# EVALUATION OF FACIAL BONE FRACTURE HEALING BY USING BIOCHEMICAL MARKERS

**A Thesis**

**Submitted to the College of Dentistry**

**University of Baghdad**

**In partial Fulfillment of the Requirement for**

**The Degree of Master of Science in Oral and Maxillofacial Surgery**

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**2008 AD** **1429 AH**

## Abstract

**Back ground:** Bone fracture causes damage and destruction to the bone matrix, death of cell, tears in the periosteum and endosteum, and possible displacement of the ends of the broken bone.

Bone formation and repair are dependent upon cascades of biological events. Many biological markers in tissues fluids and blood may be useful in evaluating the progress of bone healing.

**Aim of the study:** The purpose of this study is to evaluate bone healing in patients with different types of facial bone fracture by assessing bone biochemical markers in correlation with radiographic findings.

**Materials and Methods:** Fifty patients with facial injuries and thirty healthy control were participated in this study. Types of injuries, types of fracture, sites, and types of treatment were recorded.

Radiographic estimation were done to all patients at day of admission and during follow up post operative periods.

Blood and saliva samples were obtained from all control and for patients, samples obtained for periods (zero day, 15, 30, and 45 days)

Biochemical analysis for alkaline phosphate (ALP) activity, calcium (ca), phosphorus (P) (inorganic phosphate), and total protein (TP) were estimated in serum and saliva of control and patients.

**Results:** Serum and salivary alkaline phosphatase activity showed to be high in patients in comparison to control in all studied periods and with significant values

in mandiblular fracture in comparison to upper compartment (maxilla and zygoma) specially at 15 and 30 days post operative duration.

Serum and salivary calcium found to be high in level for patients in comparison to control and significant value in Serum calcium in mandible fracture in comparison to upper compartment fracture at days 15 and 30 post operatively.

Serum inorganic phosphate showed to be high in patients in comparison to control. While non significant values were obtained for salivary inorganic phosphate.

In comparison of Serum inorganic phosphate level in mandible fracture to upper compartment fracture in single fracture non significant values were found.

Serum and salivary total protein level found to be high in mandible fracture in comparison to upper compartment fracture in single fracture specially at 15 and 30 days post operative duration.

Comparison of all Serum and salivary biochemical markers levels in single and multiple fractures showed non significant values except for salivary calcium at 30 and 45 days showed significant value.

Evaluation of serum and salivary biochemical markers in open and close reduction treatment showed significant values except for phosphate with non significant.

**Conclusion:** Serum and salivary biochemical markers can be used for evaluation of progress of bone formation and help clinician to assess the type of treatment.