

In Vitro Analysis of Bond Strength of Metallic Brackets with Different Base Configurations.

CERTIFICATE

This is to Certify that the Dissertation entitled "In Vitro Analysis of Bond Strength of Metallic Brackets with Different Base Configurations" is the original work done by Dr. Neeraj S. Patil, in the Department of Orthodontics,

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Introduction

The introduction by Buonocore of acid etching in dentistry has had far reaching effects on the practice of Dentistry¹. Later on, Newman described a technique for acid etching enamel to enhance the mechanical adhesion of orthodontic brackets to the teeth².

Optimum retentive strength of components bonded to the tooth surface is important to ensure a successful outcome for fixed appliance orthodontic therapy. There are several factors that affect the mechanical adhesion of orthodontic brackets to the teeth. The components of retention comprise of the adhesive, the substrate and the interface. The efficacy of different resin adhesives, the effect of varying the etching time and etchant concentration, and the effect of bracket base design have all been investigated for their effect on bond retention using the acid etch technique with composite resins³.

Clinical experience and numerous in vitro studies have demonstrated that the adhesive resin usually bonds more firmly to the etched enamel than to the mesh and that the weak link in the foil-mesh system is the poorer mechanical keying at the mesh/resin interface⁴.

Several authors have suggested that microscopic features of the bracket base, particularly of mesh designs, may increase or decrease the effectiveness of mechanical interlocking with the adhesive. As the retentive area of bracket bases has been reduced for esthetic reasons, variables such as rough or smooth wires,