Combining various non-surgical techniques for treating peri-implantitis: a randomized clinical trial

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Abstract

Aim: To determine if a combination of various non-surgical techniques in a single treatment session, comprised of using hand curettes and carbon-tipped ultrasonic, air-abrasion, and Er:YAG-laser therapy in a full-mouth disinfection protocol, leads to short-term resolution of peri-implantitis.

Materials and methods: 27 patients with one or more dental implants with clinical and radiographic signs of peri-implantitis were randomly allocated to 2 groups. The test group (11 patients, 31 implants) received debridement of the affected implants, using hand curettes, carbon-tipped ultra-sonics, air-abrasion with glycine powder and Er:YAG-laser irradiation. Additionally, full-mouth disinfection was performed on all teeth with pockets >4 millimetres. The control group (16 patients, 30 implants) received debridement of the implants by hand curettes only. This group did not undergo a full-mouth disinfection. For both groups, all treatments were performed in a single session. Bleeding on probing (BoP) scores, peri-implant probing depths (PPD), clinical attachment levels (CAL), interproximal bone levels (BL) and full-mouth plaque scores (FMPS) were recorded at intake and at 3 and 6 months after treatment.

Results: The test group showed statistically significantly more reduction in BoP at the 3 and 6 months follow-up and scored better for PPD reduction at 3 months. At 6 months this difference was no longer statistically significant.

Results

The test group showed statistically significantly more reduction in bleeding on probing scores at the 3 and 6 months of follow-up despite of an increase of scores in the test group in between 3 and 6 months after treatment. Both groups showed a statistically significant decrease in PPD after 3 months ($p=0.009$ and $p=0.0008$ for the control and test groups, respectively). The difference in decrease between both groups was statistically significant in favour of the test group ($p=0.0001$). At 6 months an increase in PPD was observed for both groups. The difference at 6 months was no longer statistically significant. Changes in bone level from intake to 3 months and 6 months after treatment were not statistically significant.

Background and Aim

Non-surgical treatment of peri-implantitis is targeted at mechanical and/or chemical disinfection of the implant and its suprastructures, to allow inflamed peri-implant tissues to heal. Many different surgical and non-surgical techniques for the treatment of peri-implantitis have been investigated, with varying results. However, a combination of various non-surgical techniques in a single treatment session in a full-mouth disinfection protocol has not been investigated yet.

Therefore the aim of this study is to determine if a combination of various non-surgical techniques in a single treatment session, comprised of using hand curettes and carbon-tipped ultrasonic, air-abrasion, and Er:YAG-laser therapy in a full-mouth disinfection protocol, leads to short-term resolution of peri-implantitis.

Conclusion

A more thorough debridement protocol can result in greater resolution of inflammation in the peri-implant tissues and the effects can be sustained up to 6 months after treatment. Clinically this implicates that a more comprehensive mechanical and/or chemical disinfection protocol is beneficial for the treatment of implants affected by peri-implantitis.

Methods and Materials

27 patients with one or more dental implants with clinical and radiographic signs of peri-implantitis were randomly allocated to 2 groups. The test group (11 patients, 31 implants) received debridement of the affected implants, using hand curettes, carbon-tipped ultrasonics, air-abrasion with glycine powder and Er:YAG-laser irradiation. Additionally, full-mouth disinfection was performed on all teeth with pockets >4 millimetres. The control group (16 patients, 30 implants) received debridement of the implants only by hand curettes. This group did not undergo a full-mouth disinfection. For both groups, all treatments were performed in a single session. Bleeding on probing (BoP) scores, peri-implant probing depths (PPD), clinical attachment levels (CAL), interproximal bone levels (BL) and full-mouth plaque scores (FMPS) were recorded at intake and at 3 and 6 months after treatment.

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