Background and Aim

Short dental implants have been suggested as a more accessible treatment alternative, with high survival rates and low incidence of biological and prosthetic complications in the cases of limited bone height of the posterior region of the jaws in comparison to longer implants associated to single crowns (Morand & Irinakis 2007). Although there is an increasing success rate of short implants, there is still a lack of studies assessing prospectively the risk factors on the prognosis of the rehabilitation of the posterior region with single crowns supported by short implants.

Thus, the aim of this study was to answer the focused question: “In partially edentulous patients with severe resorption of the posterior region of the jaws, what is the effect of restoring short (<10-mm) implants with single crowns compared to single crowns supported by implants of conventional length associated to bone grafts on the survival/success rates of these implants and prostheses and on the incidence of failures and/or complications?”, through the conduction of a systematic review and meta-analysis of prospective studies published up to October 2012.

Methods and Materials

Search Strategy

Inclusion criteria: 1) RCTs, CCTs, prospective Cohort and Case Series studies where short implants supporting single crowns in non-augmented, healed jaw-bone (test) were compared to implants of conventional length associated or not to bone augmentation procedures and supporting single crowns (control) in the posterior region of the jaws of partially edentulous patients, with at least 10 implants per group and a one-year post-loading follow-up; 2) a clear report of the total number of short implants placed/surviving and the number of single crowns supported by short implants in the posterior region with its likely prognostic factors. An implant < 10-mm was considered as a short implant (Morand & Irinakis 2007).

Two reviewers performed electronic search in 10 databases using MeSH terms and key-words (Table 1). The results were exported to the software EndNote Web® (Thomson Reuters, New York, USA), where both title and abstract screenings were performed restricted to the English language. Handsearch was made on the references lists of the screened clinical studies as well as in 14 international peer-reviewed journals.

Screening and Data Collection

Full-text screening was performed with no language restrictions. The incidence of implant failures, of biological and prosthetic complications, the marginal bone loss and the risk factors were recorded in a standardized form for statistical analysis.

Statistical Analysis

The means Failure Proportion (FP), Biological/Prosthetic Failure Proportions (BFP/BFP) and Marginal Bone Loss (MBL) were estimated using random-effects models for meta-analysis. The impact of the clinical variables on the different outcomes was estimated by meta-regression and subgroup analysis.

Quality Assessment

Quality assessment was performed using a validated protocol (Tellermann et al. 2011) adapted to the present review, with 18 items. Articles have been classified according to the score obtained in high (scores 0-7), medium (scores 8-13) and low (scores 14-18).

Results

The results of the electronic and hand-searches, as well as of the screenings, are shown in Figure 1. No controlled study (RCT/CCT) has been found. Sixteen prospective studies, 10 cohorts and 6 case series, with a medium methodological quality (mean score: 8±3; 2-14), fulfilled the eligibility criteria and were used for data compilation (Table 2).

Conclusions

Within the limitations of this review, it can be concluded that the use of single crowns supported by short implants in patients with atrophic alveolar ridges appears to be a predictable treatment option in the short- and long-term, reducing costs, treatment time and the need for complex invasive procedures.

References


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