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Short implants: splinted or not in restoration? – That is a question – 3 years follow up

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Background: Short implants are often used in implants treatment, especially with indication as: short bone distance for implants installation in atrophic jaws, no agreement for augmentation; time efficacy for implants therapy and restoration. Short implants installation needs sensivity in X-ray diagnosis (CBCT planning indicated), as well as higher surgical skills because of close anatomical structures (IAN, sinus). The definition of short implants is operative and generally implants length below 10 mm means short implants. Fifteen published papers recently show lower survival rates (Van Steenberghe 1990, Frieberg 1991, Wyatt, Zarb 1998, Winkler 2000, Naert 2002 and others) and higher failure rates. (Zarb 1998 75%, Winkler 2000 74.4%, Hermann 78.2%).

Aim/Hypothesis: The authors of this study evaluate and discussed the Cumulative Implant Survival Rate, when short implants are splinted or not with neighboring teeth in maxilla and mandible.

Material and methods: Sixty-five short implants: 7 mm length, diameter 4 mm (45 implants) and 5 mm (20 implants) were installed in maxilla (28 implants) and mandible (37 implants) in 28 patients. The tapered implants with T3 surface, external hex were installed on the base on Biomet 3I protocol. The patients (17 women, age median 48), 11-man age median 43) were selected, exclusion and inclusion criteria of selection were apply. Clinical and X-ray observation (CBCT, opg, Cieszynski angle) were done in time intervals: after 3, 6, after implant placement and 12, 24, 36 months after its prosthodontics restoration. Ostell ISQ measurement was performed as a primary (time of implants placement) and as a secondary (time of imprint, prosthodontics transfer). Twenty implants were not splinted and restored (six patients × three implants, one patient × two). Twenty-five implants were splinted together with neighboring teeth (seven patients × three implants, two patients × two implants). Twenty implants were installed as a single implants (ten splinted with other long implants or teeth, ten not splinted). Normal occlusion were evaluated and fixed in all patients by T-scan methodology). The bone loss around the implants was evaluated use Cieszynski angle X-ray repeatable methodology.

Results: CSR were 92% in woman (SR 89% in maxilla and SR 93% in mandible). CSR in man were 94%, (SR 92% in maxilla, and SR 90% in mandible). Implant survival rate by splinted restoration was 89% in woman, 91 in man was lower in comparison to not-splinted implants (CSR 92%, 94% in woman and man respectively. The Ostell ISQ measurement were not different statistically in man and woman (67 – 73) and was significantly lower in maxilla (X ± SD: 69 ± 6) in comparison to mandible (X ± SD: 73). The bone loss around the implants were 1.3 mm ± 0.7 in woman and 1.1 ± 0.6 in man after 3 years. The implants were lost in first year, after healing abutment installation or restoration.

Conclusion and clinical implications: The tendency to lose not splinted short implants was higher than splinted ones. The woman shows higher CSR than found in man. The cortical atrophic mandible bone increase the stability of the splinted implants, which is recommend in both jaws and are alternative to augmentative procedures (vertical in mandible and sinus lift).