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### NITRIC OXIDE CHANGES IN GINGIVAL CREVICULAR FLUID FOLLOWING ORTHODONTIC FORCE APPLICATION

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**Background:** Nitric oxide (NO) is a signaling molecule involved in bone remodeling induced by mechanical loading. It has also been shown to enhance the rate of orthodontic tooth movement (OTM) in rat models. In humans, however, the role of NO in OTM remains less clear. In this study, we measured NO concentration in gingival crevicular fluid (GCF) after patients were bonded with maxillary fixed edgewise appliances (braces).

**Methods:** Thirteen male participants (ages 11-18, mean 14y 0m) undergoing non-extraction orthodontic treatment were recruited. Samples of GCF were collected immediately before (T0), 1 hour after (T1), and 3-4 days after (T2) bonding of the maxillary right to left first molars and insertion of light Nitinol archwires. The maxillary second molars served as controls. GCF samples were collected with PerioPaper points on maxillary bilateral central incisors and first and second molars and analyzed for the levels of NO.

**Results:** Comparative t-tests revealed a significant increase ( $p < 0.05$ ) in total nitrite levels ( $\mu\text{M}$ ) at T1 at the buccal surfaces of the central incisors when compared to both the controls and posterior teeth experiencing an applied orthodontic force.

**Conclusions:** It is hypothesized that the sites undergoing pressure due to incisor proclination demonstrate elevated nitrite levels at early time points, as this significance was not observed at 3-4 days.