ID # **634**

Implant Maintenance with a Chitosan Brush –A Randomized Clinical Trial

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, Oslo, Norway

Background

Peri-implant mucositis is common and it is reported that long term mucositis may induce peri-implantitis.[1] Treatment of mucositis and development easily applied methods for maintenance of dental implants is thus crucial. It is also important to avoid leaving instrument remnants potentially causing a foreign body reaction or to damage the titanium surface when debriding the implant.[2] Chitosan, a natural biopolymer, has been demonstrated to be biocompatible and biodegradable. Chitosan has also been suggested to have anti-inflammatory and antimicrobial properties. In this study a rotating chitosan brush (Fig. 1.) was evaluated.

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 versus titanium curettes.

Methods and Materials

This was a randomized, split mouth, examiner blinded, clinical trial of 6 months duration including 12 patients with 28 implants diagnosed with peri-implant mucositis. The study had been approved by the regional ethics committee. Implants were randomized to either treatment with a rotating chitosan brush (BioClean, LABRIDA AS, Oslo Norway) using a slow speed (4:1) dental handpiece or titanium curettes (Langer and Langer, Rønvig, Denmark). All clinical examinations were performed by two board-certified and calibrated periodontists (AMA, OCK) blinded to treatment allocation. Treatment was performed by a separate board-certified periodontist (JCW). The treatment was repeated at three months. 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) and a modified bleeding on probing index (mBoP). Differences between groups in change in clinical parameters were compared at 2 weeks, 4 weeks and 6 months. A Mann-Whitney U test with an alpha level of 0.05 was used for the statistical analyses.

