ABSTRACT

Purpose: The purpose of this article is to describe a clinical case in which the patient’s failing tooth was extracted and with minute modifications the same crown was used as provisional’s after immediate implant placement. Esthetic single tooth implant placement using traditional two stage surgery or single stage in anterior maxilla is well-documented in literature. Several complications can occur in healing phase like loss of papilla, ridge resorption, tissue loss, etc. Patients own tooth with preserved crown architecture can be utilized as provisional as it may provide acceptable gingival esthetics, maintenance of interproximal contours, palatal adaptation, better tooth shape and preservation of both papilla.

Keywords: Immediate implants, Osseointegration, Socket, Esthetic outcomes, Single tooth replacement, Natural tooth.

Key Message: Preservation of hard and soft tissue architecture is very important during replacement of anterior single tooth especially in immediate implant restoration. Natural tooth can provide the best contours for preservation of tissue architecture. Thus a clinician should be careful during the surgery and can utilize patients natural tooth anatomy to preserve the papilla and interproximal height of bone which may be a better alternative to a fabricated plastic crown and better patient acceptance as temporary prosthesis.


Source of support: Nil

Conflict of interest: None

INTRODUCTION

The evolution of dentistry has increased the use of osseointegrated implants as a treatment alternative for rehabilitation of multiple or single edentulous areas.\(^1-3\) Implant protocols have evolved over the past 40 years since Branemark introduced the concept of unloaded endosseous cylindrical implants. Implant design and surface technology has also changed. Roughened surfaces, altered thread patterns, and internal connectors have improved implant success and decreased healing times. Implants placed immediately into fresh extraction sites have been shown to be successful. Immediately loaded implants, whether they be splinted and in occlusion or single units immediately restored out of occlusion in healed sites, have high success rates with proper patient selection.

There are several studies which have reported higher failure rates with immediate implants,\(^4,5\) the reason attributed was decreased buttressing of an extraction site compared to healing site.

However, there are several studies that have reported higher success with immediate implants in fresh extraction sockets.\(^6,7\) The same authors further noted a similar success rate of 85% for immediately restored single unit implants in fresh extraction sites and on the other hand, found a 95.8% success rate for implants placed in fresh extraction sites immediately restored and out of occlusion.

Immediate implant placement using a single-stage surgical approach can reduce the duration of treatment, preserve papilla, and limit apical migration of the free gingival margin. Several studies have shown successful bone regeneration in extraction sites around immediately placed implants with clinical results similar to two stage procedures.\(^8\)

Research on the preservation of the tissue architecture, the reduction of surgical sequences, the augmentation of patient comfort during provisionalization, and greater esthetic requirements\(^9\) have led many practitioners to consider utilization of preserved crown of freshly extracted tooth as provisional’s. Successful esthetic results may ultimately be determined by the patient’s own presenting anatomy; rather the clinician’s ability to manage state of the art procedures.

CASE REPORT

A 22-year-old male patient presented to the Faculty of dental sciences, Banaras Hindu University for evaluation of the mobile left central incisor in maxillary anterior region. The patient’s medical history was negative, and he was not taking any medications that could be associated with a compromised healing response.

Clinical and radiographic examination indicated a fractured upper right central incisor just above the cemento-
Natural Crown as Immediate Implant Provisional Prosthesis

enamel junction with a hopeless prognosis and was deemed for extraction (Figs 1A and B).

The patient was given a detailed explanation concerning his present state, alternative treatment plans including removable partial denture or a fixed bridge were explained as treatment modalities including immediate implant restoration with provisional prosthesis, however an implant supported replacement treatment was accepted taking into full considerations of the risks involved in the procedure.

The hopeless tooth was evaluated in apicocoronal plane, the cervical portion of gingival margin of the tooth was coronal in its position and it defines the free gingival margin this may not be a problem in long-term esthetics of the gingival architecture, as it is well-proven that there is 2 mm of apical migration of gingiva after tooth extraction.

In the facial-lingual plane, the teeth was positioned facially, however, this position was after the traumatic fall and before the incident it looked as if it was positioned centrally, further it seems mesial-distal position seems equal on both sides of the teeth in a way preserving the interproximal bone which is needed for the papilla fill (Fig. 2).

