Submission ID 14732

Treatment of peri-implant mucositis using a resorbable chitosan brush –a pilot clinical study

Johan Caspar Wohlfahrt* PhD, DDS, Anne Merete Aass, Dr. Odont., DDS,
Ståle Petter Lyngstadaas, Dr. Odont., DDS, Odd Carsten Koldsland PhD, DDS

Institute of Clinical Dentistry, University of Oslo and Bjerke tannmedisin*

Topic: Technical and biological complications

Background:

Peri-implant mucositis has been demonstrated as a common condition around dental implants. A number of strategies for treatment of mucositis have been suggested but there is scarce data showing superior efficacy of any method. It has also been shown that long term mucositis may lead to loss of peri-implant attachment and it is consequently of importance to treat mucositis and to perform maintenance therapy at regular intervals. Use of non resorbable devices for debridement of implant surfaces may leave remnants of the device which may induce a foreign body reaction. It has also been shown that nylon tips may leave plastic deposits melted on the implant and metal scalers cause defects on the surface.[1] A novel twisted brush (Fig. 1. BioClean™, LABRIDA AS, Oslo Norway) with bristles made of chitosan, which is a very fast resorbable biopolymer was tested in this study.

Fig. 1.The Test device. A twisted chitosan brush (LABRIDA, BioClean™)

Aim

The aim of the present study was to examine the change in clinical outcome after treatment of peri-implant mucositis with a rotating chitosan brush.

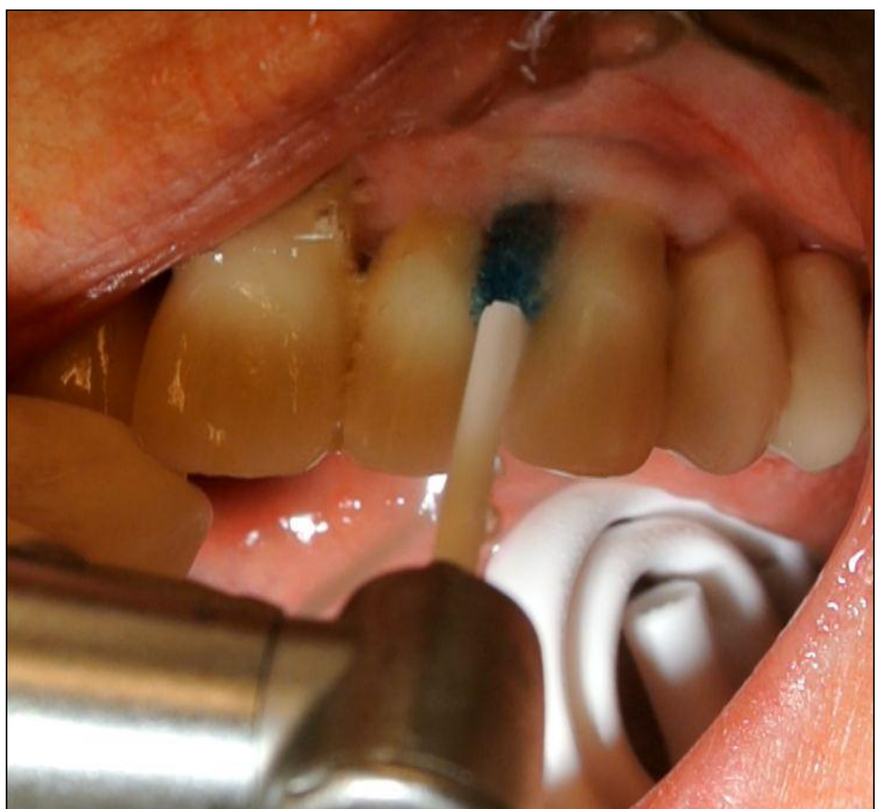


Fig. 2. Debridement (“Labridation”) of the peri-implant mucosal crevice at 1500 RPM for 3.5 minutes with the chitosan brush.

Methods and Materials

This pilot study of six months duration included 13 patients diagnosed with peri-implant mucositis. The study had been approved by the regional research ethics committee. All clinical examinations were performed by two board-certified and calibrated periodontists (AMA, OCK). Treatment was performed by a separate board-certified periodontist (JCW). Debridement was executed with the brush used in a 2:1 dental polishing handpiece with a duration time of 3.5 minutes. After finished debridement the crevice was rinsed with sterile saline. Patients were recalled at 2 weeks, 4 weeks, three months and 6 months. Radiographic analysis was performed at baseline and at 6 months to exclude implants with progression of bone loss. Clinical examinations included probing pocket depth(PPD) with a defined force 0.2 N (20g) periodontal probe (University of North Carolina, DB764R, AESCULAP, B Braun Germany) modified sulcus bleeding index (mBI)[2] and a modified bleeding on probing index (mBoP). Clinical parameters were compared between baseline, 2 weeks, 4 weeks and 6 months. The significance level was set at 0.05. The Mann - Whitney U test was used for statistical comparisons.

