

Computer Assisted Reconstruction of Unilateral Zygomatico-Maxillary Complex Fracture

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Contents

	Page
List of Abbreviations	i
List of Figures	iii
List of Tables	vi
Introduction	1
Review of Literature	3
Aim of Study	36
Patients and Methods	37
Results	60
Discussion	75
Summary and conclusion	81
References.....	83
Arabic Summary	

LIST OF ABBREVIATIONS

List of Abbreviations

2D	Two dimensional
3D	Three dimensional
ZMC	Zygomatico Maxillary Complex
ZA	Zygomatic Arch
CMF	Craniomaxillofacial
CT	computed tomography
MRI	Magnetic resonance imaging
CBCT	Cone beam computed tomography
CAS	Computer assisted surgery
CS	Conventional surgery
ASPRS	American Society of Plastic and Reconstructive Surgery
ANOVA	Analysis of variance
LSD	Least significant difference
CAD/CAM	Computer aided design/ computer aided manufacture.
DICOM	Digital Imaging and Communication In medicine
No.	Number
AST	Aspartate Transaminase

ALT	Alanine Transaminase
PT	Prothrombin Time
PC	prothrombin concentration
PTT	Partial Thromboplastin time
INR	International Normalized Ratio
STL	Stereolithographic
NOE	Naso- Orbito –Ethmoidal

LIST OF FIGURES

List of Figures

Figure	Description	Page
1	Zygomatic articulation	3
2	Jackson's classification of orbitozygomatic fractur	7
3	Pre operative photographs of a patient with left ZMC	36
4	Palpation of the facial skeleton	37
5	2D CT axial and coronal cuts scan of a right unilateral zygomatic complex fracture	38
6	MIMICS screen for thresholding	39
7	A reconstructed axial view of the bony structures before and after thresholding.	40
8	3D image of bone showing the multiple fractures and displacement of the right zygomatico-maxillary complex fracture	40
9	Mirror image of the intact side on to the fractured side	40
10	Self cured acrylic stents on the zygomaticofrontal suture & infra orbital rim	41
11	Prebending of the titanium mesh on STL model.	42
12	Tarsoraphy applied to the left eye	43
13	Application of raney clamp to the scalp incision	44
14	Elevation of the flap at the subgaleal plane	45
15	Complete elevation of the coronal flap and incising periosteum and superficial layer of temporalis fascia	45
16	Skin incision of subciliary approaches 3-5 mm below the eye lashes	46
17	Orbital septum with pre tarsal layer of orbicularis oculi attached to the lower eye lid and pre septal layer retracted inferiorly	47

18	Complete exposure of the inferior orbital rim and the fracture of it.	47
19	Lateral eye brow incision.	48
20	Intra oral trans mucosal approach	49
21	Reduction and fixation of ZMC	50
22	(A) Osteomatized LT zygomatico – Maxillary complex fracture (B) Reduction and fixation with 2.0 plates & 3D microplates	51
23	(A)Trans mucosal oral approach for harvesting of chin bone graft ,(B) marking the site of harvesting of chin bone graft with a fissure bur ,(C) exposure of anterior iliac crest for graft harvesting ,(D) bone graft ,(E) the prebended titanium mesh adapted over the zygomatic defect , (F) intraoral position of the mesh at the zygomatico maxillary buttress.	51
24	Coronal approach closed with staples	52
25	Subciliary approach closed with polypropylene	53
26	Transmucosal approach closed with (Poly glactin 910).	53
27	The lines drawn between midsagittal plane and zygomatic arch for Mediolateral measurement	55
28	2D axial cut with 2 cm spaced anterioposterior measurement	55
29	Coronal cut with 4 vertical measurements.	56
30	Pre operative photograph of a PT no. 1 in group I with RT inferiorly displaced ZMC fracture (A) . Post operative photograph showing esthetic improvement.	58
31	Pre operative photograph of a patient with RT ZMC fracture (A) , post operative photograph good esthetic improvement of the malar prominence after reconstruction with prebent titanium mesh , milled ectropian of RT lid is noted .	59
32	Pre operative photograph of a PT with LT delayed ZMC fracture with facial widening (A) , postoperative photograph with apparent facial widening	60
33	Pre operative CT of patient no.1 in group 1: axial cut showing right side displaced zygomatic bone fracture (A) ,and a coronal	62

