

## Implant Placement in Maxillary Anterior Region Along with Soft and Hard Tissue Grafting- A Case Report.

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**Abstract:** Successful replacement of lost teeth by means of tissue integrated implants represents a major advance in dentistry. The bone quality and amount of bone available in anterior maxilla is often variable and there is defect of bony wall. Currently implants are placed in such defect along with grafting procedures. This case report presents a staged approach for minimally invasive immediate implant placement for a maxillary central incisor. A primary procedure was placement of implant along with frenectomy. A secondary procedure utilised connective tissue grafting to enhance soft tissue thickness and volume for the associated area along with bone allograft to graft the buccal defect. The staged combined treatment resulted in ideal biologic health and aesthetics for the implant supported restoration.

**Keywords:** Esthetic Zone, Soft tissue grafting.

### I. Introduction

Maintaining aesthetics for anterior dental implant rehabilitation remains a challenge due to the complexities of maintaining an adequate framework of hard and soft tissue architecture, which is ultimately required for the restorative phase of treatment. There are significant changes to the ridge form, bone, and soft tissue volume that begin almost immediately post-extraction (1). Thus, careful sequencing for surgical treatment planning and decision-making is essential to obtain optimal and predictable results. The following case report presents step by step procedure in a case where the missing maxillary right central incisor was restored by placement of implant simultaneous with use of bone graft for closure of minor dehiscence in alveolar ridge. A two stage implant surgery was done wherein the 1<sup>st</sup> surgery was for implant insertion and second stage surgery several months later for uncovering the implant and attaching the prosthetic components

### II. Case Report

A 23 year-old patient reported to D.Y Patil Dental college and hospital in the department of Prosthodontics with missing right central incisor and was concerned with the aesthetics of his maxillary right central incisor. He reported a history of trauma, two years back. Intraoral-examination revealed soft tissue recession at the maxillary right central incisor (Figure 1A and 1B) and high frenal attachment. Architecture of soft tissue was firm. Cone beam CT scan (CBCT) demonstrated buccal defect. A two- stage implant surgical procedure (using NobleReplace implant system) was planned with simultaneous use of bone grafting to cover any dehiscence in the labial aspect that will appear during the placement procedure. After evaluating the clinical and radiographic findings, a stepped-screw implant of 13 mm length and 4.5 mm diameter was considered ideal for the site taking into consideration the fact that the tooth-implant distance should be greater than or equal to 3mm at the site. Study models were prepared. Occlusal guiding stents were prepared with clear acrylic resin (Fig.2). The prefabricated surgical stent was to be used to direct the implant placement.



Figure 1A- Intraoral frontal view



**Fig.1B-Pre-operative Photograph.**



**Figure 2-Placement of surgical stent.**



**Figure 3- Initial pilot drill**

**A) First surgical stage:** After anesthetizing the surgical site, a full thickness (mucoperiosteal flap) was elevated.

The flap was reflected to the labial surface to expose the underlying bone. Occlusal opening in the prefabricated surgical stent allowed the surgical drills to be placed correctly in the implant recipient site. The point of insertion on the bone was marked with the help of a round bur inserted through the occlusal opening of the stent.

This was followed by the use of a 2mm spiral drill till the depth of 13mm at a bur speed of 800rpm with copious irrigation normal saline (Fig.3). Position indicating device was used to check for the angulation (Fig.4). Bone expanders of 2mm and 3mm was used to widen the osteotomy site for receiving the selected implant. (Fig.5)The depth stop of all drills was placed at 13 mm corresponding to the selected implant length. The 2mm drill was followed by 3mm and 4mm drill till the desired predetermined length and osteotomy was completed.



**Figure 4- Placement of Position indicating device.**

The implant was removed from the sterile packaging and placed in the prepared cavity with finger pressure.



**Figure 5-Bone expanders.**

The implant was placed at the associated site and tightened with the help of ratchet with a final torque of 35Ncm. (Fig. 6)

**Frenectomy-** It was performed around the site to release tension around the area.



**Figure 6-Placement of implant.**



**Figure 7-Placement of Novabone putty**

**Bone Grafting:**A buccal dehiscence defect at the most coronal aspect of the implant exposing a few threads of the implant was noted. After decorticating the labial bone with hand instruments, (Particulate hydroxyapatite bone graft/ HAP) was mixed with blood from the recipient site and was placed covering the dehiscence (Fig 7). A connective tissue was collected from the hard palate and was grafted at the defective site. Healiguide membrane was used to stabilize the graft. The flap was closed over the graft and sutured using interrupted sutures.(Fig 8,9)

Multiple intermediate radiographs were taken to check the position of implant.



