

MANAGEMENT OF MISALIGNED MAXILLARY ANTERIOR IMPLANT USING CUSTOM MILLED ABUTMENT AND ESTHETIC COVERAGE OF EXPOSED THREADS : A CASE REPORT

Vijaysinh More¹, Ashishkumar Rathod², Priya Lele³

1 Professor, Department of Prosthodontics, Crown and Bridge and Implantology, Bharati Vidyapeeth Deemed University Dental College and hospital, Pune

2. MDS –III, Department of Prosthodontics, Crown and Bridge and Implantology Bharati Vidyapeeth Deemed University Dental College and hospital, Pune

3. Professor, Department of Periodontics, Bharati Vidyapeeth Deemed University Dental College and hospital, Pune

ABSTRACT:

Esthetic and prosthetic rehabilitation of patients with misaligned implants with exposed threads in the maxillary anterior region is always a challenge for the Prosthodontist. This clinical report describes the use of custom milled abutment for restoring an implant placed in the maxillary central incisor region using a porcelain fused to metal crown and use of gingival porcelain and subepithelial connective tissue graft for coverage of exposed implant threads for optimal esthetics. This article also discusses problems faced while rehabilitating misaligned implants in esthetic regions of the mouth.

Keywords: Maxillary central incisor, custom abutment, subepithelial connective tissue graft



INTRODUCTION

The replacement and rehabilitation of missing single tooth with dental implants is now a routine procedure. The tremendous demand for implants has fuelled a rapid expansion of the market. Although many studies regarding dental implant have indicated predictable outcomes,^[1,2] some complication challenging both patients and clinicians have been reported.^[3,4]

Implant placement should be prosthodontically driven according to the design of the definitive restoration.^[3,5] However, the position

and angulations of dental implants may not always be ideal due to operator-related and patient related factors such as inexperienced operator, limited mouth opening and poor bone quality.^[6,7]

In general, angled stock abutments can be used to correct the angulation of implant upto 20.^[12,13] However, more severe implant angulation may make conventional prosthetic reconstruction very challenging and require custom abutment fabrication in order to correct the misangulation.^[3,9]

The subepithelial connective tissue graft is a periodontal plastic surgery procedure that can be used to improve the gingival condition around dental implants. This clinical report describes the clinical and laboratory steps involved in fabrication of a custom milled abutment and a cement retained porcelain fused to metal crown with gingival porcelain for a labially misaligned dental implant in maxillary left central incisor region. Also a subepithelial connective tissue graft to achieve soft tissue coverage over the exposed implant threads and enhance the pink esthetics has been described.^[10-13]

CASE DETAIL:

A 25 year old male patient was referred from the Department of Oral Surgery to the Department of Prosthodontics, Crown and Bridge and Implantology, Bharati Vidyapeeth Deemed University, Dental College and Hospital, Pune for prosthetic rehabilitation of an implant placed in the maxillary left central incisor (21) region. He had undergone an immediate implant placement after the extraction of fractured 21 around 4 months back (OSSTEM IMPLANT SYSTEM).

On clinical examination, patient presented with thin periodontal biotype. A soft tissue dehiscence exposing the cover screw and the implant collar at the level of the mucogingival junction apically and

extending around 2 mm coronally in 21 region was evident with the implant (Fig. 1). Radiographic examination revealed a well osseointegrated implant with coronal bone level at the third thread of the implant. (Fig 2) At Stage II surgery, the cover screw was removed and a healing abutment was placed.(Fig 3)

After two weeks, the healing abutment was unscrewed and final impression of maxillary arch was made with open tray technique using polyvinylsiloxane impression material (3M ESPE Express XT Putty and Light Body). The lab analogue was secured in place in the impression and cast were poured in type IV dental stone (Kalabhai, Kalstone). Straight abutment was tried and found in an excessive labial inclination that would preclude proper crown emergence. So an angulated abutment was chosen. However even angulated abutment was insufficient to eliminate the excessive labial emergence. So the only treatment modality applicable was to use custom milled abutment in this case.

Models were sent to the dental laboratory with instructions to achieve ideal crown emergence. The laboratory was also instructed to use a gingival ceramic to mask the exposed implant collar. The custom milled abutment was screwed on to the implant and tightened to 25 N-cm using a torqued wrench. PFM crown was cemented on to the abutment

using zinc phosphate cement. Oral hygiene instructions were given. Implant maintenance was taught to the patient. The use of a mouthwash (chlorhexidine gluconate 0.2%) and a narrow interdental brush for proximal cleaning was recommended.

At a follow up examination around 1 month, it was noticed that the gingival margin had further receded exposing two implant threads apical to the gingival porcelain. A peri implant probing depth of 3 mm apical to the recession was noted. The peri-implant mucosa had thin biotype and so to maintain a long term soft tissue stability and achieve soft tissue coverage over the exposed thread, a subepithelial connective tissue graft was planned.

Local anaesthesia (2% xylocaine with 1:200,000 adrenaline) was administered using a field block technique extending from 13- 23 region labially. A greater palatine nerve block was and local infiltration in 23, 24 region was administered palatally at the donor site. The recipient site was prepared using intrasulcular incisions made labially in 11, 21 and 22 regions using a disposable crescent shaped ophthalmic blade. A supraperiosteal sharp dissection using the same blade was carried out upto the mucogingival junction, thus making a tunnel over the exposed implant threads. Care was taken not to perforate the flap so that the blood

supply would not be compromised. Two vertical incisions were made on the labial side in 11 and 22 regions extending from the mucogingival junction coronally to a distance of 4 mm to permit the passage of the connective tissue graft through the tunnel and to facilitate its placement over the exposed threads of the implant in 21 region. The donor site was the palatal mucoperiosteum in the region from 23 to 26. A palatal "trap door" design was used.