	cut showing zygomatico maxillary fracture (B). coronal showing accurate reduction and fixation at zygomatico frontal area and zygomatico maxillary buttress (C), 3D CT showing good alignment of zygomatic arch and infra orbital rim (D).	
34	Pre operative 2D CT axial cut of a PT no.1, group II with LT ZMC posteriorly and laterally displaced (A), 3D CT of the same PT (B). postoperative CT (C) 2D axial cut, (D) 3D of the same pt showing reconstruction with titanium mesh and bone graft with apparent facial widening of the LT side of the face.	63
35	Preoperative CT axial cut of a PT no.3, group II with LT delayed ZMC (A), postoperative CT axial cut with titanium mesh covering entire defect. (B) Preoperative 3D CT mesh (bottom view showing LT post traumatic zygomatic defect (C), postoperative 3D CT showing reconstruction of the zygomatic defect with titanium mesh. (D)	64
36	Pre operative 3D of pt no.1, group 3 with LT displaced ZMC fracture (A), postoperative 3D showing good reduction at the Zygomaticofrontal area and infraorbital rim but step deformity was present at the zygomatic arch.	64
37	Comparison between mean values of intact and reconstructed sites in mediolateral variable in different studied groups	65
38	Comparison between mean values of percent change in mediolateral variable in different studied groups	66
39	Comparison between mean values of intact and reconstructed sites in anteroposterior variable in different studied groups	67
40	Comparison between mean values of percent change in anteroposterior variable in different studied groups	68
41	Comparison between mean values of intact and reconstructed sites in vertical variable in different studied groups.	69
42	Comparison between mean values of percent change in vertical variable in different studied groups	70
43	Comparison between mean values of percent change in total..... variable in different studied groups.	71

LIST OF TABLES

List of Tables

Table	Description	Page
1	Patient's demographic characters of group 1	58
2	Patient's demographic characters of group II	59
3	Patient's demographic characters of group III	60
4	Comparison between mean values of intact and reconstructed sides in mediolateral variable in different studied groups.	65
5	Comparison between mean values of percent change in mediolateral variable in different studied groups.	66
6	Comparison between mean values of intact and reconstructed sites in anteroposterior variable in different studied groups.	67
7	Comparison between mean values of percent change in anteroposterior variable in different studied groups.	68
8	Comparison between mean values of intact and reconstructed sites in vertical variable in different studied groups.	69
9	Comparison between mean values of percent change in vertical variable in different studied groups.	70
10	Comparison between mean values of percent change in total..... variable in different studied groups.	71

INTRODUCTION

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The zygomatic maxillary complex is the second most frequently fractured area of the craniofacial skeleton.^[1] Typically, the entire complex is separated from its adjoining articulations.

This fracture has several clinically important consequences. First, it disrupts the normal, symmetrical position of the malar Prominence and causes significant facial deformity.^[2] Second, it enlarges the volume of the bony orbit and results in enophthalmos and ocular globe dystopia.^[3] Third, it interrupts the infraorbital canal and causes dysfunction of the infraorbital nerve. Consequently, precise reconstruction of the orbitozygomatic complex is essential to restore these deficits.

Early diagnosis and treatment offers the best opportunity to restore the pre injury structural relationships.^[4]

Concomitant life-threatening injuries, misdiagnoses, or inadequate initial treatment can lead to delay in repair and secondary complications that usually require more complex methods of management. Planning of such cases is mainly dependant on clinical and radiographic findings, including those presented as three dimensional (3D) radiographic in computerized tomography (CT) scan.

The conventional techniques depend only on surgeons experience and a “mind’s-eye view” to reconstruct the skeletal symmetry. The introduction of computer-aided surgical navigation systems and computer aided design & computer aided manufacturing (CAD/CAM) softwares has offered additional tools to assist the surgeon with accurate facial symmetric reconstruction.^[5]

Computer assisted techniques had provided surgeons with an opportunity to perform virtual manipulations of CT datasets preoperatively and transfer the preoperative plane to the operating room.^[6]

These techniques should be accurate in demonstrating ZMC fracture anatomy and it may help in the restoration of perinjury facial symmetry in unilateral ZMC fracture cases.