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Intermediate and regular-diameter implants in posterior region of the jaws to support single crowns: 4-year split-mouth randomized clinical trial

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Abstract

Objectives

The objective of this 2-year split-mouth randomized clinical trial was to compare single-tooth non-hexa-platform implants differing only in diameter and to assess a regular-diameter implant in the posterior region of the jaws to support single crowns (SCs) and to implant and prosthetic survival and complications.

Materials and Methods

Ninety patients were allocated to receive two SCs. Each patient received one wide-diameter (4.5 and 5.0 mm) and one narrow-diameter (3.3 and 3.8 mm) implant randomly assigned to a molar. A total of 180 implants were placed. Implant and prosthetic survival and complications, peri-implant probing depth (PPD) and bleeding on probing (BOP), marginal bone level (MBL) and implant stability were recorded at baseline, 1-year follow-up, and 2-year follow-up. The corresponding values for prosthetic crowns were also recorded. Data were analyzed by Fisher's exact tests, the Wilcoxon signed-rank test, and the Bayesian Weibull model.

Conclusion

No prosthetic failure occurred during the 2-year follow-up. Implant survival and success rates were high and did not differ (at 100% in regards to MBL, PPD, and BOP) between implant types.

1 INTRODUCTION

The use of wide-diameter implants (diameter ≥4.5 mm) in the posterior region of the jaws has been an improvement in biomechanical and prosthetic. The wide-diameter implants have been used to support single crowns (SCs) in posterior sites (Bozkaya, Yalcin, Yalcin, Erdemir, Yilmaz, Eskitascioglu, 2004; Giovannini, Tallarico, Cervino, Pellicciari, Tommasato, Cervino, 2020; Tallarico, Lumbau, Tommasato, Meloni, Xhanaj, 2019; Zadeh et al., 2011; Zitzmann, Marinello, Sendi, 2004). Wide-diameter implants have been used in different clinical situations, such as implants placed in fresh extraction sockets (Giovannini, Tallarico, Cervino, Pellicciari, Tommasato, Cervino, 2020; Tallarico, Lumbau, Tommasato, Meloni, Xhanaj, 2019), immediately loaded implants (Tallarico, Meloni et al., 2010; Zadeh et al., 2011), implants placed in sites with bone grafting (Giovannini, Tallarico, Cervino, Pellicciari, Tommasato, Cervino, 2020; Tallarico, Lumbau, Tommasato, Meloni, Xhanaj, 2019; Tallarico, Meloni, Meloni, Lumbau, Xhanaj, 2010), implants placed in sites with a low bone density (Giovannini, Tallarico, Cervino, Pellicciari, Tommasato, Cervino, 2020; Schwartz & Ahlquist, 2011; Tallarico, Xhanaj, Martina, Meloni, Lumbau, 2019), and implants placed in sites with a low mesiodistal space (Giovannini, Tallarico, Cervino, Pellicciari, Tommasato, Cervino, 2020; Tallarico, Meloni, Meloni, Lumbau, Xhanaj, 2010). Wide-diameter implants have been used to support single crowns (SCs) and to compensate for bone loss in the posterior region of the jaws.