

16006 POSTER DISPLAY CLINICAL RESEARCH - SURGERY

Survival rate and bone loss of immediately loaded tilted long implants: An up to 1.5-year follow-up

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Background: The All-on-4 protocol to rehabilitate edentulous jaws is a procedure in which 4 implants are placed in the anterior jaw. The two medical implants are straight and the 2 distal ones are tilted; tilted implants can be as long as 18–20 mm. Beyond the scope of pterygoid and zygomatic implants, the fate of ≥ 18 mm long tilted implants (LTI) has been scarcely addressed with regard to implant failure due to bone overheating and specific features of marginal bone loss related to the crestal position.

Aim/Hypothesis: Objective was to document the success rate and radiographic outcomes of long tilted implants used in an All-on-4 protocol in private practice. Specific bone loss features of long tilted implants were compared to tilted and straight 10–16 mm long (STD) implants when placed crestally and subcrestally.

Material and Methods: In a single private practice, 234 SEVEN (MIS) implants were placed in 36 maxillae and 22 mandibles of 36 edentulous patients (21 women, 15 men, mean 57.1 year) using the All-on-4 MULTIFIX protocol; 146 were inserted in the maxilla. Implants were 70 LTIs (66 in max, 4 in mand), 46 tilted and 113 straight STD implants. All received a per-operative multi-unit abutment (MUA); bone profiling was done at 174 sites. 36 straight implants and the distal side of 112 angulated MUAs were placed subcrestally. Implants were loaded within 3–5 hours with a screw-retained full-arch prosthesis. Radiographic data were recorded post-op (baseline) and at the 1 year and 1.5 year follow-up. Crestal bone loss (CBL) was measured on both sides from panoramic radiographs using the Image J software with internal calibration. Success rate and CBL were compared for LTIs versus angulated STDs versus straight STDs. Bone features specific to the distal side of angulated MUAs in subcrestal position versus the mesial side were also recorded.

Results: All patients passed the 1 year control, 13 pat 20 prosth 80 imp passed the 1.5 year control. No implant failed; overall success rate was 97.9% (5imp. with CBL ≥ 1.2 mm on both sides). Success rate of straight and tilted implants was 96.6% and 99.1%. At bone profiled sites bone remained slightly away from the machined MUA surface; it migrated apically down to the neck level; the same applied to the distal side of angulated MUAs. A bone densification (BD) feature was observed at straight and tilted implants; at tilted implants BD happened only on the distal side. In the mandible, BD frequency was 25.0% (11/44) for the tilted and 2.3% (1/44) for the straight; in the maxilla, it was 38.9% (28/72) for the tilted and 6.8% (5/74) for the straight. Mean CBL of straight versus tilted implants was 0.28 ± 0.51 mm versus 0.28 ± 0.54 mm. Mean CBL of LTI versus tilted STD was 0.25 ± 0.53 mm versus 0.32 ± 0.56 mm. At tilted implants, mean CBL mesial side versus distal was 0.39 ± 0.60 versus 0.17 ± 0.46 mm. 75.4% of implant sides had a 0–0.5 mm CBL.

Conclusion and Clinical Implications: The All-on-4 MULTIFIX protocol with SEVEN implants in the maxilla was as predictable as in the mandible. Overall success rate was 97.9%; it was 96.6% for the straight implants and 99.1% for the tilted ones. Overheating during placement of long tilted implants was not a concern. Bone densification at the distal sides of the tilted implants was more frequent (38.9%) in the maxilla than in the mandible (25.0%). CBL was similar for straight and tilted implants, and for LTIs and tilted STDs.