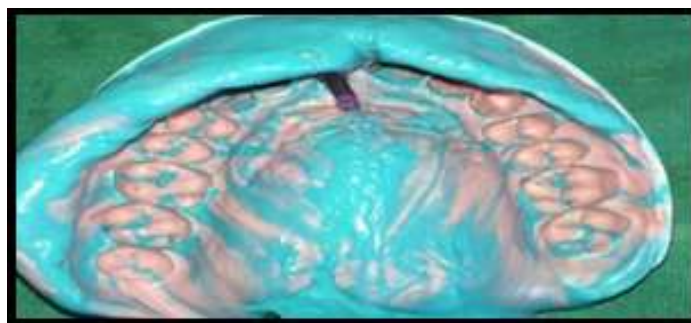
**Figure 8-**Collection of Connective tissue graft.



**Figure 9-**Placement of healiguide membrane.



**Figure 10-** Temporization.



**Figure 11-**Closed tray impression.



**Figure 12- Titanium customized abutment**



**Figure 13- Radiograph**

**After ThreeMonths-  
Second Surgical Stage:**

After a healing period of 3 months as advised in the classical Branemark 2 stage submerged protocol (Branemark et al,1969), a tissue punch was used to uncover the implant. Closed tray impression technique was used for implant level impression. (Fig 11). Titanium abutment (Fig. 12) was milled to change the angulation of implant and temporary composite crown was placed (Fig.14). Final prosthesis was inserted after a week (Fig.15).



**Figure 14- Placement of composite crown.**



**Figure 15-Final permanent Prosthesis.**

### III. Discussion

Placing dental implants in the maxillary anterior region requires precise planning, surgery, and prosthetic treatment. This article has illustrated the steps needed to create ideal aesthetics in the maxillary anterior region. Rigorous treatment planning allows the implant surgeon, working with the restorative dentist, to select location, angulation, and spacing of dental implants to achieve ideal aesthetics. Treatment planning also dictates the necessity for hard- and soft-tissue grafting, which is often crucial for an ideal aesthetic result.

Further, the prosthetic restoration of a dental implant must be ideal to achieve the desired aesthetic result. This article has discussed the importance of a comprehensive and interdisciplinary approach to treatment planning, surgery, and restoration of dental implants in the maxillary anterior region of the mouth.

Aesthetic dental implants should meet the biological and functional needs to be sustainable over time.

Establishing adequate bone and soft tissue is a necessity for the longevity and success of implants.

This case report presents an alternative approach with staged treatment beginning with implant placement and frenectomy followed by connective tissue grafting to increase the soft tissue thickness and then placing a Healiguide membrane around the implant site. This will provide a soft tissue bulk along maintaining the position of Novabone putty and grafting around the buccal defect area.

### References

- [1]. Schropp, L., Wenzel, A., Kostopoulos, L. & Kar-ring, T. (2003) Bone healing and soft tissue contour changes following single-tooth extraction: a clinical and radiographic 12-month prospective study. *The International Journal of Periodontics & Restorative Dentistry* 23, 313– 323.
- [2]. Maiorana C, Santoro F: Maxillary and mandibular bone reconstruction with hip grafts and implants using Frialit-2 implants. *International Journal of Periodontics and Restorative Dentistry*. 2002; 22(3):221-229.
- [3]. Adell R., Lekholm U & Branemark P-I: Surgical Procedures. In: *Tissue integrated prosthesis. Osseointegration in clinical dentistry*. P-I Branemark, GA Zarb, T Albrektsson, Eds.; 1st Edn.; Quintessence Publication, Chicago, 1985; pp: 211-232.
- [4]. Branemark P-I, Breine U, Adell R, Hansson BO, Lindstrom J, Ohlsson A. Intra-osseous anchorage of dental prostheses. *Scandinavian Journal of Plastic and Reconstructive Surgery*. 1969; 3:81–100.
- [5]. Quirynen M, Lekholm U: The Surgical Site. In: *Clinical Periodontology and Implant Dentistry (Vol. 2)*. J Lindhe, NP Lang, T Karring, Eds.; 5th Edn.; Blackwell Publication, Munksgaard, 2008; pp:1068-1069.
- [6]. Yeh HC, Hsu KW. Guided bone regeneration for fenestration defects in dental implants. *Chang Gung Medical Journal*, 2003 ;26(9):684-9.