

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/320456226>

TTPHIL-ALL TILT TM Concept-An Innovative Technique in Immediate Functional Loading Implant Placement in Maxilla

Article · January 2017

DOI: 10.21276/sjds.2017.4.9.4

CITATIONS

0

READS

586

2 authors, including:



Pavan Kumar

kamineni institute of dental sciences

12 PUBLICATIONS 6 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Clinical And radiographic comparasion of only buccal and buccal and Palatal corticotomy on PAOO [View project](#)

TTPHIL-ALL TILTTM Concept – An Innovative Technique in Immediate Functional Loading Implant Placement in Maxilla

Dr. Venkat Ratna Nag, P, M.D.S¹, Dr. Sarika. P, M.D.S², Dr. Pavan kumar A, M.D.S³

¹Prosthodontics and Implantology, Hyderabad, India

²Pedodontics&Preventive Dentistry, Hyderabad, India

³Peridontics and Implantology, Hyderabad, India

*Corresponding author

Dr. Venkat Ratna Nag, P

Article History

Received: 31.08.2017

Accepted: 03.09.2017

Published: 30.09.2017

DOI:

10.21276/sjds.2017.4.9.4



Abstract: Implants are placed either immediate or delayed loading protocol when adequate bone is available. It is difficult to place implants in compromised bone conditions especially posterior maxilla without sinus augmentation. Although these procedures are having highly success rates but requires long treatment period. In compromised bone situations, it is difficult to place axial implants without grafting. Even long cantilevers are required to compensate biological complications. Various alternative methods like zygomatic implants and Pterygoid implants are showed higher success rate in compromised bone situations. But these procedures are highly invasive. To overcome these problems, a newly innovative TTPHIL-ALL TILTTM concept is introduced. This case report highlights TTPHIL-ALL TILTTM concept and also the principles.

Keywords: Tilted implants, immediate loading, functional loading

INTRODUCTION

Immediate loading is a therapeutic intervention for patients who require their appearance and function in a short period of time [1]. Traditional treatment plan, large number of implants is required to restore the entire arch [1]. But, the posterior maxilla has several limitations associated with this axial approach of placing implants. In the maxilla, it is not uncommon to see resorption in the posterior regions and also enlargement of the sinuses [2]. In these situations, it is not only difficult to place axial implants alone without

sinus augmentation but also lengthy cantilevers are required to compensate biological limitations. Extensive posterior cantilevers are biomechanically unfavourable because of increased occlusal forces per unit area [3-5]. So, alternative methods such as sinus augmentation [6] or pterygomaxillary implants [7, 8] are required to achieve adequate stability for axial implants and also decrease number of cantilevers.

The introduction of tilted implants^{2, 9} has provided a significant alternative for restoration of maxillary and mandibular posterior segments without bone grafting. According to Krekmanov *et al.* [2] posterior tilting of distal implants will reduce cantilever lengths, broaden the prosthetic base, and improve implant-to-bone surface areas because longer implants can be used.

TTPHIL-ALL TILTTM concept is the innovative technique which overcomes the limitations of axial implants, also the disadvantages of All-on-4 concept and All-on-6 concept. Here, Tall (16mm-20mm), tilted (TT) implants (with angulations of 30°-70°) are used. Tall implants provide more surface area for osseointegration and are also engaged to the cortical

bone (bi cortical anchorage). The implants are placed in pinhole (PH) manner i.e flapless. All implants are immediately loaded (IL) within 48 hours with CAD/CAM (Computer-aided design and computer-aided manufacturing) prosthesis.

CASE REPORT

A 66 years male patient complains of inability to chew and also desire for rehabilitation in maxilla was selected. Orthopantomograph (OPG) radiographic examination revealed atrophied maxilla and expansion of sinuses at posterior maxilla region (**Figure.1a-1c**). Cone beam Computerized Tomography (CBCT) was undertaken to detect the available bone. After giving adequate amount of local anesthesia, periodontal compromised teeth were extracted a traumatically with the help of periostomes. Implants were placed with help of surgical template. Marking on surgical template was done by evaluating the radiograph and then transferred the markings to intra orally to place the implants in precise location in the maxilla (**Figure.2a**). Osteotomy preparation was started with initial pilot drill (1.2mm) up to 6 mm based on OPG findings. Sequential radiographs were taken with radiovisiography (RVG) checking whether it was perforated the sinus and also to

check mesio distal, bucco lingual tilt of pilot drill. Once desired placement and angulation was achieved, prepare the osteotomy till the desired length with pilot drill and also nick the cortical bone with pilot drill. Sequential drills were used to complete the osteotomy preparation (2.5 mm drill for 3.25/3.5 implant, 2.75mm drill for 3.75 mm implant and 3.2mm drill for 4.2mm implant).

Implants were placed in higher insertion torque to engage the cortical bone. All the implants were placed in pinhole i.e flapless (**Figure.2b-2c**). Because of the cortical anchorage and higher primary stability, Implants were loaded within 48 hours with definite prosthesis which was made up of metal ceramic CAD-CAM Prosthesis (**Figure.3a-3b**).



