

ABSTRACT

Aim:

The aim of the present study is to compare the alignment efficiency, arch dimensions and incisor inclination changes with passive self ligating (Damon Q) and conventional brackets and also to assess the changes in GCF volume, oral hygiene and periodontal status between the two brackets systems.

Materials and Methods:

10 patients having Angle's Class I malocclusion with moderate to severe crowding requiring all 1st premolar extractions were chosen according to inclusion and exclusion criteria and were randomly divided to 2 groups. Group 1 – Damon Q self ligating bracket system with 0.022 slot (ORMCO) and group 2 – Conventional bracket system (American Orthodontics – 0.022 slot with Roth system). Records such as Orthopantomogram (OPG), Lateral Cephalogram, plaster models, and intra oral photographs were taken at Pre-treatment (T0) and Post alignment (T2) stage.

Oral prophylaxis was done for all the patients prior to the start of treatment. GCF sample was collected at the start of treatment (T0) and after 60 days of treatment (T1). Likewise for all the patients, periodontal parameters such as PI (plaque index), GI (gingival index), and GBI (gingival bleeding index) were measured prior to the start of treatment (T0) and after 60 days of treatment (T1). Pre-treatment (T0) and post alignment (T2) study models were taken and models were scanned to provide digital digital models

measurements. The arch dimensional changes such as arch width, arch length and irregularity index was measured using both plaster models and digital models in both the groups at two different time points. T0 (prior to the start of the treatment) and T2 (at the end of alignment). The axial inclination of upper and lower incisors was also measured using Lateral Cephalogram at T0 and T2.

Results:

The periodontal parameters such as plaque index (PI), Gingival index (GI), Gingival bleeding index (GBI) and gingival crevicular fluid (GCF) increased in both the groups at T1 (after 60 days of orthodontic treatment). However when compared between two bracket types, there was no statistically significant difference in the periodontal parameters such as GI, PI, GBI taken at baseline (T0) and at 60 days (T1). The GCF volume of control group was higher compared to study group at 60 days but the difference is not statistically significant. The arch dimensions were measured in terms of arch width, arch length and irregularity index in both plaster and digital models. Results showed an increase in inter canine width, inter pre molar width and decrease in inter molar width and arch length in both the bracket systems. Significant decrease in irregularity index was seen, however when compared between both the groups the difference was not statistically significant.

Conclusions:

Damon Q passive self ligating brackets was not found to more clinically efficient or superior to conventional brackets in terms of alignment

and arch dimensional changes. The expanded arch form seem to play an important role in arch expansion rather than the bracket type. Thus the efficiency of both the systems are comparable and not superior to one another and also in terms of better oral hygiene compared to conventional brackets.

Keywords:

**SELF LIGATING BRACKETS [SLB], DAMON Q,
CONVENTIONAL BRACKETS [CLB], GINGIVAL CREVICULAR
FLUID [GCF], GINGIVAL INDEX [GI], PLAQUE INDEX [PI],
GINGIVAL BLEEDING INDEX [GBI]**