

Interdental Bone and Papilla, Hold it to preserve it: A Case Report

Abstract

Post extraction preservation of the interproximal papilla and prevention of alveolar bone collapse, especially in the smile zone is critical. Maintenance of an existing anatomical structure is always easier than its reconstruction. Immediate implantation with immediate prosthesis provides better and faster functional and aesthetic results. There are various options for provisional restorations but is traumatic, expensive and time consuming. In this article we would like to discuss a new, easy and cheaper option for provitionalization.

Key Words

Immediate implant; immediate prosthesis; interdental bone; interdental papilla

Beena Roopak¹, Roopak Mathew David²

¹Reader, Department of Oral and Maxillofacial Surgery, Rajarajeshwari Dental College and Hospital, Kumbalgud, Bangalore, Karnataka, India

²Reader, Department of Orthodontics and Dento Facial Orthopedic, RV Dental College, Bangalore, Karnataka, India

INTRODUCTION

There are various effects on Oral Health after tooth extraction: Bone loss occurs both in height and width in the following months after extraction, and soft tissue follows bone leading to open gingival embrasures or black triangles which are esthetically unacceptable. Biting irregularities due to lost tooth can cause insufficient chewing and negatively affect eating habits even to the extent of having an effect on nutritional balance. The opposite tooth can supra erupt which can compromise functionality.^[1] Initially when Brenemark introduced the implants, there was a waiting period of 6 to 12 months to place implants following extraction. After many years of studies, the waiting period has drastically come down to 3 to 4 months. With the newer protocol immediate implant is popularized.^[2] Protocol for immediate implant placement:

1. Implants placed into fresh extraction sockets have a high rate of survival, ranging between 93.9% to 100%
2. Implants must be placed 3 to 5 mm beyond the apex in order to gain a maximal degree of stability.
3. Implants should be placed as close as possible to the alveolar crest level (0 to 3 mm)
4. There is no consensus regarding the need for gap filling and the best grafting material
5. The use of membrane does not imply better results-on the contrary, membrane exposure may carry complications in its wake

6. The absolute need for primary closure remains to be established^[3]

Post extraction preservation of the interproximal papilla and prevention of alveolar bone collapse, especially in the smile zone is critical. Maintenance of an existing anatomical structure is always easier than its re-construction. Immediate implantation with immediate prosthesis provides - better and faster functional and aesthetic results.^[2-5]

There are various options for Provisional restorations available for single tooth implants:

- 1) Temporary abutment
- 2) Mary land bridge
- 3) Riding pontic
- 4) Tooth form RPD

There are certain disadvantages as they can be expensive, may involve preparation of vital teeth and also time consuming or unesthetic. In our cases, acrylic tooth is splinted to adjacent teeth with wires and composite.

CASE REPORT

10 patients who reported to our clinic with bad prognosis of anterior teeth; healthy individuals with no major medical problems; chronic smokers and with active periapical lesion were excluded. Atraumatic tooth extraction was done under local anaesthesia using periostomes and luxators, immediately implant was placed more apically and palatally. Provisional acrylic single crown, free from occlusion, was splinted using wire and composite (Fig. 1). Follow up for 6 months to 1 yr

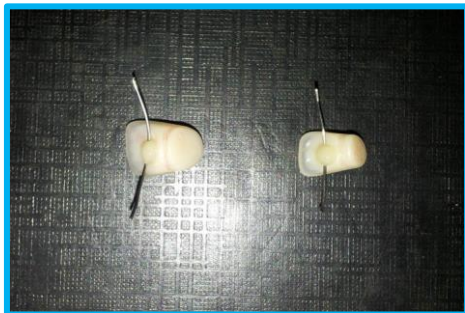


Fig. 1: Acrylic tooth splinted with wires



Fig. 2b: Intra oral view

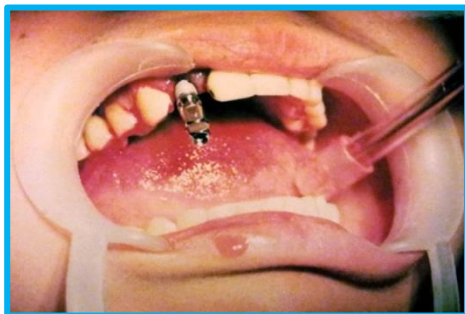


Fig. 4: Implant placement 12



Fig. 6: Final restoration after 4 month IOPA

was done, Bone around implant and soft tissue drape was accessed. Interdental bone was compared from pre op to post op on the radiograph after 6 months. Interdental papilla on mesial and distal aspect of missing tooth was compared with pre op to post op. Among 10 patients, 8 patients had good bone height and there was no recession of interdental papilla. 2 patients had recession labially, as the implants was placed slightly labially. Pink porcelain was incorporated in final prosthesis for esthetic reasons.



Fig. 2a: Pre op OPG showing failed RCT in 12



Fig. 3: Extraction of 12



Fig. 5: Acrylic tooth spinted with wire



Fig. 7: Intra oral

DISCUSSION

The alveolar process is a tooth-dependent tissue that develops in conjunction with the eruption of the teeth and resorbs when teeth are lost. The width decreases 50% (from 12 mm to 5.9 mm, on average), and two-thirds of the reduction occurred within the first 3 months. Changes in bone height is less than 1 mm.^[4-6] Classifications of implant loading: Misch *et al.*, 2004:

Immediate occlusal loading: *Functional occlusal loading* within 2 weeks of implant placement.

Early occlusal loading: *Functional loading between 2 weeks and 3 months of implant placement.*

Nonfunctional immediate restoration: *Implant prostheses placed within 2 weeks of implant placement with no direct functional occlusal loading*

Nonfunctional early restoration: *Implant prostheses delivered between 2 weeks and 3 months from implant placement.*

Delayed occlusal loading: *Restoration of an implant more than 3 months after placement.*^[7]

Garber *et al.*, reported excellent results with anterior single-tooth implants that were provisionalized after 3 weeks. The provisional restoration was kept out of occlusion for 6 to 8 weeks after which the final restoration was placed. Block *et al.*, recommended that 1-2 mm of interocclusal space should exist between the provisional crown and the opposing teeth or restorations. The provisional acrylic single crown was used in the present study because it is more hygienic and cost effective.^[8] Clinical and esthetic outcomes of implants placed in postextraction sites, reported survival rates of over 95%. Recession of the facial mucosal margin is common. Risk indicators included a thin tissue biotype, a facial malposition of the implant, and a thin or damaged facial bone wall.^[9] In Early implant placement frequency of mucosal recession compared to the long-term implant cumulative survival rate up to 16 years was 82.94%. The prevalence of biological complications was 16.94% and the prevalence of technical complications was 31.09%. The cumulative complication rate after an observation period of 10-16 years was 48.03%.^[10]

CONCLUSION

A gap greater than 0.5 mm between an implant and labial bone plate of the extraction socket should be avoided by the application of wider-diameter implants, placed more palatally and apically. Primary implant stability is the key factor to consider in implant success before attempting immediate loading- 35ncm. The soft tissue response was very favourable with the provisional crown. In this study placement of immediate implant and presence of a provisional crown throughout the healing phase, sculpted the interdental papilla, and maintained the alveolar morphology. This was cost effective and less time consuming.

REFERENCES

1. Misch EC. Single-Tooth Implant Restoration. *Dental Implant Prosthetics* 2015;499-552.

2. Chen ST, Buser D. Clinical and esthetic outcomes of implants placed in postextraction sites. *Int J Oral Maxillofac Implants* 2009;24:186-217.
3. Beagle J. *Surgical Protocol and Surgical Essentials of Immediate Implant Dentistry* 2013;71-86.
4. Al-Sabbagh M, Kutkut A. Immediate Implant Placement. *Dental Clinics of North America* 2015;59:73-95.
5. Ramaglia L, Sbordone C, Saviano R, Martuscelli R, Sbordone L. Marginal masticatory mucosa dimensional changes in immediate post-extractive implants: a 2 year prospective cohort study. *Clinical Oral Implants Research* 2014.
6. Faiella RA. Immediate Implant Placement: A Comprehensive Understanding for Achieving Optimal Clinical Success. *Implant Site Development* 2015;320-40.
7. Molon R. Reconstruction of the Alveolar Buccal Bone Plate in Compromised Fresh Socket after Immediate Implant Placement Followed by Immediate Provisionalization. *Journal of Esthetic and Restorative Dentistry* 2015;27(3):122-35.
8. Atalay B. Immediate Implant Placement Without Bone Grafting. *Implant Dentistry* 2013;22:360-5.
9. Covani U. A 10-Year Evaluation of Implants Placed in Fresh Extraction Sockets: A Prospective Cohort Study. *Journal of Periodontology* 2012;83(10):1226-34.
10. Strub JR, Jurdzik BA, Tuna T. Prognosis of immediately loaded implants and their restorations: a systematic literature review. *Journal of Oral Rehabilitation* 2012;9:704-17.