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ANALYSIS OF FACIAL SOFT TISSUE ASYMMETRY AFTER ZYGOMATIC BONE FRACTURE MANAGEMENT USING CONE BEAM COMPUTED TOMOGRAPHY – A PROSPECTIVE STUDY

By

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ABSTRACT

Background: ZMC fractures are among the most common injuries of craniofacial fractures, accounting for an incidence range of 13%–40% of all facial fractures, making ZMC fractures the second most common injury after nasal bone fractures. The zygomaticomaxillary complex (ZMC) is one of the main buttresses in the mid-facial area, serving an integral functional, structural, and aesthetic role in the mid-face contour along with protection of the orbital contents.

Objectives: To analyse the facial soft tissue asymmetry after zygomaticomaxillary complex fracture management using cone beam computed tomography.

Methods: A prospective experimental study was conducted from July 2021 to January 2024 in patients undergoing Open Reduction and internal fixation of fractured fragments of a zygomaticomaxillary complex fracture. Cone-beam computed tomography (CBCT) images of patients who underwent open reduction at least 3 months prior were compared with contralateral side for asymmetry.

Results: The degree of asymmetry was measured in both the test and control groups. Landmarks like zygion, bucclae, point of cheek and frontozygomatic point showed a statistically significant difference between the two groups. This study reports 83.33 % symmetry and 16.67 % asymmetry in soft tissue post open reduction and internal fixation of a ZMC fracture.

Interpretation: This study was cross-sectional and prospectively controlled. The kind of ZMC fracture (comminuted or linear) was the main predictive variable. Based on cone beam computed tomographic images, the key outcome variable was facial asymmetry, which was defined as the bilateral difference in the position of the malar eminence (ME) in three dimensions.

Conclusion: There are several reasons linked to soft tissue asymmetry that develops during open reduction surgery. CBCT and facescan was used to assess the asymmetry of ZMC fracture patients following surgery and it proved as an important tool in the study to assess the asymmetry of the soft tissue and help patients understand the accuracy of hard tissue reduction by showing minimal asymmetry scientifically and objectively

KEYWORDS: Zygomaticomaxillary complex fractures; soft tissue asymmetry; cone beam computed tomography

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