A Comparative Study between the application of 3 Dimensional Plate in Mandibular Fractures via Transbuccal and Extraoral Approaches: Randomized clinical trial

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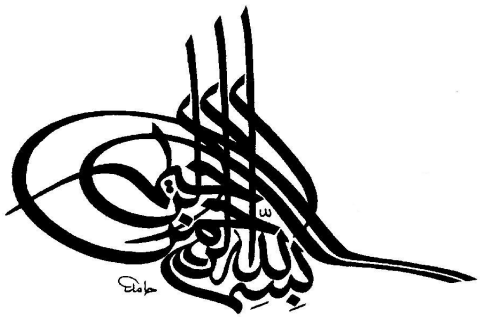

" قُلِ ٱللَّهُمَّ مَالِكَ ٱلْمُلْكِ تُؤْتِي ٱلْمُلْكَ مَن تَشَآءُ وَتَنزِعُ ٱلْمُلْكَ مِمَّنْ تَشَآءُ وَتُعِزُّ مَن تَشَآءُ وَتُذِلُّ مَن تَشَآءُ بِيَدِكَ ٱلْخَيْرُ إِنَّكَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ "

صدق الله العظيم (ال عمر ان ٢٦)

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Dedication

"To soul of my mother"

The first paragon and light was in my life for unlimited support throughout all my last life without her encouragement, I couldn't reach to this degree

And if I have to dedicate this work to persons. These persons can only be **my father** & my brother **Mohamed Abd-El latif** for this support, inspiration, devotion & love for their critical help and continuous support throughout my life and this work.

Contents

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List of abbreviations

MMF	Maxillomandibular fixation
ORIF	Open reduction and rigid internal fixation
MMBFN	Marginal mandibular branch of facial nerve
AO	Arbeitsgemeinschaft für Osteosynthesefragen (German for "Association for the Study of Internal Fixation", or AO), founded in Switzerland in 1958
IAN	Inferior alveolar nerve

AO (ArbeitsgemeinschaftfürOsteosynthesefragen)/ Association for the Study of Internal Fixation (ASIF) surgeons

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Introduction

The objective of mandibular fracture treatment is the restoration of anatomical form and function, with particular care to establish the occlusion. Traditionally, this has been achieved by immobilizing the jaws using various wiring techniques. In the former two decades interest has increased for different methods of open reduction and internal fixation **(Booth et al., 2007).**

Methods of open reduction and internal fixation have been changed and varied enormously in the past few years. They become smaller, simpler to handle, and extraoral incisions can be avoided. However, there is still debate regarding the optimal treatment **(Gear et al., 2005); (Zix et al., 2007).**

Currently, open reduction and fixation of mandibular fractures can be performed with different systems of internal fixation, through intraoral or extraoral approaches **(Zix et al., 2007)**. However; mandibular angle fractures have a high frequency of complications particularly in relation to the insufficient stability of the fixation system (**Iizuka et al., 1991); (Ellis, 1996) ; (Lamphier et al., 2003)**.

Despite the advances in internal fixation used for treatment of fractures of the mandibular angle, these fractures still present unpredictable results and difficulties in treatment compared to other mandibular fractures. The large number of studies certify to the fact that no single approach has been shown to be ideal; this leading to debate on the ideal treatment **(Guimond et al., 2005)**.

The 3-D titanium plates and screws developed by **Farmand ,1992**. However, their use in management of mandibular fractures has not yet become established**(Farmand & Dupoirieux,1992)**; **(Farmand ,1995); (Gear et al.,**

2005). Moreover, only a few follow up series are reported in the literature with few studies emphasizing on the hardware related advantages over conventional miniplate and reconstruction plate as well**(Wittenberg et al.,1997); (Feledy et al., 2004); (Parmar et al., 2007); (Jain et al., 2010).**

These advantages include easy application, improved biomechanical stability and less operative time, because of simultaneous stabilization at both superior and inferior borders. The limitations of 3D plates include excessive implant material due to extra vertical bars incorporated for countering the torque forces**(Parmar et al.,2007);(Jain et al., 2010).** They are difficult to adapt, unfavorable to use in cases of fractures involving the mental nerve and oblique mandibular fractures**(Jain et al., 2010).**

However, treatment of mandibular body fracture present some controversy situations, intraoral or extraoral surgical approach can be used. Simple or anteriorly placed fractures can be treated by intraoral approach while, comminuted or more posteriorly placed fractures can be treated by extraoral approach for better visualization and reduction **(Ellis & Miles, 2007); (Andreasen et al., 2008);(Olate et al., 2013)**.

The identification of a safe and precise technique for facial incisions via transbuccal approaches to treat the mandibular angle fractures remains a challenge **(Gulses et al., 2012).**

In recent years, close consideration of the biomechanical basics of mandibular fractures treatment has led to the use of operative besides conservative methods. The traditional treatment of mandibular angle fractures

involved either closed reduction with maxillomandibular fixation (MMF) or open reduction and internal fixation with or without MMF.

Extraoral approach,the traditional approach to open reduction and internal fixation was through extraoral skin incision concealed in a submandibular shadow. It has the disadvantage of leaving an unaesthetic scar and risks of damage to the facial nerve, though the advantages are better exposure and direct application of plate fixation **(Toma et al., 2003)**.

Another approach, the transbuccal approach was advocated and its advantages include no external scarring also allows direct visualization and conformation of the desired occlusion during placement of the bone plates **(Kale et al., 2010).** In the previous decade, an increased availability of high-quality and easy use of trocar instruments has made the transbuccal approach prevalent, but research into its complication rate is greatly lacking. Presently, the choice of the approach relies on the surgeon's personal preference; as an evidence-based decision is tricky because of lack of scientific data in the literature **(Wan et al., 2012)**.

So, the aim of this study was to investigate the difference in clinical outcome with application of 3D miniplate via transbuccal and extraoral approaches in mandibular fractures and comparing the postoperative complications rates and other factors.