

State of the art of customized CAD/CAM abutments: clinical implications and perspectives for future research

The Oral Presentation will be structured in 4 sections:

- 1) First section, where are we now? Analysis of the existing literature on the basis of this extremely recent research; the introduction will last 2 minutes:

OBJECTIVE: Computer aided design and computer aided manufacturing customized abutments are increasingly being used in every day clinical practice, especially in the aesthetic zone. Nevertheless, strong scientific evidence is currently lacking as regards potential advantages in terms of soft tissue stability. The main aim of this systematic review and meta-analysis was to compare the soft tissue outcomes of prefabricated (stock) versus customized (CAD/CAM) abutments. **MATERIALS AND METHODS:** The present review was registered with PROSPERO (CRD42020161875) and the protocol was developed according to PRISMA statement. Electronic search was performed on four databases (Pubmed, Web of Science, Cochrane Central and Embase). Hand searching was performed on related journals up to February 2021. Data extraction was followed by qualitative and quantitative analysis of the included studies. **RESULTS:** Three Randomized Controlled clinical trials (RCTs) and three Controlled clinical trials (CCTs) (number of patients= 230; number of dental implants= 230) with a follow-up comprised between 12 and 36 months were included. RCTs were judged at unclear risk of bias whereas CCTs were judged at high risk of bias. The meta-analysis was performed on 12-month data. No statistically significant differences were observed among abutment groups: Overall Pink Esthetic Score (PES) (SMD -0.43; 95% CI -1.21, 0.35; P-value= 0.28); Interproximal Papilla (SMD 0.12; 95% CI -0.10, 0.34; P=0,28) facial peri-implant mucosal recession (ML) (SMD -0.14; 95% CI -0.36, 0.08; P=0.21). **CONCLUSION:** No significant differences were observed between prefabricated (stock) versus customized (CAD/CAM) abutments regarding midfacial mucosal recession, interproximal papillae and pink aesthetic score (PES) after 12 months. Take home message: potential benefits of cad-cam abutments on soft tissues should be better clarified in future investigations. Meanwhile, the usage of customized cad-cam abutments in every day clinical practice should be based on a careful case-by-case evaluation (CRD42020161875).

- 2) Second section (4 minutes) Brief presentation of 4 illustrative cases depicting the main features of:
 - 2.1 One case will describe the usage of titanium customized CAD/CAM abutment
 - 2.2 One case will describe the usage of zirconia customized CAD/CAM abutment
 - 2.3 One case will describe the usage of titanium prefabricated abutment
 - 2.4 One case will describe the usage of zirconia prefabricated abutment

Brief overview (pictures; due to limitation for document size) related to one of the cases that will be presented is reported at the bottom of the present abstract/file

- 3) Third section (1,5 minutes), After case presentations analysis of pros and cons that are associated with each treatment modality/clinical solution will be carefully analyzed
- 4) Fourth section (2,5 minutes), Where are we going? On the basis of the current gaps in the scientific literature, the research protocol of a new original study using subcrestal implant placement in the aesthetic zone (Megagen Anyridge) will be disclosed. The research protocol is currently under consideration by the Ethical Committee of our Institution (University of Milan). Subsequently, the entire detailed protocol will be registered with ClinicalTrials.gov and details of the registration number (NCT:) will be provided at the end of the oral presentation.

Keywords: computer-aided design; computer-aided manufacturing; dental implants, esthetic zone; soft tissue; titanium abutments; zirconia abutments



