EVALUATION OF LOW ENERGY LASER ON UNDERLYING TISSUES OF IMMEDIATE DENTURE WEARERS

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LIST F ABBREVIATIONS

VDO: Vertical Dimension of Occlusion

TCM: Tissue Conditioning Material

PIP: Pressure Indicating Paste

LLLT: Low Level Laser Therapy

LILT: Low Intensity Laser Therapy

nm: Nanometer

um: Micron

Kv: Kilovolt

mA: Milliamper

INTRODUCTION

The fabrication and placement of a conventional immediate denture following extraction of periodontally compromised, non-restorable remaining teeth is a method that is frequently used to help restore form and function in an esthetically pleasing manner. **(Vellis PA. et al, 2001)**

The use of an interim denture helps prepare basal seat tissues, muscles, and joints to reach a more normal and healthy condition before definitive denture placement. This state is achieved through proper denture fabrication, occlusal adjustments, and tissue conditioning. **(Raczka TC. et al, 1995)**

Since the lasers introduction, great enthusiasm has greeted the application of lasers to medicine and dentistry. The future of dental lasers application is exciting **Lehnert MW. (1996)**

Furthermore, since the development of the ruby laser by Maiman in 1960, there has been great interest among dental practitioners, scientists, and patients to use this tool to make dental treatment more pleasant. **Wigdor et al (1995)**

Uses of laser with oral soft tissues are becoming more common in dental offices, with the availability and the future development of

different laser wavelengths and pulsing methods, much interest is developing in this growing field to become the standard of care.

The essential question always present at scientific field is whether a laser can provide equal or improved treatment over conventional care? **(Wigdor et al, 1995)**

So, the question arises here, “does low intensity laser therapy (LILT) have the ability to accelerate soft tissue healing and increase bone density following extraction of teeth under immediate denture?

REVIEW OF LITERATURE

Definition of immediate denture :

Herman GL. (1989) reported that, an immediate denture is defined as “a denture constructed for insertion immediately following the removal of the natural teeth " and is desirable and indicated for a majority of patients who lose their remaining teeth. Some patients delay the extraction of infected teeth because of the fear and dread of becoming edentulous. In immediate denture service, the humiliating edentulous period is eliminated.

Advantages of immediate denture :

Lovely M. (2005) revealed that, with immediate denture which can be complete or partial denture, the digestion function is uninterrupted, centric relation is easier to record, no time will she or he be without teeth and general appearance of the patient is less affected because there is only a minimal change in muscle tone and the occlusal vertical dimension can be maintained.

He added that, one of the advantages of immediate denture is that the artificial teeth of the same size and shade as that of the natural teeth can be set in the identical positions occupied by the natural teeth. Also, as the ridges are subjected to early function, less resorption will take place and the resultant ridges are better preserved and adapted to support a complete denture.

Voitik AJ. (1996) concluded that, a well-designed and properly completed transitional prosthesis can maintain or improve function and significantly influence patient confidence and subsequent decisions to buy advanced treatment.

Omarov OG. (1997) reported that, the electromyographic studies demonstrated that immediate dentures ensure full-value repair of the functions of the masticatory, temporal, and suprahyoid muscles. Immediate dentures are the most rational and pathogenetically valid orthodontic treatment preventing maxillodental deformations.

Chierici et al (1978) concluded that, the loss of natural teeth and the wearing of immediate dentures did not alter sensorimotor pathways significant to the precision of oral motor skills. It was also determined that physical characteristics of dentures are significant factors in the production of acceptable speech.

Chaney et al (1978) demonstrated that, the perceptual aspects of speech showed no clinically significant distortion of articulation following the insertion of immediate dentures. There is an interaction and adaptability between the height of the tongue and maxillary-mandibular relationships.

Mahmood et al (1992) reported that, immediate dentures could aid adaptation to complete dentures and also improve masticatory effectiveness and slightly improve chewing efficiency.

Makila E. (1969) stated that, with immediate dentures masticatory function can be performed more easily and effectively than by having a period of edentulousness and that this would help the dietary intake and maintenance of the general health.

