BACKGROUND

• Crestal bone stability is usually considered a sign of implant success. Presence of CBL in early stages is considered an indication of further bone loss progression, and CBL is often considered the first step preceding peri-implantitis.

• Factors contributing to crestal bone loss include surgical manipulation of implant site, establishment of biologic width, foreign body reaction to titanium, reduced thickness of buccal bone and reduced thickness of soft tissue at implant site.

• By definition, the implant-abutment microgap is located at the implant-abutment junction, which, with exception of soft tissue level implants, is located at the same level as crestal bone. Observing the behavior of crestal bone adjacent to IAJ suggests that strong inflammatory stimuli originate at the implant-abutment interface, and that there is a causal relationship between the degree of inflammation and the magnitude of CBL. Thus, it was suggested that if the microgap was placed away from crestal bone, only minimal bone loss will occur.

• The objective of this review was to address the following focused questions:
  1) Does the apico-coronal position of IAJ affect early and late CBL?
  2) Since IAJ position changes with different implant configurations, will there be a difference in CBL between bone and tissue level implants?

METHODS & RESULTS

Background

- The effect of implant-abutment junction position on crestal bone loss. A systematic review and meta-analysis.
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Results

Fourteen articles were included in the systematic review and 12 were included in the quantitative synthesis. For bone level implants, WMD comparing early CBL in equi and subcrestal placement was 0.15 mm (p=0.18). For analyses of late CBL in bone level implants, equi and subcrestal placement revealed a 0.03 mm WMD (p=0.88). Where in supra and subcrestal placement, WMD was 0.04 mm (p=0.86).

The comparison presented considerable heterogeneity between the two arms, where the p-value for chi-square test presented as 0.006. Finally, for CBL between supra and equicrestal placement, WMD was 0.64 mm (p=0.001), favoring the supra group. For tissue level implants, WM of early and late CBL in implants placed equicrestally was 0.68±0.12mm and 0.69±0.14mm, respectively, where for implants placed subcrestally, the WM of CBL was 1.72±0.15mm and 2.26±0.63mm, respectively.

Conclusions

I) In bone level implants, the association between the apico-coronal position of the IAJ and CBL is statistically insignificant in all configurations except when subcrestal IAJ is compared to Equicrestal. II) There is a difference in the behavior of tissue level implants compared to bone level implants. Equicrestal placement of IAJ produces significantly less CBL than the subcrestal placement in tissue level implants. III) limited evidence proposes that a subcrestal position of the IAJ might keep implant threads covered by bone after early and late CBL occurs. IV) Approximately 1mm of CBL is expected after implant placement as a result of bone remodeling.