

FIXED REHABILITATION OF MISSING MAXILLARY MOLAR USING IMMEDIATELY LOADED BASAL DISK IMPLANT : A CASE REPORT**Col(Dr) Mohinder Panwar^{*1}, Sqn Ldr(Dr) Navneet², Col(Dr) V B Mandlik³ & Lt Col(Dr) Manab Kosala⁴**

^{*1}Associate Professor, Division of Periodontology, Department of Dental Surgery and Oral Health Sciences Armed Forces Medical College, Pune, India.

²Resident, Division of Periodontology, Department of Dental Surgery and Oral Health Sciences Armed Forces Medical College, Pune, India.

³Professor, Division of Periodontology, Department of Dental Surgery and Oral Health Sciences Armed Forces Medical College, Pune, India.

⁴Reader, Division of Periodontology, Department of Dental Surgery and Oral Health Sciences Armed Forces Medical College, Pune, India.

Abstract

Keywords: *Disk implant, immediate loading protocol, osseointegration.*

Conventional two-stage implant placement need two invasive surgeries separated by a 3–6-month healing period. In addition to that an increased risk of trauma to the implant–bone interface may be caused by the transitional removable partial denture during the interim submerged period, which can cause increased crestal bone loss around the implants during initial bone healing. There are various techniques available for Rehabilitation of maxillary molar area like conventional implants, hybrid implants but immediate loading is facilitated when basal disk implants are used. This case report describes an approach based on basal disk implant for the future implant bed where a 37 year old male patient was successfully treated for missing 26 using Disk implant.

Introduction

Implant placement in maxillary jaw is especially challenging because of the poor quality and quantity of the alveolar bone (1). Sinus lift procedures, bone augmentation, calvarial or iliac bone grafts are often used to overcome the initially unfavorable anatomical and mechanical conditions in maxillary jaw (2). Despite acceptable success rates, these approaches involve unpredictable degrees of morbidity at the donor and/or recipient sites. Furthermore, patients are sometimes reluctant to undergo such procedures. Jaffin reported a 56% implant loss when implants were placed into maxillae with Type IV bone(3).

Once the density of the recipient bone site is judged acceptable, the implants are installed and immediately loaded with a rigid, passive-fit, screw-secured prosthesis serving as an external fixator.

Edentulous areas are well managed with plate-form disk implants. The high fatigue strength of these solid titanium implants without any welds or added parts is particularly indicated for mechanically demanding situations. A specific osteotome (“cutter”) is used to create a groove in the basal bone bed for lateral impaction of the implants. The implant is then covered by full thickness mucoperiosteal flap and stabilized by 3-0 silk sutures. These implants feature a flat emergence profile that allows 90 degree of freedom for prosthetic requirements.

Materials and methods**Clinical case report**

A 37 year old male patient reported to the division of periodontology with the chief complaint of missing upper left molar for the past two years, which was extracted due to caries. His medical history was not relevant and on intra

oral examination revealed a missing 26 (Fig 1a). A preoperative diagnostic CBCT was taken which revealed a residual bone height of 15.6mm and residual bone width of 10.2mm (Fig 1b). To facilitate the immediate loading and rehabilitation for the patient disk implant was selected (Fig 1c). A full thickness flap was reflected to expose the bone. An initial guidance groove with straight fissure bur was prepared and anchoring grooves were placed with parallel disk burs of 7mm diameter (Fig 2a). The implant was reduced from its original 13mm length to 11mm by cutting the apical disk using diamond grit burs and then placed into the grooves. Using a small chisel and mallet the implant was secured into place (Fig 2b & 2c). The abutment was also secured in place. Particulate bone graft was placed over the implant and primary closure achieved using 3-0 silk sutures. A Periodontal pack was placed and patient recalled after 7 days for removal of pack and review. Impressions were made after suture removal on 7th day post operative and crown was fabricated. Clinical and radiographic follow-ups were carried out at 6 months (Fig 3a & 3b) after prosthetic rehabilitation revealing no pathological signs.

