Background and Aim:

Platform switching concept is based on the discrepancy between the prosthetic abutments of a smaller diameter in relation to the implant platform diameter and clinically seems to preserve crestal bone height and soft tissue levels increasing the quality outcomes in treatments with dental implants and the patient satisfaction. However, it is well-known that the lack of well-designed prospective randomized clinical trials evaluating the efficiency of platform switching (PS) versus platform matching (PM) placed in partially edentulous mandibles. The purpose of this five-year prospective randomized multicenter study was to assess the differences in bone level changes between CAMLOG® SCREW-LINE implants supporting single crowns in the posterior mandible restored either with platform matching or platform switching abutments (FDI positions 37-34 and/or 44-47). The secondary objectives included implant success (Buser et al. 2002) and survival rate, performance of the restorative components, nature and frequency of the adverse events. This paper presents interim results obtained in up to two years.

Material and methods:

Study design

The prospective multicenter randomized clinical study was performed in three centers located in Germany (two) and Portugal (one). The study was approved by the competent Ethics Committees (FECI 09/1308 and CES/0156) and performed in accordance with the Declaration of Helsinki (2008).

Inclusion criteria

Patients ≥ 18 years old missing two or more adjacent teeth in the posterior mandible and with a natural tooth mesially to the proximal implant site. Free end situation was allowed and opposing dentition must be natural teeth or implant supported fixed restorations.

Exclusion criteria

Individuals who presented uncontrolled systemic diseases or took medications interfering with smoking status. Those who presented ≥10 cigarettes/day or presenting handicaps that would interfere with the ability to perform adequate oral hygiene.

Material

-CAMLOG® SCREW-LINE Implants, Promote® plus:
  - Diameter 3.8, 4.3 and 5 mm
  - Length 9, 11 and 13 mm
-Platform switching and platform matching prosthetic components.

Statistical methods

The distance from the implant shoulder to the first crestal bone contact, at the mesial and distal side, was measured with standardized radiographs and averaged to represent the change of bone level over time per implant. Two-way ANOVA considering Center and Randomization as factors was used to evaluate the mean differences in bone level change at a significance level of 0.05.

Survival analysis was calculated to implement success and survival rate.

Results:

The mean bone levels changes at two years post loading. Number of implants subdivided in 0.2 mm intervals. In 81% of the implants in PS group and 48% in PM group bone gain was observed. A bone gain higher than 0.4 mm was observed in 33% of the implants with PS and only in 7.8% in PM group.

The survival rate of this study are 97.6% in the PS group and 98.8% in the PM group (not statistically significant).

Conclusions:

At two-year post-loading the implants restored with platform switching abutments appear to preserve the crestal bone more predictably than the implants restored with platform match.

References: