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Failure analysis of maxillary and mandibular bonded spiral wire retainers

Sarah Irfan

Aga Khan University Hospital, Pakistan

Fixed spiral wire retainers offer several advantages, however they are prone to breakages which may result in relapse. The aim of the present study was to identify the frequency and factors associated with failure of fixed spiral wire retainers. A retrospective cross-sectional study was conducted using orthodontic files and dental casts of 126 patients from dental clinics of a tertiary care hospital. Descriptive statistics were applied to calculate the frequency and most common site of breakages. Chi-square test was applied to compare the frequency of breakages among age groups and different retainer spans. Independent sample t-test was used to compare the mean overbite in retainer breakage and retainer intact groups. A $p\text{-value} \leq 0.05$ was considered as statistically significant. The frequency of retainer breakage was found to be 53.1%. Maxillary retainer breakages were found in 41.3% subjects whereas mandibular retainer failed in 22.2% subjects. The mean survival time of retainer was 8.91 ± 4.57 months. The detachment of the retainer from the tooth surface was the most common occurrence (86%). The most common site of retainer breakage was maxillary canine (32.5%) and mandibular central incisor (12.7%). All the subjects who had retainers extending till maxillary molars encountered breakages. It was concluded that a longer retainer span is associated with a greater risk of breakage, failure rate in the maxillary arch was higher than the mandibular arch, the most common sites were the maxillary canine and mandibular central incisor and the most common pattern was wire detachment.

sarah.irfan@aku.edu