figure1: chief complaint: black triangle syndrome, aesthetic impairment



figure 2: x-ray indicating poor prognosis



figure 3: previsualization before acceptance of the treatment plan



figure 4: details of the surgical phase, implant placement and horizontal GBR

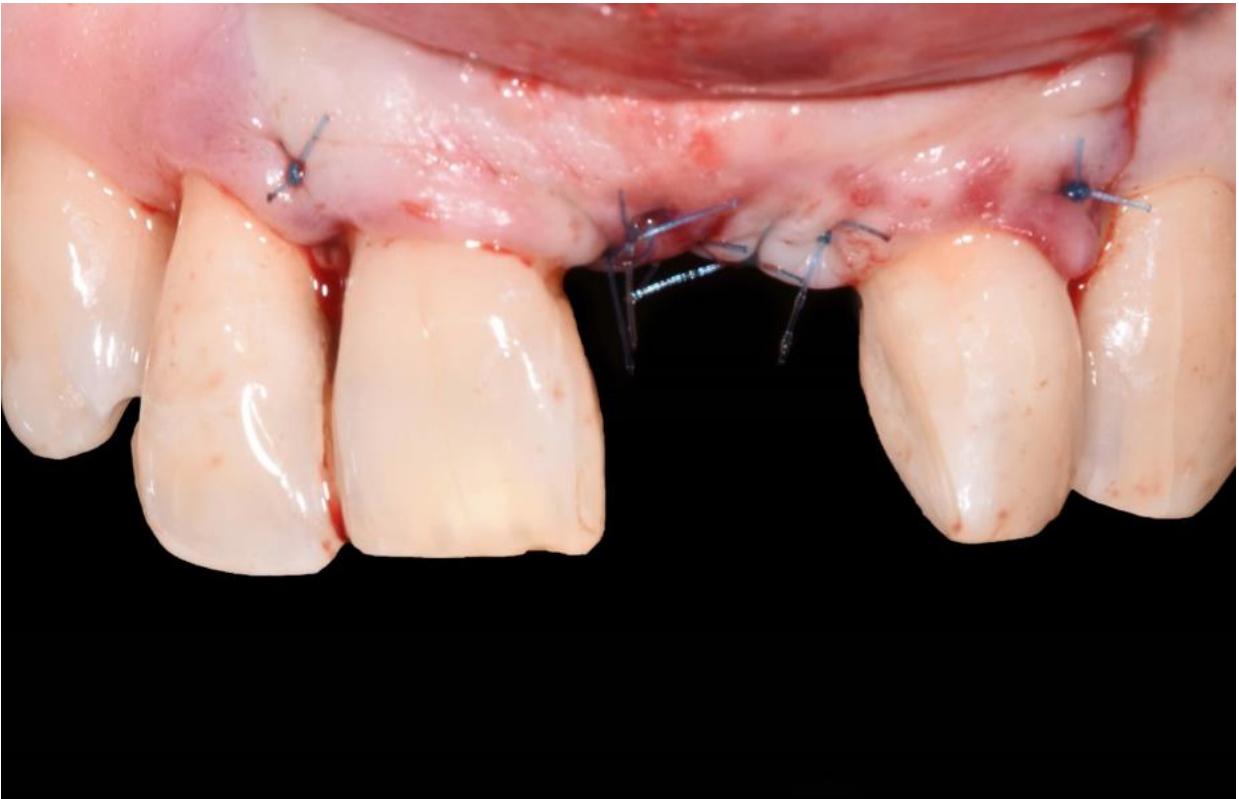


figure 5: details of the surgery, after suturing the flaps

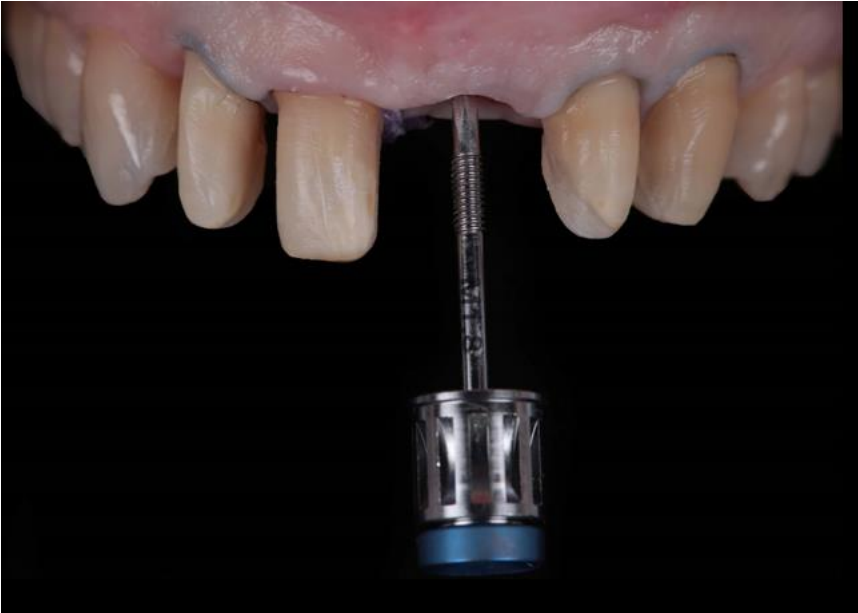


figure 6: details of prosthetically driven implant placement, before taking the final impression



figure 7: details of customized zirconia CAD/CAM abutment

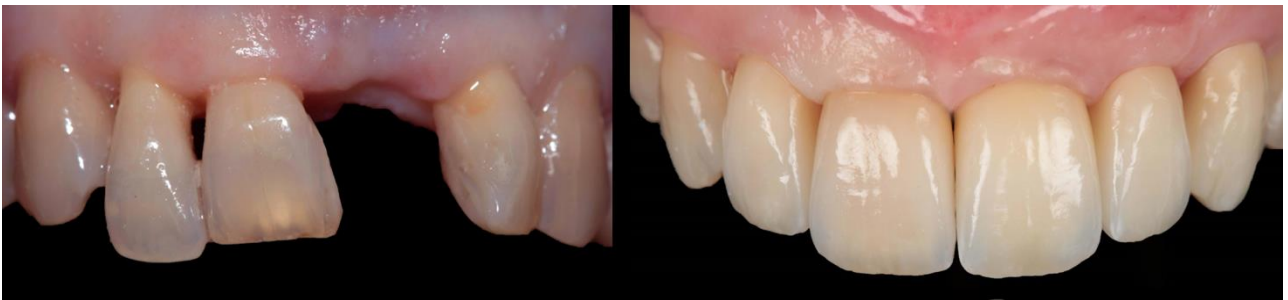


figure 8: pre- post- comparison of smile composition and smile arc

Further pictures (as instance full face, before and after treatment, will be part of the final presentation)