

***Gingival health condition in relation to selected salivary constituents among patients with facial fracture before and after intermaxillary fixation (follow up study)***

***A thesis***

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***By***

***Entiqal N. Jassim Al- Wazni  
B.D.S, H.D.***

***Supervised by***

***Assist. Prof. Dr. Nadia A. Al-Rawi  
B.D.S., M.Sc., Ph.D.***

## **Abstract**

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**Background:** Intermaxillary fixation (IMF) is one of the methods used to stabilize a fractured jaw involving maxillomandibular complex. The time of intermaxillary fixation which may last for 6 weeks, may be associated with general and oral problems.

**Aims of this study:** To investigate the impact of intermaxillary fixation on gingival health condition among patients with facial fracture in relation to salivary physico-chemical properties.

**Materials and methods:** Thirty patients with an age range of (17-37) years old with facial fractures, and indicated for intermaxillary fixation (arch bar). Unstimulated saliva sample collection was carried out under standardized conditions according to Navazesh and Kumer (2008) before intermaxillary fixation application and after removal to measure salivary flow rate and viscosity in addition to estimate the concentrations of interleukin-6 and C-reactive protein. Plaque index (Loe, 1967) and gingival index (Loe, 1967) were used to assess both dental plaque and gingival health condition respectively before application and after removal of intermaxillary fixation.

**Results:** A higher mean value of plaque index ( $1.72 \pm 0.48$ ) was recorded after intermaxillary fixation removal than that before application ( $1.22 \pm 0.4$ ) with statistically highly significant changes ( $p < 0.01$ ). Also, mean value of gingival index was higher after intermaxillary fixation removal ( $1.78 \pm 0.33$ ) than before application ( $1.24 \pm 0.37$ ) with statistically highly significant changes ( $p < 0.01$ ). there was a highly significant correlation between dental plaque and gingivitis .

Regarding salivary physical properties, salivary flow rate mean value was lower after intermaxillary removal ( $0.32 \pm 0.12$ ) than before application ( $0.41 \pm 0.21$ ) with statistically highly significant changes ( $p < 0.01$ ). Although, a negative correlation was recorded between dental plaque index with salivary flow rate there was no significant changes after removal of

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intermaxillary fixation. Regarding correlation between salivary flow rate and gingival index a negative correlation has been found before intermaxillary fixation application and after removal.

Concerning salivary viscosity, it has been found that a higher mean value after intermaxillary fixation removal ( $0.06 \pm 0.02$ ) than before application ( $0.04 \pm 0.2$ ) with statistically highly significant changes after intermaxillary removal ( $p < 0.01$ ).

There was a significant correlation between salivary viscosity and dental plaque index before intermaxillary fixation application and after removal. Also, a positive correlation has been detected between salivary viscosity and gingival index before application of intermaxillary fixation and after removal, however it was not significant.

Regarding salivary interleukin-6 a higher mean value was recorded after intermaxillary removal ( $17.91 \pm 20.06$ ) than before intermaxillary fixation application ( $13.67 \pm 14.39$ ) with statistically highly significant changes ( $p < 0.01$ ), while a positive correlation between interleukin-6 with dental plaque index and gingival index before intermaxillary fixation application and after removal, however it was not significant.

Regarding salivary C-reactive protein, a higher concentration has been recorded after intermaxillary fixation removal ( $977.71 \pm 476.23$ ) compare with the concentration before application ( $675.49 \pm 283.87$ ) with statistically highly significant changes. Regarding oral indices, statistically failed to reach significant correlation between salivary C-reactive protein with both plaque and gingival index.

**Conclusion:** The results of current investigation revealed that intermaxillary fixation (Arch bar) have a significant effect on gingival health in addition to changes in salivary level of certain physico-chemical properties.