Author pl. provide photograph and e-mail address of "Paresh B Patel".

IJCID

CASE REPORT

Placement of Mini Dental Implants and Immediate Load with PFM Crowns in One Visit: A Case Report

Paresh B Patel DDS

General Dentistry, 310 Mulberry Street Southwest Lenoir, NC 28645

Correspondence: Paresh B Patel, General Dentistry, 310 Mulberry Street Southwest Lenoir, NC 28645, USA Phone: (828) 547881, e-mail: pareshpateldds@charter.net

Abstract

This case report shows the restoration of missing teeth 8 and 9 with mini dental implants and PFM crowns utilizing a surgical stent. The report demonstrates one modality to successfully treat a premaxilla that has resorbed in facial/lingual dimension without ridge augmentation or an onlay graft. The mini-implants were used to support a splinted set of crowns in a modified ridge lap design to offer acceptable esthetics, lip support and function.

Keywords: Mini dental implants, fixed partial denture, immediate placement.

INTRODUCTION

Patients most always present with some degree of compromised bone when considering traditional implants (implants greater than 3.0 mm). The remaining bone may be compromised in height, width, depth and density. This compromised situation may also involve the periodontal biotype making it difficult for the clinician to place a traditional implant. There have been a few studies with results similar to traditional implants when using mini implants to support FPD and single unit crowns.[1]

Immediate load of traditional implants has been shown to be effective.[2] The thought process is that the clinician can eliminate the second stage surgery to uncover the implant and supporting gum structure remains intact without disruption of the blood supply. It has also been demonstrated that the bone-implant interface is stronger the day of surgery than several months later.[3]

If the amount of thermal and surgical trauma can be kept to a minimum then the risk of overloading the implant is decreased. Mini dental implants can be placed without reflecting a flap and creating a small pilot hole of only 1.2 mm. Mini implants are self-tapping and bone condensing by design. Self-tapping implants demonstrate greater bone remodeling around the implant during initial healing.[4,5]

Patient factors such as parafunction, bruxism and direction of occlusal load have all been well-studied in the natural dentition. How the occlusion should be designed for FPD or single unit crowns on traditional implants is not unanimous.[6] The occlusal design for fixed restorations on mini implants is not well-studied.

This case report shows the placement of 2 Intra-Lock 2.5 × 15 mm one piece implants utilizing a surgical stent and immediate placement of splinted FPD #8 – 9 for immediate load and function. The decision to splint the crowns together was to increase stability and prevent rotation of the restorations on the mini dental implants.

CASE REPORT

A 41-year-old woman presented with missing teeth #8 and #9. She reports the teeth have been missing for over 5 years and has been wearing a removable partial denture for the same time frame (Fig. 1). The removable partial denture has shaped the supporting gum tissue with a blunt papilla between 8 and 9 (Fig. 2). Clinical and radiographic examinations reveal division B-w bone. Options were discussed with the patient of ridge expansion and placement of 3.25 mm traditional implants, mini implants or a FPD from #7-#10. The patient chose placement of minis and splinted crowns #8 and #9.

A polyvinyl siloxane (Affinity-Clinicians Choice) full arch impression was taken of both arches. A bite registration in centric was taken and the case was sent to Shatkin First Dental Labs. A surgical stent and 2 PFM crowns were made and inspected prior to the patient's next appointment (Figs 3 and 4).

Fig. 1: Preoperative view with partial denture

Fig. 2: Preoperative view without partial denture

Fig. 3: Lingual view modified ridge lap PFMs # 8.9

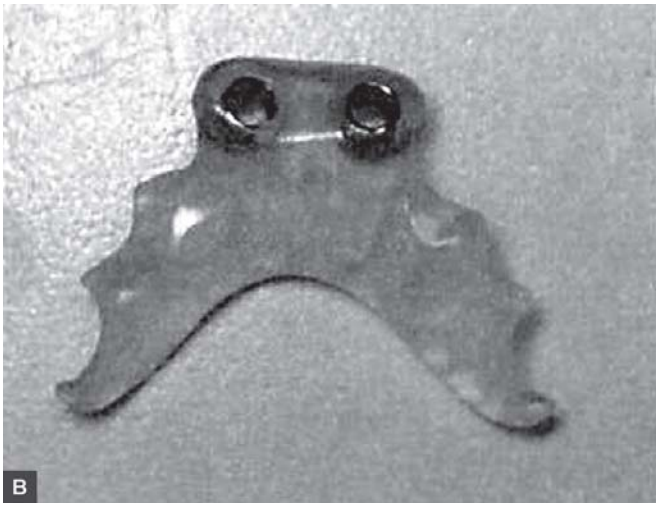
Fig. 4: Facial view modified ridge lap PFMs # 8.9

