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Immediate functional loading of cortical implants: A case report in Maxillary Anterior Rehabilitation

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ABSTRACT: In conventional implant system, we provide delayed loading, which needs prolonged time period for osseointegration to take place. Paradigm shift occurs from delayed to immediate loading implant system through cortical implantology. Cortical implantology is a science but even more so, it's an art where technique and procedure with thorough knowledge can be well executed by skilled dentists via multidisciplinary approach. This system is associated with a special occlusal scheme, which demands rigid fixation of implant to the stable cortex. Anterior aesthetic possesses a greater challenge to clinician in terms of aesthetic results. This paper presents a case report with this unconventional implant system.

Key words: Cortical implantology, Immediate loading, Rigid fixation.

I. INTRODUCTION:

Dental implant therapy has now become a predictable treatment choice for dental rehabilitation. Ever since Dr.Branemark discovered the unique "osseointegration" of implants into alveolar bone, the success of implant therapy has become more rewarding and widespread throughout the globe.[1] But there are lot of limitations which involve prolonged healing of 4-6 months, atrophied jaws, caudal expansion of maxillary sinus, few medical conditions like uncontrolled diabetes, smokers are not indicated for this Branemark protocol.

Each of this situation needs special attention for rectification so that implants can be successfully placed. Of late, cortical implants have a very special design with specific characteristics and can be used as a substitute for these above mentioned conditions. [2] These implants are inserted into the basal and cortical bone with acclaimed stability for immediate functional loading. The history of basal impantwas a single-piece implant developed and used by Dr. Jean-Marc Julliet in 1972. In the mid-1980s, French dentist, Dr. Gerard Scortecci, invented an improved basal implant system completed with matching cutting tools. [3]

In today's dentistry, rehabilitation of missing tooth or teeth is the most challenging as the prosthesis does not duplicate the ideal dentulous anatomy. To overcome this challenge, the prosthetic design most biocompatible and suitable in achieving the previous archetype is Implants. Successful implant is influenced by the macro and micro design of implant, the quality (thickness), and quantity of bone.[4] During insertion, the obstruction offered by bone will be reflected at bone- implant interface and can likewise demonstrate the nature of bone through which it passes. The basal bone implants are usually placed in poorly atrophied bone areas and require stable cortex for engagement, for example anterior nasal spine, nasal floor, pterygoid areas, etc. in maxilla,[5]while lingual cortex, mandibular symphysis, etc. in mandible. Single or multiple unit restorations are supported by the basal implants in maxillary and mandibular jaws. Healed bone of extraction sites, recently extracted sockets and bone areas with deficient height and width are sites where these implants can be placed.The basal implants are the treatment modality of choice wherever unpredictable augmentations are devised as an alternative. Due to its customer oriented approach of meeting ideal patient demands, it serves as a good solution to the problems faced with conventional implants. Hence in this article, the indication of using basal implants is discussed along with a case report.

II. CASE REPORT:

The following four cases have been done for the maxillary anterior rehabilitation. The real

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challenge is to maintain the aesthetics of the patient as well as maintain the prosthesis in a position where the occlusion is not hindered.Subsequently, impression was made of both the arches, trial was done the consecutive day. Prosthesis was placed following proper guideline.

The results so obtained was satisfactory and the prosthesis so placed was placed to obtain a balanced occlusion without interferences.

CASE 1

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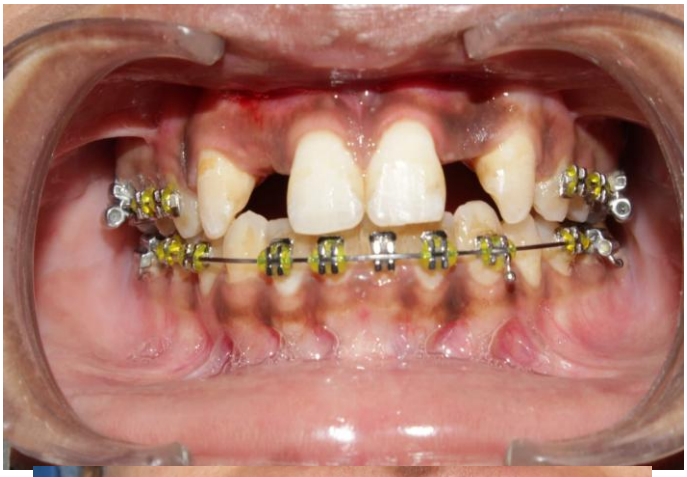

