ORIGINAL RESEARCH PAPER

Dental Science

# CLINICAL, RADIOGRAPHIC AND ESTHETIC EVALUATION OF IMMEDIATE IMPLANT PLACEMENT WITH BUCCAL DEHISCENCE IN THE ANTERIOR MAXILLA USING AN OSSIFYING SCAFFOLD

**KEY WORDS:** 1) buccal plate 2) dehiscence 3) ossifying scaffold

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**ABSTRACT**

**Objectives:** To evaluate the clinical, radiographic and esthetic outcomes of immediate implant placement with buccal bone dehiscence in the anterior maxilla using Ossix Volumax. **Methods:** In this case series, implants were inserted immediately after tooth extraction in sockets with buccal bone dehiscence. AN OSSIFYING SCAFOLD ( VOLUMAX, DENTSPLY SIRONA was placed over the defect sites. The following outcome variables were measured. probing depth, bleeding on probing, Pink Esthetic Score (PES), marginal bone loss and thickness of buccal bone plate (TBP).

## 1 INTRODUCTION

Immediate implant placement has been advantageous in terms of reduced treatment time and fewer surgical interventions. However, it is well known that the placement of an implant into a fresh extraction socket will not prevent the resorption of the bundle bone and thus imposes a high risk of buccal soft tissue recession in implant placement.[1,2] Indeed, previous systematic reviews showed that a median of 26% of the sites showed recession of >1 mm of the midfacial mucosa, suggesting strict selection criteria should be imposed for immediate implant placement.[3]

Given the fact that the level of buccal bone acts as a major prognostic factor for immediate implant placement (IIP), the indications for immediate implant placement were suggested to be limited to intact alveolar sockets.[4] Supporting evidence could also been seen in a systematic review where the majority of the included studies assessing immediate implant placement described an intact buccal plate or small dehiscence defects (<3 mm in height) as the case selection criteria.[5]

**Facial plate:** In the cellular molecular structure scenario for dental implants, primary or mechanical stability in implant dentistry is considered a prerequisite for successful osseointegration. Alveolar bone architecture of the implant drilling site dictate the success of anchored endosteal implants.

A series of cellular and molecular events occur where host tissues biologically integrated alloplastic material into native bone structure.while cortical bone has the function of supporting torsional loads and providing greater intial stability, spongy bone is riches in vascular channel, and therefore in vascularization to supply mesenchymal progenitor cells. In this sense the complex and dynamic process of osseointegration can occur via contact osteogenesis, where the surface of the implant is filled with bone cells after fixation to form new bone via osteogenesis, where bone formation is preceded by tissue osteoclastogenesis.

Buccal bone act as a major prognostic factor for immediate implant placement where suggested to be limited to intact alveolar sockets.

**GBR (Guided Bone Regeneration)** was proposed as a valuable treatment strategy for regaining buccal plate thickness in immediate implant placement in compromised extraction socket. This could be attributed to the format of ridge defect in extraction socket as a favorable bony envelop, predicting new bone formation at the facial aspect of the implants. GBR was proposed as a valuable treatment strategy for regaining buccal plate thickness in immediate implant placement in compromised extraction socket.

In principle, the ideal GBR membrane should possess the following feature:

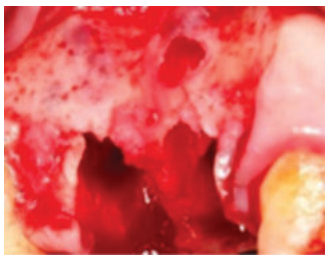
(a) the effective protection effects exclude the non-osteoblast interference from osteogenesis
(b) the excellent biocompatibility of the membrane is the prerequisite for clinical applications
(c) sufficient mechanical properties prevent the membrane from perforating and rupturing (d) the degradation period of the membrane should well match with the bone regeneration period
(e) the good bacteriostatic property is also highly required for the membrane to bone defect repair.

Considering the role of soft tissue in compensating for the possible labial tissue loss, Ossix Volumax resorbable was developed, predicting new bone formation at facial aspect of the implant. However pronounced midfacial soft tissue recession of 1-3mm was stiff noticed in 40% patients even in sockets without large defect. The limited volume of soft tissue for primary wound closure at immediate implant placement may be one of the most common issues to be addresed .

In recent years, many attempts have been performed to compensate for the alveolar ridge resorption in immediate implant placement in compromised sockets. Indeed, a small number of recent studies showed favorable implant survival and esthetic outcomes.[6-9] While the others reported a compromised gingival level with a mean mid-facial recession of around 0.5 mm after 6 month follow-up. Currently, no decisive data were available concerning the mid-facial soft tissue recession of immediate implant placement in compromised extraction sockets. Therefore, we investigated the mid-facial soft tissue recession of immediate implant placement in compromised sockets by means of a systematic appraisal and meta-analysis. Implant survival ranged from 95–100%. . This result might be explained by the heterogeneity of the surgical techniques, such as flap design, hard and soft tissue augmentation procedures, among different studies. Guided bone regeneration was proposed as a valuable treatment strategy for regaining buccal plate thickness in immediate implant placement in compromised extraction socket.[10,11,12] This could be attributed to the format of ridge defect in extraction socket as a favorable bony envelop, predicting new bone formation at the facial aspect of the implant. However, pronounced mid facial soft tissue recession of 1-3 mm were still noticed in 40% patients even in sockets without large defect.[13] The limited volume of soft tissue for primary wound closure at immediate implant

