Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; Vol 13: Issue 3
Open Access

Fabrication of Provisional restoration for single tooth implant – Index method

1. **Dr. M.Rathinavel Pandian, [2.] Dr. M.Narasimman.M.D.S., [3.]Dr.NavinBharathy Mohan , [4.] Dr.Moksha Dayini, [5.] Dr.Ramya Dhanasekaran [6.] Dr.Tamizhesai balavadivel**

[1]M.D.S., Reader, Department of Prosthodontics, Tagore Dental College and Hospital.
[2]Professer, Department of Prosthodontics. Tagore Dental College and Hospital.
[3]M.D.S., Senior Lecturer, Department of Prosthodontics. Tagore Dental College and Hospital.
[4]Tutor, Department of Anatomy, Sree Balaji Medical College and Hospital.
[5]M.D.S., Reader, Department of Prosthodontics, Sree Balaji Dental college and Hospital.
[6]M.D.S., Reader, Department of Prosthodontics, Tagore Dental College and Hospital.

Cite this paper as: M.Rathinavel Pandian, M.Narasimman,NavinBharathy Mohan , Moksha Dayini, Ramya Dhanasekaran,Tamizhesai balavadivel (2024) Fabrication of Provisional restoration for single tooth implant – Index method. *Frontiers in Health Informatics, 13* (3), 10438-10445

ABSTRACT:
Dental implant supported restoration is one of the successful treatment option to restore totally or partially edentulous arches. After implant placement a traditional loading period of 3 to 6 months is recommended for implant restoration. Immediate loading of implant is one of the ways of eliminating the traditional healing period. immediate provisionalization of an implant is needed for the patient to provide tooth like structure to satisfy the patient desire to replace missing tooth. Various techniques have been described in the literature for a successful fabrication of a provisional restoration at the time of implant placement. Indexing an implant at the time of surgery can facilitate the placement of a provisional restoration earlier in the healing period or after implant in the healing period or after implant exposure. This article describes a method of fabricating cement retained provisional restoration immediately after implant placement.

Key words: Dental implant, Immediate loading, Partially edentulous arches, Immediate provisionalization, Provisional restoration.

Introduction:

Dental implant supported restoration is one of the successful treatment option to restore totally[1-3] or partially[4-6] edentulous arches. After implant placement a traditional loading period of 3 to 6 months is recommended for implant restoration. Immediate loading of implant is one of the ways of eliminating the traditional healing period. Immediate loading has been applied in implant supported over denture[8-11], Full arch cement (or) screw retained Maxillary [12-16] and mandibular [17, 18] denture or partially edentulous[19-20] arch. This due to the time between the implant placement and the restoration for the patient is not optimal to be without restoration.

However immediate provisionalization of an implant is needed for the patient to provide tooth

like structure to satisfy the patient desire to replace missing tooth. The advantage of immediate or early provisionalization of implants are maintenance of interdental space, developing the gingival sulcus and contours, patient comfort by eliminating a removable partial denture, elimination of second stage surgery and the improvement of patient acceptance, immediate function in selected situations and improving esthetics[21].

Various techniques have been described in the literature for a successful fabrication of a provisional restoration at the time of implant placement. Indexing an implant at the time of surgery can facilitate the placement of a provisional restoration earlier in the healing period or after implant in the healing period or after implant exposure. This article describes a method of fabricating cement retained provisional restoration immediately after implant placement.

Case Report:

A 40 year old female was reported to Department of Prosthodontics Tagore Dental College and Hospital with the chief complaint of missing tooth in the right maxillary posterior region. On examination patient had missing tooth in the 16 region. Patient had lost the tooth 6 months back due to periodontal problem. Various treatment plans was explained to the patient to replace the missing tooth in the 16 region, finally the patient was opted the implant supported fixed prosthesis. The final treatment plan was to treat the partially edentulism with a single root form implant.

The steps were followed:

I. A diagnostic impression was made before the implant placement. Cast was poured in type I dental stone. A diagnostic setup was done to evaluate the restorative crown height and width.(Fig.1)

II. A Diagnostic radiograph (Orthopantomogram) was made to know the height of the available bone and bone mapping was done to evaluate the width of the available bone to place an appropriate root form implant.

