Labial Bone Preservation and Soft Tissue Profile using the Socket-Shield Technique in anterior Immediate and delayed Implant Placement

Thesis Submitted in partial Fulfillment of PH.D degree requirements in Oral Medicine, Periodontology and Oral Diagnosis.

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Acknowledgment

First thanks to **ALLAH** *to whom I relate any success in achieving any work in my life.*

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Mohamed Wagdy Bissar

Dedication

This work is dedicated to …

My beloved Parents, to whom I owe everything I ever did in my life.

And my sister that loved me more than anything in the world.

And my wife for being the light of my life.


إنما يخشى الله من عباده العلماء

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Introduction

Dental implants are frequently used to replace missing anterior teeth, teeth loss due to trauma, or teeth removed due to unfavorable restorative conditions. The process of tooth replacement by means of a dental implant and a crown is diverse and it relies on a complex array of clinical and pragmatic factors. Implants may be placed into extraction sockets immediately or at some period of time following extraction and wound healing. Following implant placement, provisionalization or direct occlusal loading may be generated immediately or after the process of osseointegration has been completed.

Both submerged (two-stage) and non-submerged (one-stage) approaches may be utilized. All these methods include tooth extraction followed by implant placement and loading at different times. At present, clinical data indicates implant survival is possible following all of these routes of treatment.

Beyond measurement of implant survival, there is little data concerning the fate of the buccal plate after implant placement in sites where teeth have been recently removed. The concern levied here is for architectural changes in the alveolar bone following extraction and subsequent to implant placement.

Unanticipated and excessive tissue changes can result in unacceptable esthetic deficits that range from soft tissue asymmetry to facial tissue discoloration to marked tissue dehiscence and abutment or implant exposure .(1)

Clinicians must realize that alveolar resorption is a consequence of tooth extraction or avulsion. Dental implant therapy must include rational consideration of these phenomena.

The recognition of alveolar resorption is longstanding. This process for the edentulous patient has been characterized as an inevitable and progressive process that occurred rapidly following tooth extraction. Remarkable changes in the maxillary alveolar ridges following the removal of teeth have been reported.

During the past decade, renewed interest in this phenomenon has surfaced in the context of single missing teeth and the residual alveolar ridge. It has been observed that the maxillary alveolar ridge width diminishes approximately 50% following tooth extraction.(2) It has also been demonstrated that alveolar bone resorption occurs following tooth extraction and implant placement in premolar regions with marked loss of horizontal and vertical buccal architecture.(3)

Some clinical observations suggest that buccal bone resorption varies in magnitude among individuals and from site to site.

Factors implicated in this variation include the presence and absence of existing infection, flap versus flapless extraction and implant placement, the extent of trauma during extraction and the thickness of the buccal plate of bone prior to tooth extraction. The width of the buccal plate of bone may be an important determinant of bone morphologic changes following extraction.(4)

The marked alterations after tooth extraction appear to be attributable to the loss of periodontal ligament and the consecutive trauma in particular at the buccal bone plate . Thus, it can be assumed that root retention may have an influence on the occurring resorption process.(5)

The loss of a tooth triggers a remodeling reaction as part of the healing process, involving various degrees of alveolar bone resorption, especially affecting the buccal lamella: The bundle bone is primarily vascularized by the periodontal membrane of the tooth. Therefore, this part of the alveolar bone is compromised by the extraction, to such an extent that the buccal lamella is insufficiently nourished, leading to its total or partial resorption.(5)

With the root submergence technique (RST), submucosal root retention can virtually eliminate bone resorption. Based on this

concept, the retention and stabilization of the coronal and buccal bundle bone and the retention of the periodontal membrane by retaining a coronal tooth fragment (so-called “socket shield”), including adequate blood supply, can be expected.(6)

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