Value of immediate denture over conventional denture :

Ejvind Budtz – Jorgensen (1999) stated that, the treatment with immediate denture is advantageous compared to treatment with a conventional complete denture, which begins 2 to 3 months after tooth extraction when the edentulous ridge is completely healed. Thus, with an immediate denture, the physiological adaptation to wear dentures is relatively easy, because the denture teeth take over the function of the natural teeth, the person suffers less psychological distress from becoming edentulous, and the denture acts as bandage to help control bleeding and protect against injury from food and direct mechanical injury.

Disadvantages of immediate denture :

Nancy S. Arbree (1997) concluded that, immediate dentures are a more challenging modality than complete dentures, because the presence of teeth makes impressions and maxillo-mandibular records more difficult to record. Specific concerns include , there can be no anterior try in hence the aesthetics of the immediate denture can not be evaluated until the insertion appointment , the alveolar bone and soft tissues will remodel and resorption occurs after insertion hence the denture will not fit well . This inherent problem is best addressed by careful planning and explanation.

She also revealed that, immediate denture procedure needs more chair time, additional appointment, and therefore increased costs are unavoidable. Presence of remaining teeth in various locations frequently leads to incorrect centric occlusion positions. An occlusal adjustment, or even selective pre-treatment extractions, maybe needed to record an accurate centric relation record.

Terry BC and Hillenbrand DG. (1994) revealed that, there are usually many problems associated with placement of immediate dentures.

Bissasu M. (2004) said that “pressure caused by immediate complete dentures on a surgical area always leads to postoperative soreness at that area ”.

Jonkman et al (1995) reported that, although patients who receive immediate complete dentures might experience a lot of discomfort, they are satisfied in general with their dentures.

Indication of immediate denture :

Bates JF. and Staffor GD. (1971) in their study of immediate complete dentures said that “no patient should be rendered edentulous without the placement of an immediate denture”.

Cagna et al (2007) concluded that, for patients possessing non-restorable, periodontally hopeless residual dentitions, immediate denture therapy is often the treatment of choice.

Contraindication of immediate denture :

Nancy S. Arbree (1997) reported that, a few patients are not good candidates for immediate dentures. They include, patients who are in poor general health and /or are poor surgical risks; and patients identified as uncooperative, because they cannot understand and appreciate the scope, demands, and limitations to the course of treatments. On occasion, patients will not object to be without teeth during the healing period, the conventional complete denture treatment for them is simpler and less expensive.

Management of immediate denture :

Seals et al (1996) demonstrated that, when dentists treat patients for immediate complete dentures, they assume responsibility not only for the clinical and laboratory techniques unique to immediate complete denture fabrication, but also the responsibility for informing their patients about their treatment options, instructing their patients in the care of their oral tissues and dentures, and for continuing maintenance of the immediate dentures. Immediate dentures can be a traumatic introduction to complete dentures if patients are not informed fully about the complexity of the clinical and laboratory procedures, the need for immediate denture maintenance, and the costs associated with immediate denture treatment. The importance of 8 to 12 months of continuing care for immediate denture patients must be explained to patients and the dangers of neglecting continuing care must be emphasized.

Ejvind Budtz-Jorgensen (1999) revealed that, an immediate denture should be considered a definitive denture when it is relined 3 to 6 months after it has been placed. This means that during construction, full attention should be paid to all details regarding fit, occlusion, esthetics and comfort.

Nancy S. Arbree (1997) reported that, the immediate dentures often require tissue conditioning or temporary liners during the healing phase as the natural process of gum and bone shrinking takes place. After several months, the immediate denture will need a definitive reline.

Cagna et al (2007) concluded that, accurate impressions are important elements in both the fabrication and maintenance phases of immediate denture therapy. An impression procedure capable of accurately registering functional vestibular anatomy facilitates successful therapy. To maintain optimal tissue-base relationships, use of specialized impressions and subsequent laboratory reline procedures is often indicated. For both of these impression procedures (ie, immediate denture impressions and denture reline impressions) , vinyl polysiloxane (VPS) impression material offers distinct advantages.

Holt RA Jr. (1986) suggested that, written instructions should be given to each patient before insertion of the dentures to improve the comfort and the acceptance by patients with immediate dentures, and to overcome adverse physiologic and psychological effects that may occur in patients who receive immediate dentures. These effects may be caused by ill-fitting dentures that result from oral changes that occur after insertion.