Fig-1a: Pre op Frontal, 1b. Occlusal view, 1c. Orthopantomo gram (OPG)



Fig-2a: Surgical template for implant placement, 2b. Immediate post op implants 2c. Immediate post op OPG



Fig-3a-3b: Metal Ceramic CAD-CAM Prosthesis

DISCUSSION

In TTPHIL-ALL TILT™ concept, Implants are placed in such way that to engage the inner and outer diameter of the implant with bone and also engaged to bicortical bone for high primary stability. Implants are placed in higher insertion torque (45N/cm). Due to high primary stability, it is possible to load the implants immediately and also the procedure is flapless which provides better wound healing. In this technique, the remaining dense trabecular bone is used for placement of tilted implants. This procedure is devoid of bone grafting, sinus augmentation and alveolar bone augmentation. Finite element analysis has shown that the use of tilted implants is much more favourable biomechanically than using shorter implants with axial inclinations [10].

Tilted implants requires short cantilevers to restore the posterior occlusion which prevents crestal bone loss, unretained restorations, the fracture of prosthetic components and finally complete implant and prosthetic failure [11-13]. Inclination of distal/posterior implants does not have any deleterious biomechanical effect on abutments and also reduce the cantilever effect on force magnitude from short arch to long arch [14] which is the advantage of TTPHIL-ALL TILT™ concept over All-on-Four and All-on-Six concepts. The success rate of tilted implants was more than 90% in the available literature [15].

The implant prosthesis is rigid, retrievable, passive fit and also follows cross arch stabilization which makes this technique unique among the all other techniques both biomechanically and functionally.

CONCLUSION

TTPHIL-ALL TILT™ concept provides predictable method to restore edentulous jaws. The implants are placed in flapless and tilted direction makes this concept predictable in both biomechanical and functional manner. However, a large sample and long term follow-up study is needed to explore the success rate of implants in this technique.

REFERENCES

- Block MS, Winder JS: Method for insuring parallelism of implants placed simultaneously with maxillary sinus bone grafts. *J Oral Maxillofac Surg* 1991; 49:435-437.
- Krekmanov L, Kahn M, Rangert B, Lindström H. Tilting of posterior mandibular and maxillary implants for improved prosthesis support. *International Journal of Oral & Maxillofacial Implants*. 2000 May 1; 15(3).
- Bahat O. Brånemark system implants in the posterior maxilla: clinical study of 660 implants followed for 5 to 12 years. *International Journal of Oral & Maxillofacial Implants*. 2000 Sep 1; 15(5).
- Rangert B, Jemt T, Jörnåus I: Forces and moments on Branemark implants. *Int J Oral Maxillofac Implants* 1989;4:241-247.
- English C: Biomechanical concerns with fixed partial dentures involving implants. *Implant Dent* 1993; 2:221-242.
- Balshi TJ: Preventing and resolving complications with osseointegrated implants. *Dent Clinics North Am* 1989;33:821-868.
- Worthington P, Brånemark PI. Advanced osseointegration surgery: applications in the maxillofacial region. Quintessence Pub Co; 1992.
- Graves SL: The Pterygoid plate implant. A solution for restoring the poster maxilla. *Int J Periodont Rest Dent* 1994;14:512-523.
- Aparicio C, Arevalo X, Ouzzani W: A retrospective clinical and radiographic evaluation of tilted implants used in the treatment of the severely resorbed maxilla. *Appl Osseo Res* 2000;3:17-21
- Bevilacqua M, Tealdo T, Pera F, Menini M, Mossolov A, Drago C, Pera P. Three-dimensional finite element analysis of load transmission using different implant inclinations and cantilever lengths. *International Journal of Prosthodontics*. 2008 Nov 1; 21(6).
- Sertgoz A, Guvener S. Finite element analysis of the effect of cantilever and implant length on stress distribution in an implant-supported fixed prosthesis. *J Prosth Dent*. 1996; 76:165–169.
- Misch C.E., Clinical biomechanics in implant dentistry: force delivery and failure mechanism. In: C.E. Misch 3rd (Ed.) *Contemporary Implant Dentistry*. Elsevier Mosby, St. Louis; 2008.
- Misch CE: Cantilever length and its relationship to bio-mechanical stress. In *Misch Implant Institute Manual*, Dearborn, Misch, 1990, Misch International Implant Institute.
- Geremia T, Naconecy MM, Mezzomo LA, Cervieri A, Arai Shinkai RS. Effect of cantilever length and inclined implants on axial force and bending moment in implant-supported fixed prostheses. *Rev. odonto ciênc*. 2009; 24(2):145–150.
- Malò P, Rangert B, Nobre M. “All-on-Four” immediate-function concept with Branemark system implants for completely edentulous mandible: A retrospective clinical study. *Clin Implant Dent Relat Res*. 2003; 5(suppl 1):2–9.