III. A clear acrylic custom made index was made in the maxillary right quadrant. An occlusal hole was made in the corresponding edentulous region.(Fig.2)

IV. After the implant placement, implant mount was left in the implant. Clear acrylic index was placed intra orally and the autopolymerising resin was applied between implant mount and the clear acrylic custom made index.(Fig.3)

V. After polymerization of the acrylic resin, the template was removed, an acrylic resin, the template was removed. An implant analog was clipped onto the implant mount.(Fig.4)

VI. An access hole was prepared in the edentulous region of the diagnostic cast to receive the implant analog. The custom made acrylic stent was seated in the cast. The space

between the implant analog and model was filled with acrylic resin for the provisional crown fabrication.(Fig.5)

VII. Provisional crown was cemented in the patient mouth proximal contacts and occlusion was verified in centric and eccentric occlusion.(Fig.6)

Discussion:

This technique offers the alternative method of fabricating cement retained provisional crown extra orally for immediate loading of implants. Fabrication of this technique eliminates the need for impression and the laboratory work like cast pouring time material expenses are eliminated and the less intra oral adjustment when compare to the method described earlier.

This cement retained provisional offers the advantage over screw retained provisional crown offers the advantage over screw retained access hole in the anterior tooth due to esthetics[4]. This technique also eliminates the laboratory work and required clinical time compare to a conventional procedure.

Summary:

Immediate loading of implants are mostly successful in the mandibular anterior region. A good primary stability, Implant design, cross arch stabilization and the occlusion, these are the factors which determine the implant for immediate loading of implant to be successful. In this technique a good primary stability was achieved, broder interproximal contacts were provided and occlusal clearance was to reduce early micro movement of the implant due to occlusal load. Implant indexing technique offers immediate provisionalization and to develop the gingival sulcus and the immediate placement of definitive restoration after the implant has been integrated.

References:

1. Adell R, Lekholm U, Rockler B, Branemark PI. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. Int J Oral Surg 1981;10:387-416.
2. Adell R, Eriksson B, Lekholm U, Branemark PI, Jemt T. Long-term followup study of osseointegrated implants in the treatment of totally edentulous jaws. Int J Oral Maxillofac Implants 1990;5:347-59.
3. Lindquist LW, Carlsson GE, Jemt T. A prospective 15-year follow-up study of mandibular fixed prosthesis supported by osseointegrated implants. Clinical results and marginal bone loss. Clin Oral Implants Res 1996;7:329-36.
4. Jemt T, Lekholm U, Adell R. Osseointegration in the treatment of partially edentulous patients: a preliminary study of 876 consecutively placed fixtures. Int J Oral Maxillofac Implants 1989;4:211-7.
5. Johns RB, Jemt T, Heath MR, Hutton JE, McKenna S, McNamara DC, et al. A multicenter study of overdentures supported by Branemark implants. Int J Oral Maxillofac Implants 1992;7:513-22.

6. Jemt T, Pettersson P. A 3-year follow-up study on single implant treatment. J Dent 1993;21:203-8.

7. Branemark PI. Osseointegration and its experimental background. J Prosthet Dent 1983;50:399-410.

8. Babbush CA, Kent JN, Misiek DJ. Titanium plasma-sprayed (TPS) screw

9. implants for the reconstruction of the edentulous mandible. J Oral MaxillofacSurg 1986;44:274-82.

10. Babbush CA. Titanium plasma spray screw implant system for reconstruction of the edentulous mandible. Dent ClinNorth Am 1986;30:117-31.

11. Lefkove MD, Beals RP. Immediate loading of cylinder implants with overdentures in the mandibular symphisis: the titanium plasma-spray screw system. J Oral Implantol 1990;16:265-71.

12. Chiapasco M, Gatti C, Rossi E, Haefliger W, Markwalder TH. Implantretained mandibular overdentures with immediate loading. A retrospective multicenter study on 226 consecutive cases. Clin OralImplants Res 1997;8:48-57.