Regular checkups for maintenance and verification of the occlusion were performed every 3 months the first year. After 6 months, CT imaging revealed that implant were radiographically and clinically osseointegrated (Fig 3c & 3d). The gingival tissues around implant appeared healthy (no bleeding or inflammation).

Discussion

Implantology is a non-urgent therapy that allows time for osseointegration of implant (4). Immediate loading of laterally inserted disk-design implants with a fixed, functional prosthesis is a safe and reliable method for management of the partially edentulous maxilla(5). Basal disk implants are solid monoblock appliances and are equivalent of external orthopedic fixators. The primary multicortical anchorage achieved with the large base of these laterally inserted implants improves load distribution and initial stability, as demonstrated by finite element stress analysis(6,7) They maintain the absolute initial stability at the bone/implant interface during function required for adequate physiological bone remodeling over time around the implants. The prosthesis allows evaluation of masticatory function, occlusion, speech, esthetics, and the embrasures required for adequate maintenance. The increased initial cortical support from the buccal to the dense palatal bone plate provided by the disk design allows the immediate connection to a screw-secured fixed prosthesis. The material selected for the final prosthesis (composite resin, ceramic, zirconium) must take into account the specific clinical characteristics of each individual (bruxism, bite force, presence of fixed opposing teeth).

Pre operative



Fig 1a

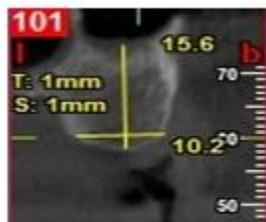


Fig 1b



Fig 1c

Intra operative

Fig 2a



Fig 2b



Fig 2c

Post operative

Fig 3a



Fig 3b



Fig 3c



Fig 3d

References

1. Scortecce G, Misch CE, Benner KU. *Implants and Restorative Dentistry*. London, UK: Martin Dunitz; 2001:79–85.
2. Misch CE, Qu Z, Bidez MW. Mechanical properties of trabecular bone in the human mandible. Implications of dental implant planning and surgical placement. *J Oral Maxillofac Surg*. 1999;57:700–706.
3. Jaffin RA, Berman CL. The excessivelossofBraⁿemarkfixturesinType IV bone. A 5-year analysis. *JPeriodontol* 1991;62:2–4.
4. Guillaume Odin, Carl E Misch, Itzak Binderman, Gerard Scortecce, *Fixed Rehabilitation of Severely Atrophic Jaws Using Immediately Loaded Basal Disk Implants After In Situ Bone Activation*. *Journal of Oral Implantology* Vol. XXXVIII/No. Five/2012:611-616.
5. Scortecce G, *Immediate function Of cortically Anchored disk-Design implants Without Bone augmentation In moderately To Severely resorbed completely Edentulous maxillae*. *Journal of Oral Implantology* Vol. XXV/No. Two/1999:70-79.
6. Scortecce G, MeyereP,ZattaraH, Doms P. Intra-oral applications in small bone volumes. Patient selection and long-term results. In: Laney W, Tolman D, eds. *Tissue Integration in Oral, Orthopedic and MaxillofacialReconstruction*. Chicago: Quintessence; 1990: 350–355.
7. Scortecce G. Diskimplant system yields tricortical support to make the most of available bone. *Dent Implantol Update* 1991;2:72–74.

Author Bibliography

	<p><i>Col (Dr) Mohinder Panwar</i> Col (Dr) Mohinder Panwar is Associate Professor at esteemed Armed Forces Medical College. He is a keen researcher and academician par excellence. He has numerous International and national publications on his name</p>
	<p><i>Sqn Ldr (Dr) Navneet</i> Sqn Ldr (Dr) Navneet is resident in Armed Forces Medical College. He has great Interest in research activities. He is a part of various research projects going on In his college.</p>