The desired subepithelial connective tissue was procured. Absorbable gelatine foam was placed to achieve haemostasis. The palatal access flap was then replaced and sutured. An acrylic stent was placed over the palate to maintain pressure and aid in haemostasis. The harvested connective tissue graft was drawn through the tunnel with the help of a suture placed at one end of the graft. The graft was secured over the exposed implant threads using a sling suture. Also the labial flap covering the connective tissue graft was retracted coronally and sutured in an attempt to cover the entire graft, which would allow for the establishment of a better blood supply to the graft and therefore enhance its chances of survival.

CONCLUSION:

Custom abutments are just such an advancement. Their advantages, including patients-specific soft tissue management during the healing

phase and final restorations that adhere precisely to the patient's gingival architecture, make them an excellent option for implant treatment.

This clinical report described how to manage a challenging patient due to a malpositioned implant and exposed threads and greyish gingival color over the implant. The angulation of the implant was corrected using a custom abutment with gingival porcelain FPD. By using this custom

abutment additional surgical procedure like implant removal were avoided. The subepithelial connective tissue grafting procedure mask the undesirable implant threads and greyish gingival color and also create the desired soft-tissue root prominence. The technique described in this report may be an alternative to efficiently restore malpositioned implant.

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FIGURES:



Fig-1: Radiograph showing implant in 21 region



Fig-3: Intraoral view showing healing abutment



Fig-2: Intraoral view showing treads expose with implant in 21 region



Fig-4: Intraoral view showing impression copings

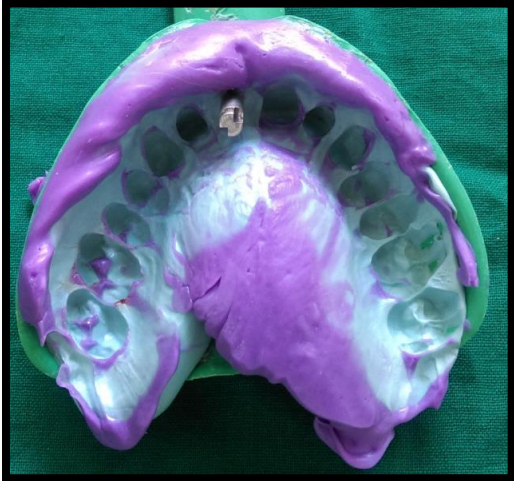


Fig-5: Impression with lab analogue



Fig-8: intraoral view showing improved emergence profile with customized abutment

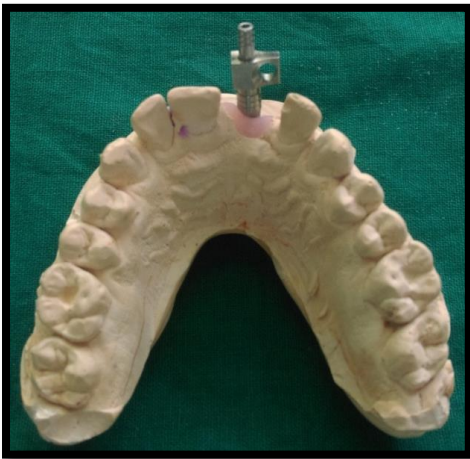


Fig-6: showing labially oriented Impression copings



Fig-9: intraoral view showing trail coping



Fig-7: showing labially oriented Impression copings

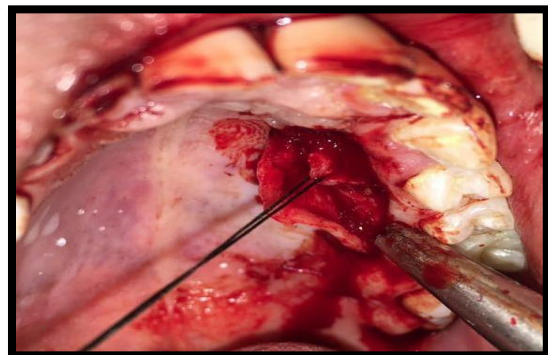


Fig-10: lifting of the palatal partial-thickness flap to gain access to a connective tissue wedge of adequate length and thickness

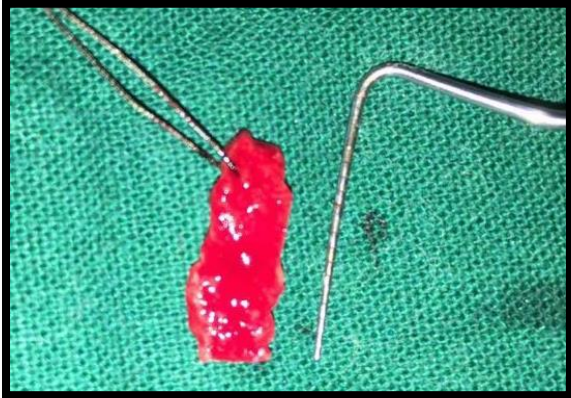


Fig-11: the harvested connective tissue graft



Fig-14: complete coverage of the dental implant treads. Note after 15 days their is pink color due to newly grafted tissue and absence of the greyish color of the implant.



Fig-12: vertical incisions on the labial side in 11 and 22 region



Fig 15: Intra oral view of final prosthesis



Fig-13: the donor graft drawn over dental implant through tunnel preparation



Fig-16: Extra oral view of final prosthesis