Differences in intra- and periimplant biospectrum comparing conical vs. tube in tube connection. First data of a randomised, prospective, in vitro studie using Camlog and Conelog implants

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Objectives
Many authors have postulated that a conical implant-abutment connection is superior to other connection geometries in terms of micro leakage and its consequences. The purpose of this prospective, in vivo, split mouth study was to compare the Implant-Abutment interface of 80 implants over a period of 24 month. We compared the Tube in Tube Camlog connection vs. the conical Conelog connection in terms of technical and biological differences. To exclude most of the bias factors associated with an in vivo study we designed a clinical setup that delivers the highest possible homogenous microclimate around the implants for reproducible and comparable data.

Materials and Method
Our study setup was chosen to gain detailed information on technical as well as biological differences and their consequences of the two connection geometries.

Study Set Up
- Edentulous patients matching the inclusion criteria are included in the present study
- Pre operative to the implant treatment the OHIP-14 score is documented.
- 80 Implants (40 Camlog 3.8mm and 40 Conelog 3.8mm) are placed in edentulous upper and lower jaws and are treated with a Locaator fixed full denture.
- A minimum of two Implants are placed and randomly divided alternately in Camlog 3.8mm and Conelog 3.8mm Implants.
- After a healing period of 4 month the Implants are loaded with a Locator Abutment and connected to the full denture.
- 6 month after the functional loading the Mombelli bleeding index and the OHIP-14 score is documented to be compared to the pre operative score.
- 12 month after the functional loading the bleeding index is evaluated.
- 18 month after the functional loading biological probes are collected (1) from the perimplant sulcus and (2) from within the inner geometry of the implant after unscrewing the Locator abutment. 20 different pathogens bacteria specimens where evaluated.
- 24 month after the functional loading, radiological comparison of the peri implant bone level and bleeding index

Technical complications such as Abutment loosening, mechanical wear of the matrices and fractures of any prosthetic parts where evaluated during the recall apointments.

Study Design and Status 2016

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<th>Pre operative</th>
<th>6 mo post loading</th>
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Specimen Analysis using DNA chips and Polymerase Chain Reaction
20 different Bacteria specimen where tested during this study. The principle is based on the detection of the pathogen-specific 16S rRNA gene. From the intracoral probe taken, the bacterial DNA is extracted. A DNA fragment of about 300 nucleotides, is amplified in the presence of a pair of primers with the a polymerase chain reaction. Single stranded DNA fragments are than formed and labeled with a fluorescence Cy5 primer. After hybridization, analysis can be performed with a microarray scanner. For detection, a wavelength of ~532 nm (Cy3) and ~636 nm (Cy5) is used.

In the present study the Parochek 20® by Greiner Bio-One GmbH Austria is used.

Specimen tested:
Actinobacillus actinomycetemcomitans, Actinomyces viscosus, Actinomyces odontolyticus, Tannerella forsythia, Campylobacter concisus, Campylobacter rectus, Capnocytophaga sputigena, Eikenella corrodens, Capnocytophaga ochracea, Peptostreptococcus micros, Porphyromonas gingivalis, Prevotella intermedia, Prevotella nigrescens, Streptococcus constellatus group, Streptococcus mitis group, Streptococcus oralis group, Streptococcus mitis group, Streptococcus mitis, Streptococcus oralis, Streptococcus salivarius group, Streptococcus sanguinis group, Streptococcus salivarius, Streptococcus gordonii, Streptococcus mitis, Streptococcus sanguinis, Streptococcus mutans group, Streptococcus mitis group, Streptococcus mitis, Streptococcus salivarius, Streptococcus gordonii, Streptococcus mutans group

Results
The Data evaluated up to this point shows a significant difference in the peri- and intra implant Bacterial load.

Conclusion
Within the first data collected in this study there seems to be a clear correlation between the connection geometry and the bacterial load around and inside the implants.