

The Effect of Implant Design on the Height of Inter-Implant Bone Crest: A 10-Year Retrospective Study of the Astra Tech Implant and Branemark Implant

Authors : Daeung Jung

Abstract : Background: In case of patients with missing teeth, multiple implant restoration has been widely used and is inevitable. To increase its survival rate, it is important to understand the influence of different implant designs on inter-implant crestal bone resorption. There are several implant systems designed to minimize loss of crestal bone, and the Astra Tech and Brånemark Implant are two of them. Aim/Hypothesis: The aim of this 10-year study was to compare the height of inter-implant bone crest in two implant systems; the Astra Tech and the Brånemark implant system. Material and Methods: In this retrospective study, 40 consecutively treated patients were utilized; 23 patients with 30 sites for Astra Tech system and 17 patients with 20 sites for Brånemark system. The implant restoration was comprised of splinted crown in partially edentulous patients. Radiographs were taken immediately after 1st surgery, at impression making, at prosthetics setting, and annually after loading. Lateral distance from implant to bone crest, inter-implant distance was gauged, and crestal bone height was measured from the implant shoulder to the first bone contact. Calibrations were performed with known length of thread pitch distance for vertical measurement, and known diameter of abutment or fixture for horizontal measurement using ImageJ. Results: After 10 years, patients treated with Astra Tech implant system demonstrated less inter-implant crestal bone resorption when implants had a distance of 3mm or less between them. In cases of implants that had a greater than 3 mm distance between them, however, there appeared to be no statistically significant difference in crestal bone loss between two systems. Conclusion and clinical implications: In the situation of partially edentulous patients planning to have more than two implants, the inter-implant distance is one of the most important factors to be considered. If it is impossible to make sure of having sufficient inter-implant distance, the implants with less micro gap in the fixture-abutment junction, less traumatic 2nd surgery approach, and the adequate surface topography would be choice of appropriate options to minimize inter-implant crestal bone resorption.

Keywords : implant design, crestal bone loss, inter-implant distance, 10-year retrospective study

Conference Title : ICDDHEOH 2018 : International Conference on Dentistry, Dental Hygiene Education and Oral Health

Conference Location : Sydney, Australia

Conference Dates : December 03-04, 2018