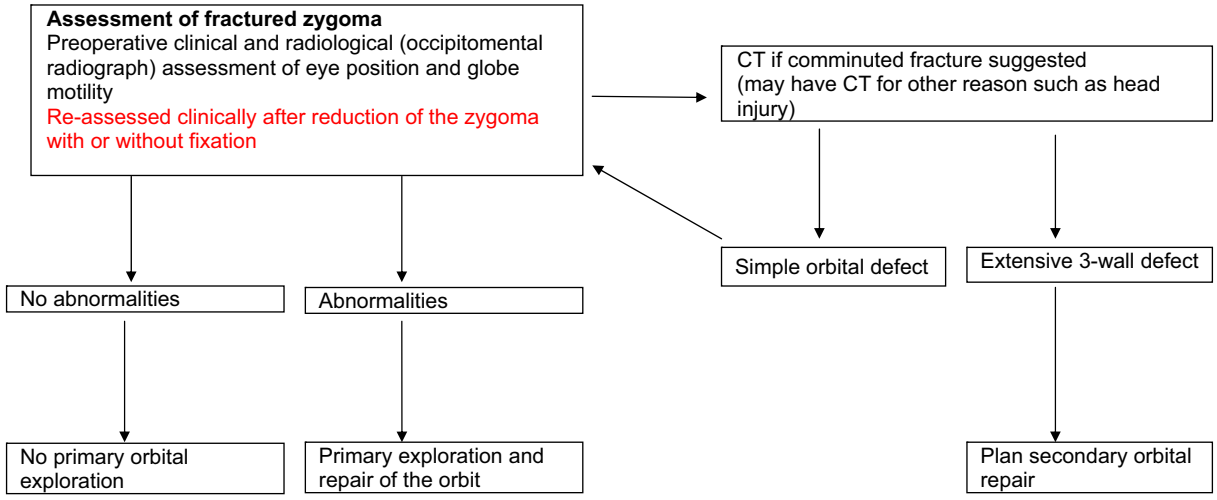

Fig. 1. Local protocol for management of the orbit in zygomatic repairs. In red: the additional assessment added after this study (CT: computed tomography).

Table 1
Age and sex of patients. Data are number.

Age range (years)	Male (n = 43)	Female (n = 7)
0-14	1	0
15-29	22	1
30-44	13	2
45-59	7	3
>60	0	1

Table 2
Aetiology of fractures of the zygomaticomaxillary complex.

Aetiology	No. of patients (n = 50)
Alleged assault	29
RTA	4
Fall	3
Sports	14

Methods

We retrospectively studied a case series of 50 patients who had open reduction and internal fixation of fractures of the zygomaticomaxillary complex between 2011 and 2014. Consecutive patients whose notes could be found, who had attended follow up, and had been operated on by a single surgeon, were included. According to the local protocol, only patients with severe diplopia, or restriction or malpositioning of the globe had orbital exploration and repair. Patients were evaluated by age, sex, aetiology, clinical findings including diplopia and ocular malpositioning, fracture pattern, and morbidity.

Results

Of the 50 patients, 43 were men and 7 were women, mean (range) age 34.0 (13-66) years (SD 12.6). Table 1 shows the age distribution. Fractures of the left zygoma were the most common (left 31; right 19). Four patients had additional facial fractures (two had a Le Fort I fracture, one a frontal fracture, and one a nasal fracture). Table 2 shows the aetiology of the fractures. The mean (SD) interval between trauma and primary operation was 10.4 (6.4) days.

A total of 14 patients had preoperative ophthalmic signs. These were minimal in five so treatment was conservative. The other nine (eight with diplopia and one with a malpositioned globe) had orbital exploration, and seven of them had repair with titanium mesh or PDS sheet (Table 3). This was not possible in the remaining two because of the complexity of the defect, and they had planned secondary procedures several months later with customised prostheses. There were no postoperative ophthalmic signs (diplopia or malpositioning of the globe) in the 41 patients who did not have exploration, or in the nine who had exploration and primary or definitive secondary reconstruction.

Table 3
Preoperative ophthalmic signs in patients who had exploration and repair of the orbit.

	No. of patients
Diplopia	4
Malpositioned globe	1
Both	4

Discussion

Fractures of the zygomaticomaxillary complex can considerably alter the structure, function, and aesthetic appearance of the facial skeleton, including the globe.[11] They are often seen in cases of maxillofacial trauma, and are particularly common in young men.[12–15] The causes include road traffic accidents, assaults, falls, and sports, and although the relative