13. Schnitman PA, Wohrle PS, Rubenstein JE. Immediate fixed interim prostheses supported by two-stage threaded implants: methodology and results. J Oral Implantol 1990; 16:96-105.

14. Schnitman PA, Wohrle PS, Rubenstein JE, DaSilva JD, Wang NH. Tenyear results for Branemark implants immediately loaded with fixed prostheses at implant placement. Int J Oral Maxillofac Implants 1997; 12:495-503.

15. Tarnow DP, Emtiaz S, Classi A. Immediate loading of threaded implants at stage 1 surgery in edentulous arches: ten consecutive case reports with 1-to-5-year data. Int J Oral Maxillofac Implants 1997;12:319-24.

16. Balshi TJ, Wolfinger GJ. Immediate loading of Branemark implants in edentulous mandibles: a preliminary report. Implant Dent 1997;6:83-8.

17. Randow K, Ericsson I, Nilner K, Petersson A, Glantz PO. Immediate functional loading of Branemark dental implants. An 18-month clinical follow-up study. Clin Oral Implants Res 1999;10:8-15.

18. Salama H, Rose LF, Salama M, Betts NJ. Immediate loading of bilaterally splinted titanium root-form implants in fixed prosthodontics—a technique reexamined: two case reports. Int J Periodontics Restorative Dent 1995;15:344-61.

19. Levine RA, Rose L, Salama H. Immediate loading of root-form implants: two case reports 3 years after loading. Int J Periodontics Restorative Dent 1998;18:333-43.

20. Piattelli A, Paolantonio M, Corigliano M, Scarano A. Immediate loading of titanium plasma-sprayed screw-shaped implants in man: a clinical and histological report of two cases. J Periodontol 1997;68:591-7.

21. Gomes A, Lozada JL, Caplanis N, Kleinman A. Immediate loading of a single hydroxyapatite-coated threaded root form implant: a clinical report. J Oral Implantol 1998; 24:159-66.

22. Rangert B, Jemt T, Jorneus L. Forces and moments on Branemark implants. Int J Oral Maxillofac Implants 1989;4:241-7.

23. Uhthoff HK. Mechanical factors influencing the holding power of screws in compact bone. J Bone Joint Surg Br 1973; 55:633-9.

24. Cameron HU, Pilliar RM, MacNab I. The effect of movement on the bonding of porous metal to bone. J Biomed Mater Res 1973;7:301-11.

25. Brunski JB, Moccia AF Jr, Pollack SR, Korostoff E, Trachtenberg DI. The influence of functional use of endosseous dental implants on the tissue implant interface. I. Histological aspects. J Dent Res 1979; 58:1953-69.

26. Aspenberg P, Goodman S, Toksvig-Larsen S, Ryd L, AlbrektssonT.Intermittentmicromotion inhibits bone ingrowth. Titanium implants in rabbits. ActaOrthopScand 1992;63:141-5.

27. Soballe K, Hansen ES, B-Rasmussen H, Jorgensen PH, Bunger C. Tissue in growth into titanium and hydroxyapatite-coated implants during stable and unstable mechanical conditions. J Orthop Res 1992; 10:285-99.

28. Goodman S, Wang JS, Doshi A, Aspenberg P. Difference in bone in growth after one versus two daily episodes of micromotion: experiments with titanium chambers in rabbits. J Biomed Mater Res 1993;27:1419-24.

29. Goodman SB. The effects of micromotion and particulate materials on tissue differentiation. Bone chamber studies in rabbits. ActaOrthopScandSuppl 1994;258:1-43.

30. Esposito M, Hirch JM, Lekholm U, Thomsen P. Biological factors contributing to failures of osseointegrated oral implants. (II). Etiopathogenesis. Eur J Oral Sci 1998; 106:721-64.

Fig.1.Diagnostic Set-up

Fig.2. Acrylic Index with Occlusal hole

Fig.3 Acrylic Index Connected with Implant mount

Fig.4 Implant mount was connected to implant analog

Fig.5 Implant analog was placed in Diagnostic model

Fig.6. Provisional Crown Cementd