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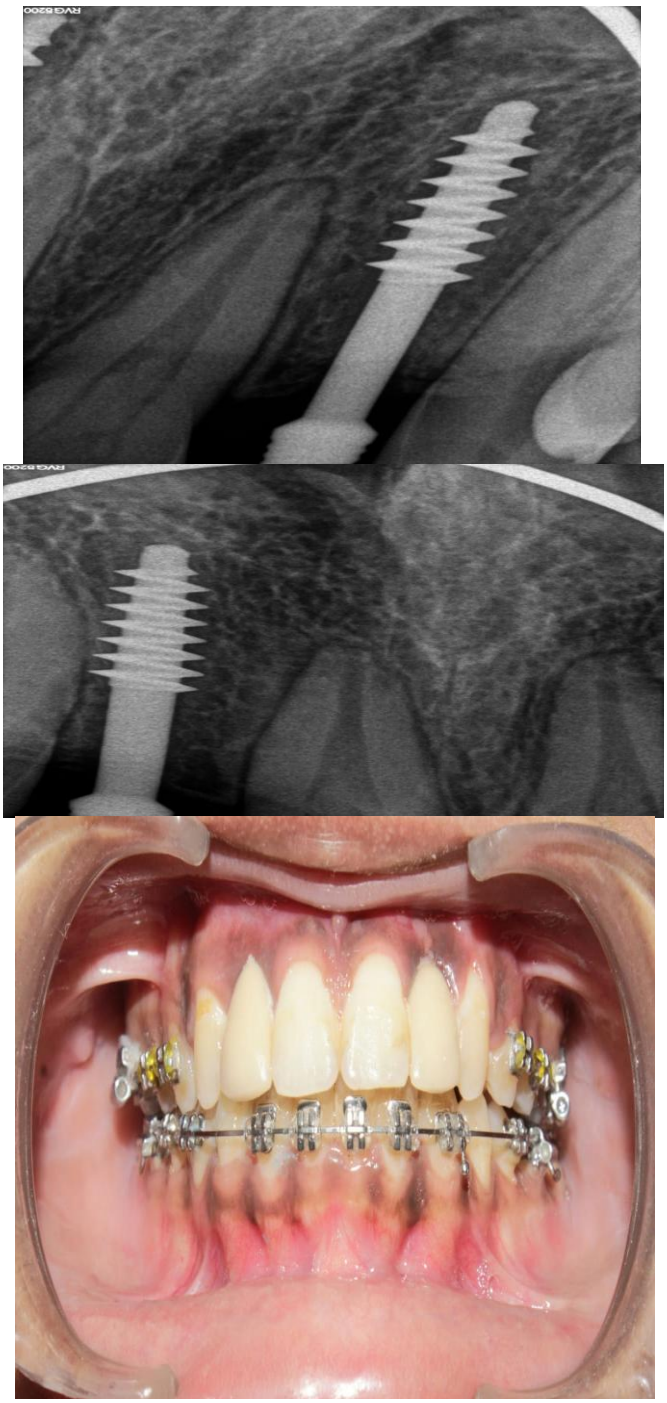

CASE 2

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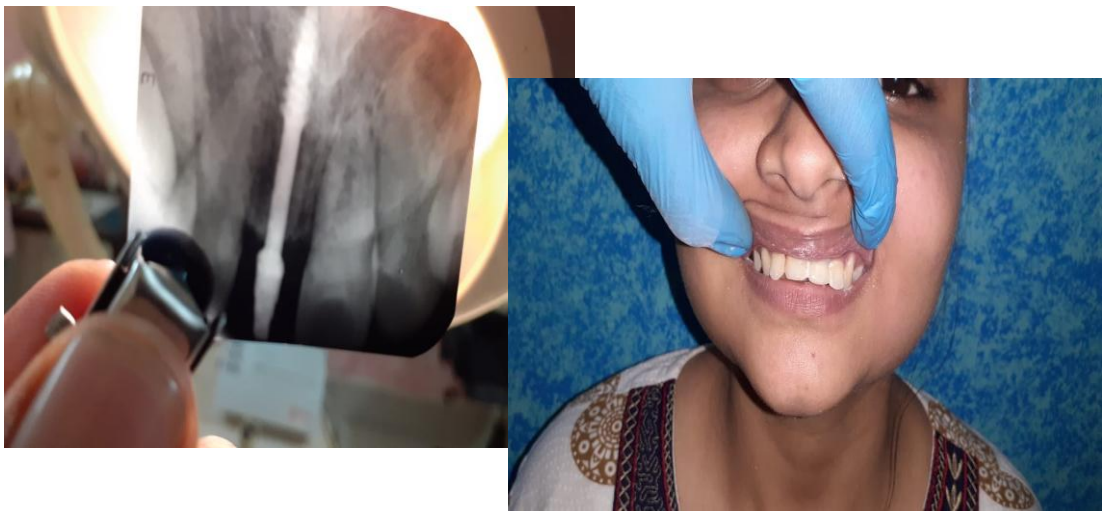
CASE 3



CASE 4

III. DISCUSSION:

Cortical implants have been chosen by other practitioners as well and had appreciable outcomes.[3] Through OPG & CBCT, this case didn't show sufficient alveolar bone for placing the conventional implant without bone augmentation. There was a need for such adjunct surgery which incurs additional cost and expense. Since cortical implant doesn't require sufficient alveolar bone in terms of its height and width, the fixation of implants was successfully made with basal bone just beneath the nasal floor. In the upper left central incisor position where 3.2X23mm of smooth cortical implant was engaged to the Anterior Nasal Spine and 2.7X23 mm was engaged in stable cortical apical to nasal floor. Amongst these two implants,one is placed after immediate extraction and other is in healed bone.The assessment of discrepancy between implant abutment and margin of the gingiva, necessitates the creation of gingival prosthesis.

The transmission of occlusal load through these 2 implants will be on basal bone & nasal spine and in noway there will be load transmitted to the alveolar bone.Therefore, the alveolar bone with its entire cancellous part will not be getting any stimulus for mastication and transfer of resorption of alveolar bone will soon take place. The soft tissue over the alveolar bone will shrink and shift apically with concomitant resorption of alveolar bone in the long run, hence space maybe present between alveolar bone and the prosthesis. This gap is taken care through later changing prosthesis if required.

IV. CONCLUSION:

Prosthetic management of discrepancy in the alveolar ridge has been taken care of in cortical and basal implant placement. We have to perform more longitudinal clinical case studies to establish the long term success in terms of cortical implant rehabilitation.

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LEGENDS:

1. CBCT showing the bone condition
2. Measurement of the tooth to be extracted and the bone apical to the tooth
3. Pre-operative OPG
4. Surgical instruments
5. Preoperative view
6. Osteotomy following atraumatic extraction
7. Implant placement
8. Occlusal view after the first implant placement
9. Lateral view after the first implant placement
10. Osteotomy at the second site
11. Implant placement at the second site
12. Postoperative view
13. Postoperative radiograph
14. Crown prosthesis prepared