The gingival scallop was flat in a way mimicking osseous scallop, can be a good maintenance of interproximal papilla. The biotype of the gingiva was thick, the tooth shape was square, favorable prognosis because the proximal contact is longer and more tooth structure fills the interdental area. The osseous crest was between 3 and 4 mm from the free gingival margin as it was measured before and after the extraction and interproximal, bone was coronal to the crest.

Surgical Procedure

Before surgery was performed, the patient rinsed for 2 minutes with a 0.12% chlorhexidine digluconate solution. Following an injection of 2% lidocaine with 1:100 000 epinephrine, the crown portion and the residual roots were atraumatically removed preserving the underlying osseous architecture (Figs 3A and B).

The extraction socket was thoroughly debrided and degranulated to remove all the granulation tissues (Fig. 4). The site was prepared to accept a 3.8 by 13 mm implant (Xive Dentsply Friadent), stability was achieved by careful osteotomy extending 2 to 3 mm beyond the socket dimensions. The buccal plate were preserved to some extent and osteotomy was cautiously completed in the palatal aspect of the socket (Fig. 5). Implant was stable because of good palatal and apical bone. The buccal surface and marginal voids were grafted with bovine inorganic hydroxyapatite (Bio-Oss, Geistlich AG, Wolhusen, Switzerland) (Fig. 6).

Restorative Procedure

The Friadent Temp base abutment was connected and the natural tooth prosthesis was fabricated at the chairside. The coronal portion of the patients tooth was to be used as the provisional restoration (Fig. 7). The root of the tooth was sectioned horizontally with a diamond bur (Brasseler USA) approximately 3 mm from the cementoenamel junction. The tooth was then hollowed out, so that it would fit over the abutment. After confirming the accurate fit, the contour on the facial surface was made slightly flat so that not much pressure is there on the free gingival margin, which can cause apical migration of the tissues. The interproximal tissues


35
were well supported by natural emergence profile of the tooth (Figs 8A and B). Temporary cement (Protemp 3, 3M) was used and allowed to self cure for 2 minutes. Excess cement was removed and the tooth was kept in infraocclusion. The patient was advised not to use the surgical site and instructed not to have any contact on that tooth while eating.

The patient was given amoxicillin 500 mg 3/d for 5 days, mefenamic acid 500 mg initially then mefenamic acid 250 mg 4/d for 5 days and chlorhexidine digluconate 0.12% 3/d for 4 weeks. Patient was asked to refrain from chewing on the surgical area for the first 4 weeks postoperatively.

**DISCUSSION**

In the anterior region, the successful replacement of a single tooth with an implant-supported restoration is one of the most difficult treatment options due to numerous functional and biological requisites. Such prostheses should also satisfy the increasing esthetic demands of patients who expect the definitive restoration to mimic the natural dentition and their supporting gingival tissues. ‘Since the maintenance of the existing anatomical structures is easier than their re-creation, it has even been advocated to perform provisionalization with a pseudoloaded prosthesis.
immediately following stage I surgery in immediate tooth replacement although this procedures is still experimental.’ Immediate replacement, while no longer experimental, nevertheless remains challenging and requires careful case selection (i.e. preimplant identification of unfavorable factors), a rigorous observance of the criteria for success, flawless technical execution, serious collaboration with the patient, and strict professional maintenance. Thus author decided to use patients own tooth as provisional because a perfect contours are needed for preservation of tissues. Long-term multicenter prospective studies would be useful in confirming the reliability of the technique, identifying factors to optimize it, and to define its limitations. The evolution toward the combination of immediate implantation and early loading techniques, however, our clinical case appears to represent the most adequate solution for solving concerns inherent in single-tooth replacement for the esthetic zone.

CONCLUSION

Patient own tooth can be used as provisional’s for immediate solution of temporary restoration, our clinical case may require several modification and long-term evaluation regarding esthetic preservation, papilla fill as well justification for temporary tooth to be used as an alternative for acrylic prosthesis.

REFERENCES