At the seat appointment the two crowns were 'dry fitted' over the area of #8 and #9. Esthetics, proximal contacts, incisal length, and tissue contact of the modified ridge lap design were evaluated. Upon approval from the patient of the esthetics of the crowns it was decided to proceed. The area was infiltrated with one carpule of Septocaine 4% on the buccal, lingual and crestal ridge. The surgical stent was removed from the stone model and trial fitted over the working area (#5-#12) (Figs 5A and B).

After verification of the fit of the surgical stent the Intra-Lock 1.2 mm pilot bit at 1250 RPM's was used with external irrigation to punch through the cortical plate and taken to a working length of 5 mm or 1/3 the length of the mini implant. A pilot bit guide was used in the surgical stent to ensure proper angulation of the implant. A sterile 2.5 × 15 mm Intralock mini was removed from its packaging with the hand driver and hand tightened to 1/2 its length. The surgical stent was removed and reinserted to ensure that the mini implant was correctly angled and parallel. The mini was then taken to length (the base platform of the mini is flush with the gingival tissue). The same process was repeated for mini implant area #9. Both mini implants were torqued with the hand driver to 40 Ncm.

Radiographs were exposed to verify placement of the two mini implants. Splinted PFM crowns 8 and 9 were final cemented with a self cure resin cement. (Adherence Septodont Corp) (Figs 6 and 7). The patient was instructed to keep the area around the mini implants and crowns clean with a water pick.

The splinted PFM crowns have been in function for over 1 year with no complications. The modified ridge lap design at the last clinical exam did not show any bleeding



Figs 5A and B: Surgical stent

Fig. 6: Mini dental implants placed

Fig. 7: PFM crowns cemented in place (1 year postoperative)

on probing. Radiographically there does not appear to be any apparent bone loss (Fig. 8).

DISCUSSION

This patients desire to get rid of a removable appliance for a fixed set of crowns were successfully met with mini dental implants. Many patients are not candidates for traditional implants without ridge expansion. This case shows how mini implants can provide that option. With mini dental implants available in sizes from 1.8 mm to 3.0 mm a atrophic ridge of 3.8 mm in width could provide enough bone to adequately circumscribe the implant. Mini implants can cause less damage to the surrounding periodontium due to their size. Less bone removal is required as the mini implant is self tapping and bone condensing. One aspect not covered

Fig. 8: Postoperative PAN

thus far is the vast difference in financial cost to the patient. No additional surgery is needed: no impression analog, no abutment, and a standard PFM can be utilized.

This is not a long-term study and much more research will need to be conducted before any firm conclusions can be made.

CONCLUSION

Placement of mini dental implants into sites compromised in facial-lingual dimension can support a splinted set of PFM crowns for immediate function.

ACKNOWLEDGMENT

The author appreciates the support, training, and friendship of Todd Shatkin DDS and his father Samuel Shatkin DDS MD.

REFERENCES

1. Shatkin TE, Shatkin S, Oppenheimer BD, Oppenheimer AJ, Mini dental implants for long-term fixed and emovable prosthetics: A retrospective analysis of 2514 implants placed over a five year period. Compend Contin Educ Dent. 2007;28:92-99.
2. (Linkow LI: The blade-vent: A new dimension in endosseous implants, Dent Concepts 1968;11:3.
3. Strid KG: Radiographic results. In Branemark Pl, Zarb GA, Albrektsson T, editors: Tissue integrated prothesis, Chicago, 1985, Quintessence.
4. Misch Contemporary Implant Dentistry.
5. Satomi K, Akagawa Y, Nikai H, et al. Bone implant interface structures after nontapping and tapping insertion of screw-type titanium alloy endosseous implants, J Prosthet Dent 1988;59:339-42.
6. Kim Y, Oh TJ, Misch CE, Wang HL. Occlusal considerations in implant therapy: Clinical guidelines with biomechanical rationale. Clin Oral Implant Res 2005;16:26-35.