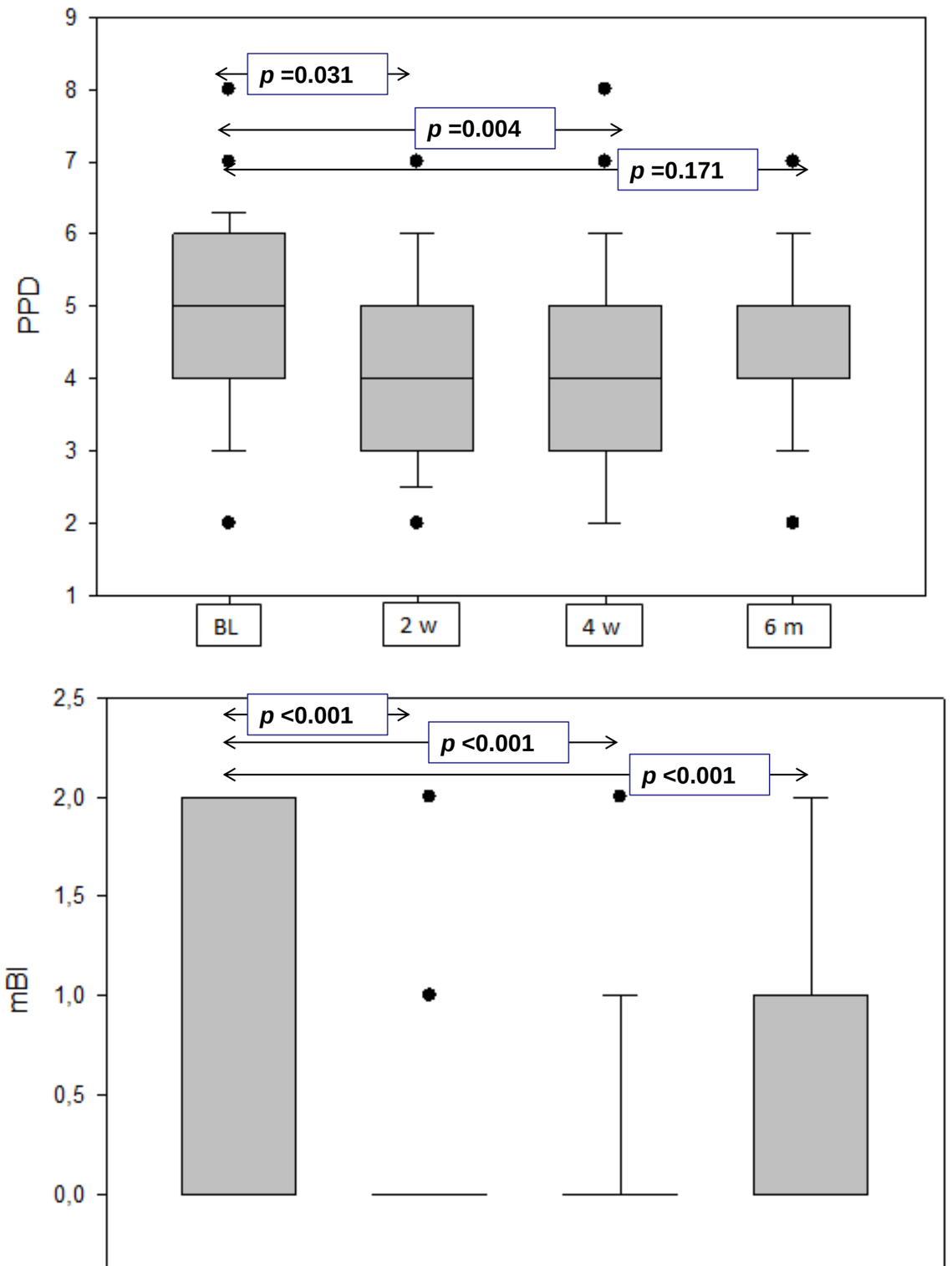
Indexes

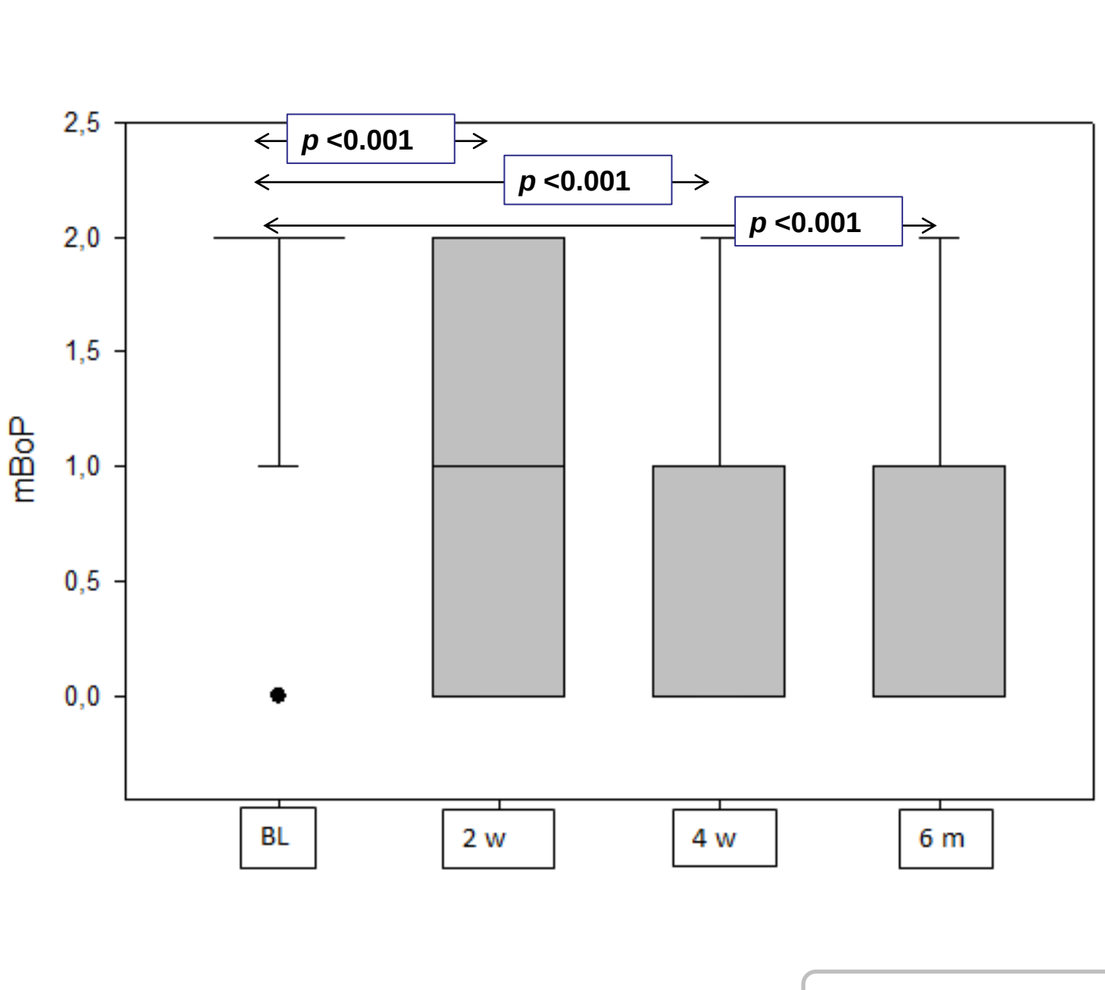
mBI[2]:
Score 0: No bleeding when a periodontal probe is passed along the gingival margin adjacent to the implant.
Score I: Isolated bleeding spots visible.
Score 2: Blood forms a confluent red line on margin.
Score 3: Heavy or profuse bleeding.

mBoP:
Score 0: No bleeding 30 seconds after probing
Score I: Isolated minimal bleeding spots visible 30 seconds after probing.
Score 2: Blood forms a confluent red line on margin 30 seconds after probing.
Score 3: Heavy or profuse bleeding 30 seconds after probing.

Results

Significant improvements in clinical parameters (PPD, mBI and mBoP) were demonstrated. No subjective symptoms such as pain were reported by the patients. The brush penetrated well down in the mucosal crevice and the flexibility of the brush stem made it easy to access the approximal parts of the pockets





Conclusions

A rotating chitosan brush seems to be a safe and efficient device for treatment of peri-implant mucositis. A randomized clinical trial has been initiated.

References

1. Mann M, Parmar D, Walmsley AD, Lea SC.
Effect of plastic – covered ultrasonic scalers on titanium implant surfaces, Clin Oral Implants Res. 2012 Jan;23(1):76-82. Epub 2011 Apr 13.

2. Mombelli A, van Oosten MA, Schurch E Jr, Lang NP. The microbiota associated with successful or failing osseointegrated titanium implants. Oral Microbiol Immunol. 1987 Dec; 2(4):145-51

Financial disclosure

Dr. Wohlfahrt and Dr. Lyngstadaas are the patentholders of BioClean and share holders in LABRIDA AS. The testmaterial used in this study was sponsored by LABRIDA AS.

Presented at the 22nd Annual Scientific Meeting of the European Association of Osseointegration
17-19 October 2013, Dublin, Ireland