COMPARATIVE STUDY BETWEEN THE EFFECT OF TWO DIFFERENT BLEACHING SYSTEMS ON TOOTH COLOR AND SURFACE TOPOGRAPHY

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Dedication

To:

My beloved parents and my precious sons.

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Introduction

Cosmetic dentistry has become an important part of restorative dental practice in the recent years. The appearance of teeth is very important to patients of all ages and is often associated with a perception of health and fitment. **Zekonis et al, 2003** [57].

Bleaching can be used for teeth which are discolored due to intrinsic and extrinsic staining, examples of intrinsic staining are, endodontic staining and tetracycline induced discoloration while extrinsic staining of the enamel includes, fluorosis, yellowing due to aging, hypoplastic enamel, caries demineralization, smoking and ingested food and beverage. **Strassler, 2006**[48]**,** moreover, internalized discoloration formed due to taking up of the stains into the body of enamel or dentine ,these stains are those causing the extrinsic discoloration ,including in particular the dietary chromogens such as tea, coffee ,beverages and the byproduct of tobacco smoking. **Watts and Addy, 2001**[59]**.**

Esthetic restorative dentistry includes many treatments ranges from the routine placement of resin composite restorations, porcelain veneers, tooth whitening, all ceramic, full and partial coverage restorations and implants. With the increase of knowledge and interest of patients in having the appearance of their teeth changed with esthetic dentistry, the more conservation technique of tooth whitening with vital bleaching has gained wider acceptance**.** **Strassler, 2006** [48]**.**

Tooth bleaching was first described in 1848 using oxalic acid, later, ranges of peroxides such as hydrogen peroxide, were used. **Sulieman etal , 2005**[52].

The mechanism by which teeth are bleached by hydrogen peroxide is not completely understood, It is thought that the peroxide diffuse into the tooth structure may react with organic colored materials found within the tooth structure leading to reduction in color **Luk et al, 2004 [30].**

Bleaching agents can be applied externally to the teeth (vital bleaching) or internally within the pulp chamber (non-vital bleaching) **Sulieman et al**, **2003[49].**

Three fundamental vital tooth bleaching regimens exist namely, dentist–supervised night guard bleaching, in-office or power bleaching and over the counter (OTC) bleaching products. Night guard beaching typically uses a relatively low level of whitening agent applied to the teeth via a custom fabricated mouth guard and is worn at night for at least two weeks. In office bleaching generally uses relatively high levels of whitening agents for example 25-35% hydrogen peroxide or 35% carbamide peroxide containing products, for shorter time periods, while over the counter (OTC) products typically contain low levels of whitening agent (e.g. 3-6% hydrogen peroxide) that are self-applied to the teeth via gum shields, strips or paint on products which require twice application for up to two weeks. **Joiner, 2007[20].**

"Power bleaching" is an in – office whitening technique developed to bleach teeth in single office visit with a combination of a whitening agent such as peroxide and an auxiliary such as light, characteristics include rapid lightening, lower concentration peroxide gels for shorter periods, less pain- inducing application and

protection of the gingival with barrier material. **Tavares et al, 2003[54].**

But unfortunately improvement in tooth color may, however, be at the expense of tooth strength, The mechanism of action of hydrogen peroxide in tooth bleaching is considered to be oxidation, it is felt that the oxidizers remove some unattached organic matter from the tooth with out dissolving the enamel matrix, but also may change the discolored portion to a colorless state **Haywood, 1992[15].**

Thus, it was thought that a study evaluating the effect of different bleaching regimens on the color change and enamel surface topography might be of value.

Review of Literature

I-Effect of tea solution on enamel color:

***Suleiman et al., in* 2003[(49)],** evaluated an in vitro study to evaluate the effectiveness of tooth bleaching. Extracted human permanent third molar were collected and stained in tea solution for six days period by immersion of specimens in a standardized tea solution. The tea solution was produced by boiling two grams of tea in 100 ml of distilled water, for five minutes and filtered through gauze to remove tea from the infusion. Thirty- five samples were divided into seven groups. The first group of five samples were immersed in tea solution for one day. The second group for two days and the final group was immersed in tea solution for six days, color assessment were made at baseline, post staining and post whitening using a standard clinical shade guide, shade vision clinical colorimeter system and a reflectance chromometer .Groups of stained specimens were exposed to water (placebo control), Enamel polished, Enamel polished and bleached through enamel, Bleached through enamel, Bleached through dentine, Bleached though enamel and dentine and Gel without hydrogen peroxide was applied on enamel .The results revealed that control and polish treatments had no or little effect respectively on tooth shade but all bleach treatments produced marked and statistically significant whitening effects and the model could be used to study many aspects of vital tooth bleaching.

Sulieman et al., in 2004[(50)], evaluated an in vitro study on the effect of hydrogen peroxide concentration on the out come of tooth whitening. Extracted human third molar were selected and stained