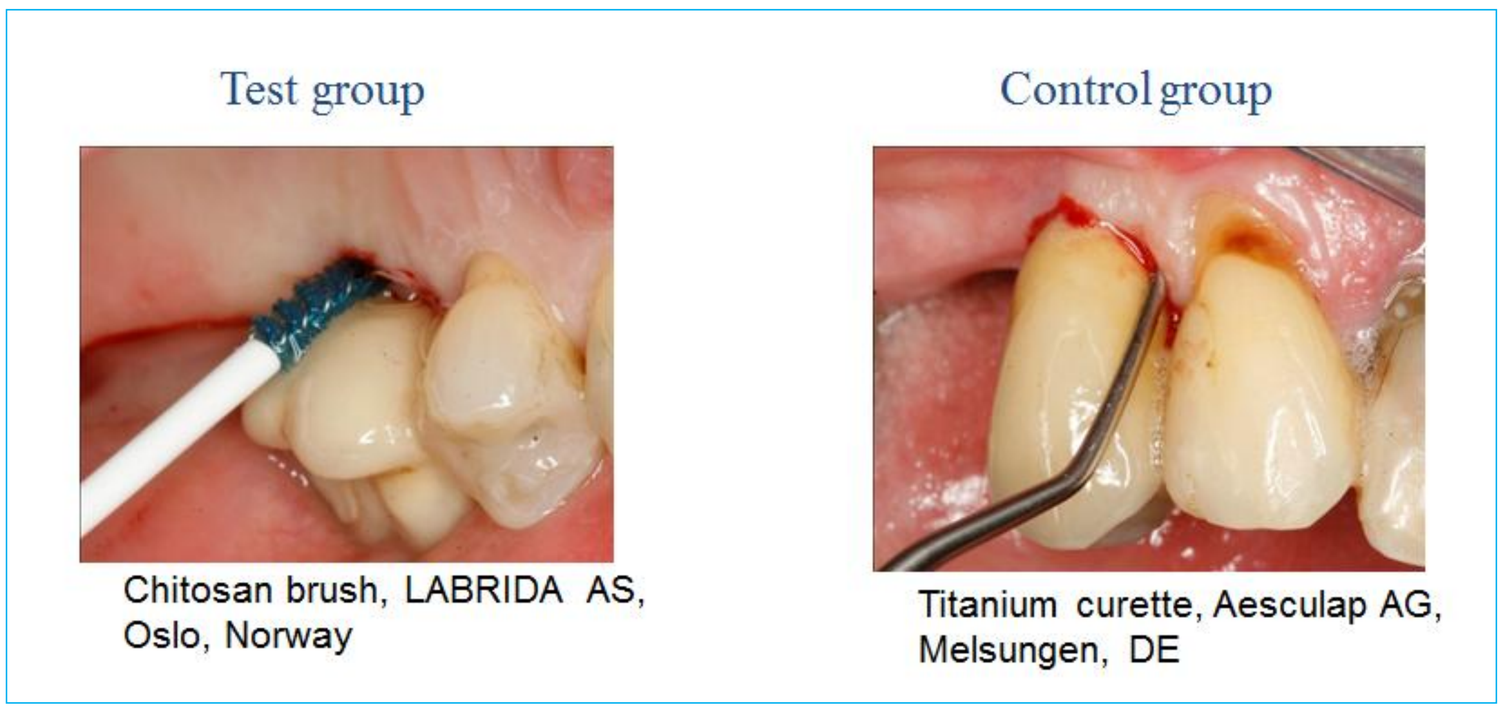
Indexes

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

Both groups demonstrated significant reductions in clinical parameters between baseline and 4 weeks. The test implants treated with the chitosan brush had a better improvement in BoP at 2 weeks and a better improvement in PPD at 2 weeks and 4 weeks as compared with the implants treated with the titanium curettes, however no differences were found after 6 months. None of the implants demonstrated progression in bone-loss during the course of the study**.**

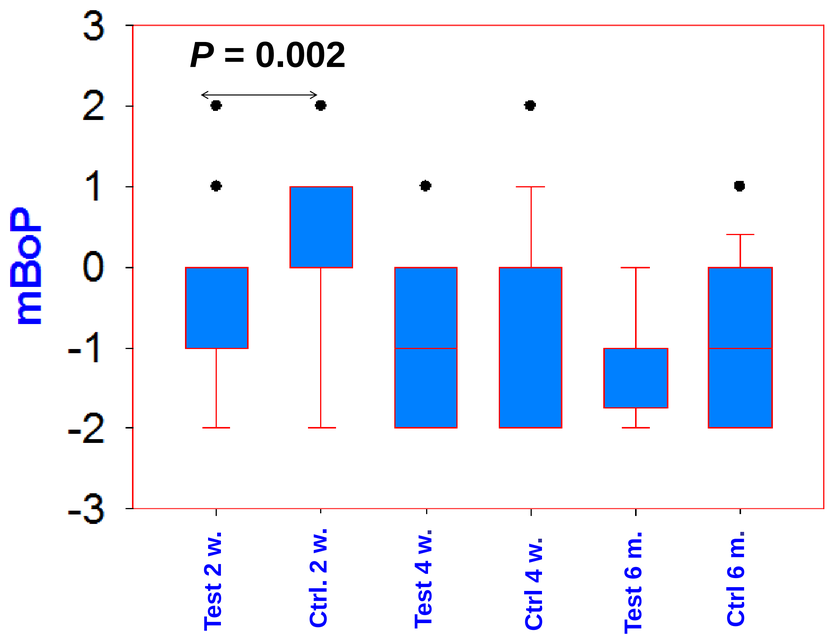
Fig. 1.The Test device. A twisted chitosan brush (BioClean™, LABRIDA AS, Oslo, Norway)



Chitosan brush, LABRIDA AS, Oslo, Norway

Titanium curette, Aesculap AG, Melsungen, DE

Variable	Mean ± SD (min, max)		*P*
	Test (n=14)	Control (n=14)	
PPD change 2 weeks (mm)	-0.37 ±1.18 (-4, 3)	0.00 ±0.74 (-2, 1)	0.01
PPD change 4 weeks (mm)	-0.74 ±1.14 (-5, 2)	-0.27 ±1.27 (-3, 3)	0.04
PPD change 6 months (mm)	-0.13 ±1.18 (-3, 2)	-0.17 ±0.74 (-2, 2)	0.72



Conclusion

A chitosan brush seems to be a safe and more efficient device than titanium curettes for maintenance of dental implants. A European multicenter clinical study has been initiated.

Reference

1. Costa FO, Takenaka-Martinez S, Cota LO, Ferreira SD, Silva GL, Costa JE, J Clin Periodontol. 2012 Feb;39(2):173-81. doi: 10.1111/j.1600-051X.2011.01819.x. Epub 2011 Nov 23
2. 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

Financial disclosure

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

**Presented at the IADR GENERAL SESSION
CAPE TOWN, SOUTH AFRICA, 25-28 June, 2014**