

*Assessment of Tempromandibular joint response
to closed and open treatment of unilateral
mandibular
condylar fracture*

Thesis

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DEDICATION

To the candles who lightened my life....

To my mother who gave me love, care and support.

To my loving and caring father...

To my brother, who was by my side in each step...

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LIST OF ABBREVIATIONS

TMJ: Tempromandibular joint.

MMF: Maxillomandibular fixation.

ZMC: Zygomaticomaxillary complex.

ORIF: Open reduction and internal fixation.

PT: Prothrombin time.

PTT: Partial thromboplastin time.

INR: International normalized ratio.

ECG: Electrocardiogram.

CT: Computed tomography.

MIO: Maximum interincisal opening.

SD: Standard deviation.

INTRODUCTION

Condylar injury has generated more discussion and controversy than any other site in the field of maxillofacial trauma. The condylar region is a common site of mandibular fractures.^(1, 2)

They can be classified according to their anatomical location into intracapsular & extracapsular and according to the relationship of the condylar fragment to the mandible and glenoid fossa.^(3,4)

In the past, most oral and maxillofacial surgeons seemed to favor nonsurgical treatment for condylar fractures. However, with the introduction of plate and screw fixation devices, open treatment has become more common.⁽⁵⁾

Nevertheless, there is still no consensus about which fractures warrant open treatment. Most surgeons who advocates open treatment base their decision, in part, on the position of the fractured condylar process and the degree of displacement and dislocation.^(6, 7)

Several studies have been made comparing between surgical and closed treatment of condylar process fractures,⁽⁸⁻¹⁴⁾ and it seems that the battle will rage forever between the extremities who urge nonoperative treatment in particularly every case and the other extremities who advocate open reduction in almost every case.⁽¹⁵⁾

Assessment of outcomes of various treatment modalities of condylar fracture was the topic of numerous studies.^(10,16,17) The outcome was considered successful if the following criteria were met: return to the preinjury occlusion, normal jaw opening, pain free joint, symmetry of the mandible, and minimal morbidity of surgery.⁽¹⁷⁾

Despite the existence of plenty of studies concerning the comparison between the two treatment modalities, there is still need for further

investigations to aid in selection of the most suitable technique for a particular case.

REVIEW OF LITERATURE

Anatomy of mandibular condyle and TMJ:

Anatomically the TMJ is a diarthrodial joint which is a discontinuous articulation of two bones permitting freedom of movement that is dictated by associated muscles and limited by ligaments.

The TMJ is composed of the temporal bone and the mandible, as well as a specialized dense fibrous structure (articular disc), numerous associated muscles and several ligaments.

Functionally, the TMJ is composed of four articular surfaces: the articular facets of temporal bone, the mandibular condyle, and the superior and inferior surfaces of the articular disc.⁽¹⁸⁾

The articular or mandibular (glenoid) fossa is a concave structure extending from the posterior slope of the articular eminence to the postglenoid process which is a ridge between the fossa and the external acoustic meatus. The surface of the articular fossa is thin and it is not a major stress bearing area lined by thin layer of non-vascularized non-innervated dense fibrous tissue, thus penetration of the condylar head into the middle cranial fossa may be a fatal complication of trauma in the region. This layer thickens remarkably over the posterior slope of the articular eminence indicating the areas best suited to sustain maximum pressure which is upward and forward.⁽¹⁸⁻²⁰⁾

The mandible articulates with the temporal bone by means of the articular surface of the condyle forming 145-160° angle to each other. The condyle is 15-20 mm in width and 8-10 mm in anteroposterior dimension.⁽¹⁸⁾