



RESEARCH ARTICLE

USE OF C-ARM IN ASSESSING THE INNOMINATE LINE (ZYGOMATICOSPHEOID SUTURE)
IN ZYGOMATICOMAXILLARY COMPLEX FRACTURES

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ABSTRACT

Zygomaticomaxillary fractures are the most common fractures that can occur in the maxillofacial region. Fracture of these zygomafractures can be managed by different methods. Fracture in the zygomaticosphenoidsuture is difficult to visualize clinically. Post-operative radiographs are the only way to assess the adequacy of reduction of these fractures. This article describes a technique that uses the C-Arm to quickly and accurately evaluate the reduction intraoperatively so that appropriate corrections can be made.

INTRODUCTION

Management of fractures involves reduction, fixation and immobilization. Reduction, which is anatomic realignment of fracture ends, is a challenging task in the facial bones (Toriumi et al., 2014). Facial bones unlike long bones are three dimensional structures, which makes reduction difficult. Zygoma is a prominent bone, which gives esthetic facial appearance and maintains facial width. Due to its prominent position it is more prone to fractures in RTA or assault. C-Arm, is an essential equipment in any operating room. Usually used for orthopaedic procedures, it can be used for phenomenal benefit in management of the fractures of zygomatic bone (Kisung Lee et al., 2012). The Campbells lines and Dolans lines along with the innominate line can be visualized in the Waters Projection in the C- Arm and can be used for adequate reduction of Zygomatic fractures intraoperatively (Badjate et al., 2005).

C-arm technique

Patient is placed in Anti-Trendelenberg position with neck extended and supported. Image intensifier is placed as close as possible to patient in vertex area. X-ray source should be kept

as far from patient as possible and the intensifier must be kept as close as possible. This will reduce the entrance surface close to patient and reduce magnification of image. X-rays are directed from the center of the chin towards vertex area approximately 5° upwards to imaginary line drawn from Menton to Bregma (Tejraj Pundalik Kale, 2010).

Case description



Figure 1. Pre operative CT image of patient with right ZMC fracture, rotated in anticlockwise direction along M-L axis and P-A axis and clockwise direction in I-S axis with fracture of angle of mandible on right side. Patient is taken to operating room and operated under guidance of c-arm in assessing ZMC fracture

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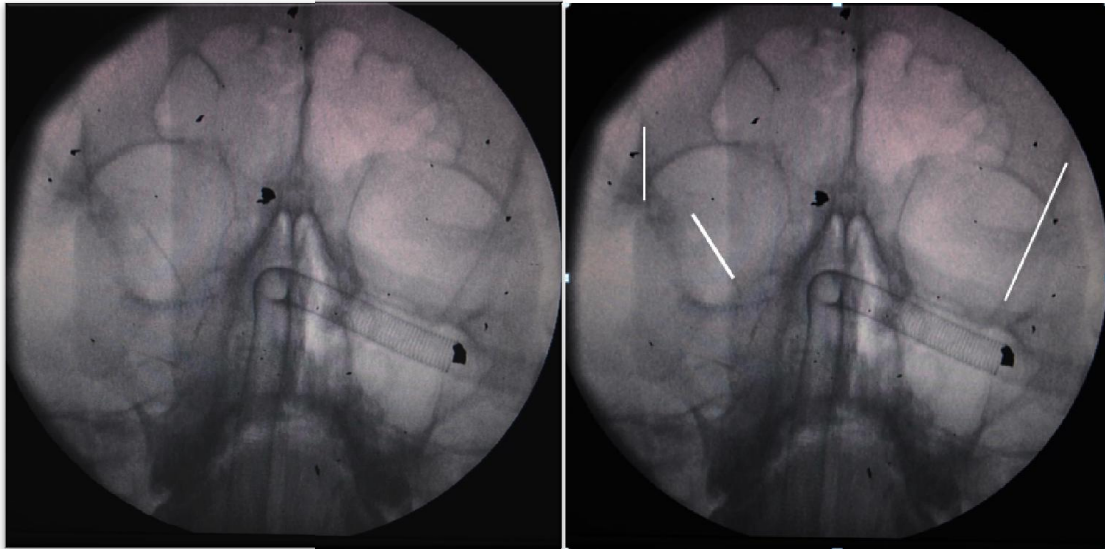


Figure 2. Pre Operative C-Arm Image showing fracture right Zygomaticomaxillary Complex

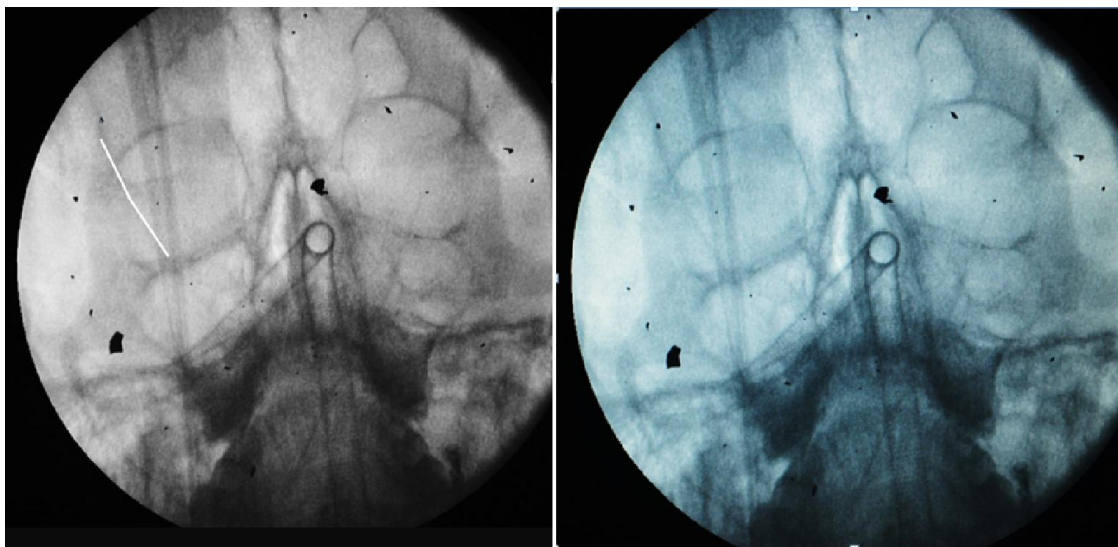


Figure 3. After Reduction Before Fixation showing good alignment of the innominate line

DISCUSSION

The innominate line is well known and easily identifiable landmark on caldwell view of skull. Margaret Anne Whelan *et al*³ done a study in 1984 on dry skull to view the innominate line in caldwell view x-rays by placing metal beads at zygomaticosphenoid suture. This is applied to c-arm view at 0° to patient in supine position with extended neck. This is useful in assessing the proper reduction of displaced ZMC fractures.

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