

Changing Occlusal Vertical Dimension Using Short And Standard Conelog® Screwline Implants

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INTRODUCTION

The posterior regions of the maxilla may represent regions of insufficient bone for conventional dental implant placement. In these cases it may therefore be necessary to increase the geometry and volume of the alveolar bone. To address these anatomical and physiological limitations, different sinus augmentation techniques with simultaneous or delayed implant placement have been proposed. This can be obtained by grafting techniques, sinus elevation, and transposition of the inferior alveolar nerve or by intrabony distraction of the alveolar process, which results in four to five surgical interventions. An alternative therapy is the placement of short implants, defined as implants with an intrabony length of 8 mm or less. This strategy simplifies overall treatment and minimizes the incidence of complications associated with bone augmentation procedures. The use of shorter implants offers a number of potential advantages if such utilization yields the same level of treatment success as the use of longer implants.

PRESENT SITUATION

A 46-year-old patient with no systemic contraindication was referred to the Department of Prosthodontics, University of Marmara with edentulism in the posterior maxilla. The implant site was evaluated with CBCT (Cone Beam Computed Tomography). The treatment alternatives of removable partial denture, precision attachment removable dentures and implant treatment were discussed with the patient. After the consultation it was decided to place implants and fabricate a fixed partial prosthesis. The bone volume was found to be sufficient vertically at the right side of maxilla. But on the left side, bone volume was not sufficient because of pneumatization of the maxillary sinus.

THERAPY

There were two different treatment modalities. It was decided not to perform a sinus lifting operation and to place short implants instead. So the long and short implants (3.8-4.3 mm diameter, 7-13 mm length) (Conelog® screwline implants, Biotechnologies, Basel, Switzerland) placement was performed with local anesthetic agents. (Maxicaine Fort (40 mg/ml articaine, 0.01 mg/ml epinefrine, VEM Medicine, Turkey) After submerged healing periods (4 months), healing caps were placed and one week later an impression was taken. Total and lower vertical facial height was determined with cephalometric analysis and Niswonger two-point method. Temporary (provisional) restorations (Imicryl Acrylic Konya, Turkey) were fabricated in this appropriate vertical dimension and used for eight weeks. Permanent metal-ceramic crowns (MESA Magnum Ceramic S, Italy- Matchmaker Cosmetic Ceramics, Davis Schottlander Davis LTD, UK) were fabricated with using CONELOG® Esthomic® abutments. After the prosthodontic treatment, the patient was recalled at six months.



Fig. 1 Intraoral view before treatment



Fig. 2 Occlusal view before treatment.



Fig. 3 Initial panoramic radiograph.

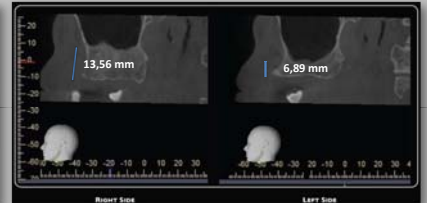


Fig. 4 Cone Beam Computed Tomography before treatment



Fig. 5 Pre-surgical situation: Left side.



Fig. 6 Open flap situation and implant placement: Left side.



Fig. 7 Pre-surgical situation: Right side.



Fig. 8 Intraoral view after healing cap placement.



Fig. 9 Panoramic radiograph after implant placement



Fig. 9 Periapical radiographs after implant placement



Fig. 10 Trial opening of Occlusal Vertical Dimension with wax rim



Fig. 11 Impression devices and Caps in position prior to master impression



Fig. 12 Impression



Fig. 13 Temporary Acrylic Restoration



Fig. 14 Acrylic jig 8 for the proper abutment placement.



Fig. 15 Intraoral view of metal infrastructure.



Fig. 16 Intraoral view after prosthetic treatment.



Fig. 17 Lateral views after prosthetic treatment.



Fig. 18 Occlusal views after prosthetic treatment.



Fig. 21 Periapical radiographs after treatment

Above: at baseline
Below: At a year



Fig. 23 Lateral views after prosthetic treatment



Fig. 19-20 Facial analysis prior-post to change of Occlusal Vertical Dimension

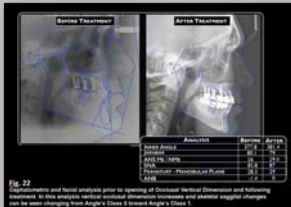


Fig. 22 Cephalometric and facial analysis prior to treatment and after treatment. In this analysis vertical occlusal dimension and alveolar height changes can be seen changing from Regent's Class 3 toward Regent's Class 4.

Conclusion

The use of short implants, 7mm in length, in combination with minimally invasive sinus floor elevation, where necessary, provides clinicians with more conservative treatment options, and helps minimize treatment duration, costs and trauma. These benefits, along with the safe and predictable use of short implants, should make implant therapy accessible to a greater number of patients and practitioners. Increased use of this simplified, minimally invasive approach to implant placement in the deficient maxillary premolar or molar region may allow a larger segment of the patient population to avoid uncomfortable, removable appliances, or long-span fixed prosthesis.