Self-ligating Vs. conventional ligating orthodontic brackets (Smile aesthetic perspective): Prospective Randomised clinical Trial

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INTRODUCTION

A fixed orthodontic appliance basically consists of three components: brackets, archwire, and accessories. The brackets are attached to the crowns of the teeth and have a slot that receives the archwire so the archwire and accessories can control tooth position. Generally, according to the type of orthodontic bracket system the archwires are held in the bracket slots by one of two ways: conventionally by using an elastic ring (Figs. 1A, 3C) (elastomeric ligature) or a loop of wire (ligature wire) (Figs. 2B, 3B); or self-ligating systems (Figs. 1B, 2A, 3A, 3C) in which the brackets have an inbuilt mechanical device that can be opened and closed with an instrument or finger tip to hold or release the archwire devoid of the need for ligation by wires or elastics.¹⁷

This study reports part of the data from a randomised clinical trial undertaken to compare the treatment efficiency, patient experiences, and treatment outcome of using two orthodontic bracket systems.

MATERIALS & METHODS

This study reports part of the data from a randomised clinical trial undertaken to compare the treatment efficiency, patient experiences, and treatment outcome of using two orthodontic bracket systems.

Design: Prospective, multi-centre randomised clinical trial.

Setting: This was undertaken in the real world environment of ‘high street’ specialist orthodontic practices in the United Kingdom.

Participants: Ninety patients were randomly allocated (Fig. 4) to be treated with either the Damon 3 MX (Figs. 2A, 3A) self-ligating (n = 45) or the Orthos system (Figs. 2B, 3B) conventional-ligating (n = 45) 0.022-inch slot preadjusted bracket systems (Ormco), and another ninety patients were randomly allocated to treatment with either the SmartClip (Figs. 1B, 3D) self-ligating (n = 45) or the Victory (Figs. 1A, 3C) conventional-ligating (n = 45) 0.022-inch slot preadjusted bracket systems (3M Unitek).

AIMS

- To compare the smile aesthetics created by the use of self-ligating and conventional orthodontic appliances.
- To investigate the rationale for the increased cost of using self-ligating orthodontic appliances to improve smile aesthetics.
- To develop a new tool that provides a global smile aesthetic score which is easy to apply to assess and compare the smile aesthetics created by any kind of dental treatment.

The assessment of smile aesthetics will be done by subjective and objective scoring and analysis. The subjective evaluation will be undertaken by laypersons, patients, and dental professionals; while the objective assessment will be done by one principal examiner by analysing and scoring of 2 dimensional smile photographs, and 3D study casts.

Subjective evaluation: panels of laypersons, orthodontists, and other dental professionals will evaluate the smile aesthetics of pre- and post-treatment digital photographs of the patients using five points visual analogue scale: 1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent.

Objective evaluation: measurements will be obtained from digital photographs and study models of the subjects by one principal examiner (AA) using landmarks as defined by Phillips et al.⁸ (Fig. 5) in order to measure the changes in the smile aesthetic parameters and compare the results.

Data analysis will be undertaken by using the Statistical Package for Social Science (SPSS). The mean and standard deviation of all measurements for both self-ligating and conventional ligating groups will be computed.

Comparison between both groups will be done using statistical tests and a value of 0.05 or less will be considered to be significant.

To determine measurement error, photographs will be selected randomly by the principal examiner (AA) and the measurement will be remeasured after a period of a month and the result will be compared.

REFERENCES