

Does implantoplasty during peri-implantitis treatment affect implant strength?

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Aim

To assess the effect of implantoplasty (IP) on implant strength.

Methods

Implants of different diameter [narrow (3.3mm) and regular (4.1mm)], material (Ti and TiZr-alloy), and design [bone (BL) and tissue level (TL)] of one company were tested. Resulting groups (7 implants/group) were tested with or without IP. Dynamic loading was performed prior to maximum load testing. Multiple regression analysis was performed with maximum loading strength as dependent variable and IP, material, and design as predictors.

Results

Implants with IP and TL type implants showed statistically significant reduced maximum loading strength irrespective of the diameter. Implant material had a significant impact for regular diameter implants with TiZr being stronger than Ti, while material lacked significance among the narrow diameter implants. However, narrow Ti TL implants with IP suffered already 4 fractures during the dynamic loading (i.e., before the actual maximum load testing).

Conclusion

IP significantly reduced implant strength, irrespective diameter, material, or design. The maximum loading strength of regular diameter and narrow BL implants remained high, while >50% of the narrow TL implants with IP fractured already under dynamic loading, simulating “regular chewing function”. Single narrow TL implants subjected to IP may have an increased risk for mechanical complications.