

TIME SAVING METHOD IN CURING LIGHT CURE COMPOSITE WHILE ORTHODONTIC BRACKET PLACEMENT

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ABSTRACT

The placement of brackets precisely in clinical situations cured by light cured techniques is time consuming. This special technique describes an innovative idea of reducing the curing time and saving the clinical hours for placement of brackets.

KEYWORDS: Bracket placement, Light Curing, QTH (quartz-tungsten-halogen lamp)light

INTRODUCTION

It is beyond doubt that the bonding of brackets in orthodontics have improved esthetics and less time consuming. There are many composite materials introduced some are single bonding while some as multiple stage techniques. All of them utilise some source of light for curing the bonding agent and the adhesive.^{1,2} Following incremental placement of resin and proper maintenance of the curing units, these units perform well. New resin curing lights are being introduced now which utilize high intensity fast cure, low intensity slow cure and a combination of both. However the duration of bonding with light cure composite is very time consuming. A time period of 30 to 60 seconds for each bracket is no less time and very discomfort for patient and the operator.

Recent research indicates that there may be some advantages to curing composite resins by varying the intensity of the QTH (quartz-tungsten-halogen lamp)light. Routinely the QTH light is turned on for 40-60 seconds for curing the resins and the light is turned off. This constant exposure to intense light source may cause the resin composite to polymerize too quickly. Stresses induced by rapid polymerization compromise the strength of the recently formed bond of the material to the tooth structure and lead to leakage.

By using a different light technique we may be able to reduce the amount of polymerization stress. There are two techniques, which use short duration, and low intensity light followed by a longer duration of high intensity^{1,2}

Stepped technique

Ramp mode

Pulse delay cure technique

Ramp mode: The ramp mode begins at reduced intensity before gradually moving to 100% intensity. This function is designed to reduce polymerization shrinkage.

Stepped technique: Here, the low intensity exposure is immediately followed by the high intensity exposure. The first commercially available light unit this technique was Elipar Highlight (ESPE). It uses a 10-second exposure of light at 150 mW/cm followed by 30-50 seconds at 700mW/cm

Pulse delay technique: incorporates a waiting period between exposures. The VIP light from BISCO used the pulse delay cure technique, a very short (3 second) exposure at 200 mW/cm² is first used to harden the composite resin. After a waiting period of three minutes, a 30-second exposure at 600 mW/cm² is used. The waiting period allows stress relaxation and the restoration can be finished and polished at this time.

In both cases the low intensity light exposure theoretically allows the resin's newly induced stresses a chance to dissipate. These techniques are the subjects of research and it is wise to delay purchasing new units based on these technologies.

New Technique

The alternative effective technique was tried and found to be clinically effective. The *Beyond polus*™ teeth whitening unit (Fig.1) used for dental bleaching has a high intensity of Powerful 150 watt halogen bulb emits a high-intensity blue light (480-520 nanometers wavelength) for faster curing results and time saving the unit was tried and found effective^{3,4}.

Halogen-powered teeth whitening accelerator, LED curing light, and Low Powerful halogen light output, clinically proven to provide superior results to LED and plasma arc system- *Unique Light Bridge*™ and light technology of *Beyond polus*™ equipment



Fig.1. *Beyond polus*™ teeth whitening unit

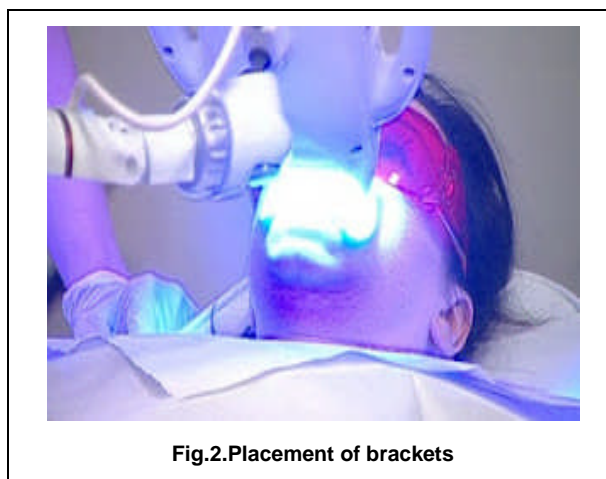


Fig.2.Placement of brackets

Dual-arch curing features gentle, normal, and intense light-output settings for the perfect treatment setting with each individual patient tailored treatment results barrier spectacles to avoid insult to eyes are used.(Fig.2) Advanced filtration removes all harmful heat and ultraviolet output, ensuring patient safety and comfort Built-in powerful LED curing light with dual-wavelength output cures any dental composite on the market. The method is simply place the bracket in position and initial tag cure for 6 seconds to stabilize the bracket after completion of all brackets with the tag curing to facilitate the curing on of the the distal accept of the brackets an intra oral mirror used for occlusal photography is placed occlusally asking the patient to bite gently on the mirror and switch on the unit for 10 minutes. The clinical trails were conducted on 8 patients and found effective for straight wire mesh brackets how ever a through study on comparative bond strength with varies technique to be tested.

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