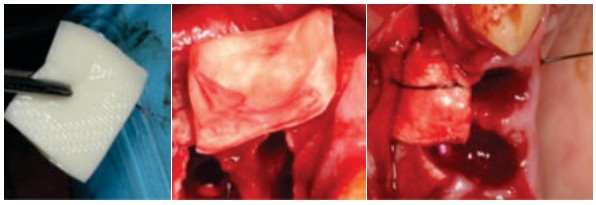
placement compared with that of early implant placement may be one of the most important reasons for the discouraging soft tissue recession.[14,15] Considering the role of soft tissue in compensating for the possible labial tissue loss, connective tissue graft was applied simultaneously for IIP in compromised extraction socket.6,7,16,17

**Upper Rt Maxillary Teeth 14 and 15**



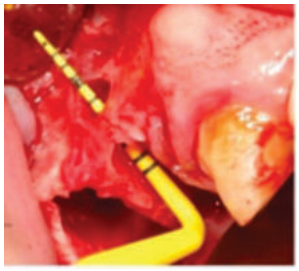
**Extraction of 14 and 15**

A series of studies showed satisfactory clinical outcomes of the Ossix Volumax with the conjunction with the support such as autogeneous bone graft, allograft, xenograft, osteoconductive and /or inductive bone substitute, or a mixture of these in the region in bone defect sites reduced marginal recession when connective tissue graft was used simultaneous in a facial pouch for IIP with guided bone regeneration after 6 month follow up.

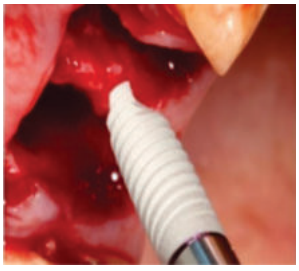


**Placing of Ossix Volumax IRT 14 and 15 and its Suturing with Buccal Bone**

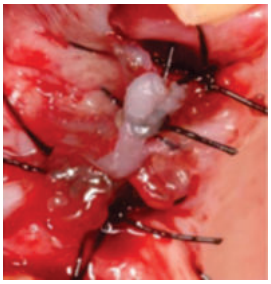
All these studies applied connective tissue graft in a flapless approach or tunneling access. Compared with the flapless procedure, guided bone regeneration with flap surgery is more beneficial in terms of a clear surgical vision and thereby a complete debridement. It is also useful in correcting the position of the mucosal margin. On the other hand, however, the disruption of local blood supply in flap elevation may pose negative impacts on tissue remodeling.



**Hu Friedy Colorvue UNC12 probe**



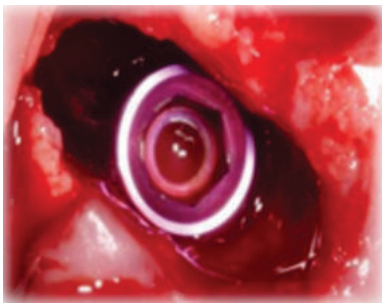
**Dental Implant Placement IRT 14 and 15 M Gel**



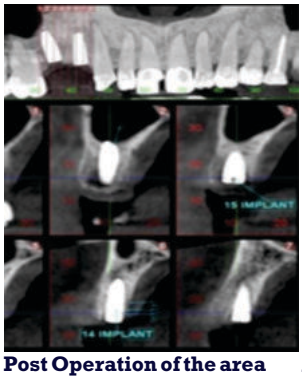
**3-0 polyamide suture, would covered with blue**

Considering the importance of interproximal soft tissue and the underlying bone level, flap surgery with papilla preservation technique was proposed in this study to better preserve the vascularity of interdental areas. Indeed, flap elevation procedures with papilla preservation technique have shown favorable clinical outcomes in surgical treatment of periodontal and peri-implant intra-bony defects. However, the clinical outcomes of IIP with guided tissue regeneration and connective tissue one plate (TBP). Grafting using papilla preservation technique in compromised extraction sockets has not been previously reported. Therefore, the aim of this study was to evaluate the facial soft tissue level of immediate implant placement in compromised sockets with guided tissue regeneration and connective tissue grafting using the papilla preservation technique.

**Pink Esthetic Score (PES)** was used to evaluate peri-implant soft tissue asthetics. PES is an elevation system that incorporate seven variables mesial papilla,distal papilla,soft tissue level,curvature of the facial mucosa and root convexity,soft tissue colour and texture . Grades on a scale is from 0 to 2.



**OSSIX® VOLUMAX- The Resorbable Collagen Membrane:** OSSIX® VOLUMAX is a biodegradable and biocompatible collagen membrane intended for use during the process of guided tissue and bone regeneration. The collagen is extracted from porcine tendons subjected to veterinarian inspection and is purified to prevent hypersensitivity reactions. It acts as a biodegradable barrier for ridge augmentation for later implant insertions, simultaneous ridge augmentation and implant insertions, ridge augmentation around implants inserted in immediate and delayed extraction sites, alveolar ridge preservation consequent to tooth (teeth) extraction, over the window in lateral window sinus elevation procedures, in implants with vertical bone loss due to infection, only in cases where satisfactory debridement and implant surface disinfection can be achieved, in intra bony defects around teeth, for treatment of recession defects, together with coronally positioned flap, in furcation defects in multi rooted teeth, and localized gingival augmentation. OSSIX® VOLUMAX must not be used in patients with known collagen hypersensitivity, patients with sensitivity to porcine-derived materials and patients suffering from autoimmune diseases and connective tissue diseases, such as systemic lupus erythematosus, dermatomyositis etc.



**Post Operation of the area**

**After Crown Placement IRT 14 and 15 CBCT clearly demonstrates bone fill**

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