

STUDY OF CALCIUM AS A BONE MARKER IN GINGIVAL CREVICULAR FLUID OF HEALTHY ADOLESCENTS WITH CLASS I CROWDING: A PRELIMINARY STUDY

N.C. WELLAPPULI,¹ A. CHANDRASEKERA,¹
K.A. KALYANARATHNE,² J. AMARASENA³ AND B.B.M. PEIRIS³

¹*Department of Medicine and Periodontology,* ²*Department of Community Dental Health,*
³*Department of Basic Sciences, Faculty of Dental Sciences, University of Peradeniya*

During orthodontic tooth movement, light forces applied to teeth induce resorption of the supporting alveolar bone. These tooth movements can be assessed by using markers of bone turnover around the tooth and supporting structures such as gingival crevicular fluid (GCF) and alveolar bone surfaces. Evaluation of such bone markers in GCF may be important in assessing the outcome of orthodontic treatment.

The aim of this study was to determine whether simple bone markers like calcium, magnesium and alkaline phosphates could be detected in GCF of healthy adolescents with class I crowding. Ten subjects (5 females and 5 males) were selected from successive patients who were referred to the Division of Orthodontics, Dental Hospital (Teaching), Peradeniya prior to commencement of treatment. All subjects had a healthy periodontal status (Gingival index = 0; pocket depth < 3 mm)

GCF samples were collected from the crevice region of the distal surface of the maxillary canines using filter paper strips according to Griffith (1998). After drying and isolating the area concerned, a filter paper strip was placed at the entrance to the gingival crevice for 5 s. After 1 min, another strip was used to obtain another 5 s sample. This was followed by a 30 s interval and final 30 s collection from both the left and right sides. After removing from the crevice entrance, the filter paper strips were immediately placed in the micro-centrifuge tubes and caps were fitted to prevent evaporation. The concentration of calcium was estimated using electrode technique.

This study revealed that calcium could be detected in GCF of healthy individuals. Mean calcium concentrations of males and females were 1.86 g/dl (SD = ± 3) and 1.61 g/dl (SD = ± 2.9) respectively. There was no significant difference between the two gender groups with regard to the level of calcium ($P > 0.05$).

This study will be continued to ascertain the possibility of detection of other markers and to explore their relationship to different types of orthodontic tooth movements.