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Effect of Cortico-Cancellous Ratio (CCR) of the osseous surface area surrounding and its relation with the immediate and long-term stability of the dental implant-A Cone Beam Computed Tomography (CBCT) assisted clinical study

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Replacement of lost teeth with dental implant (DI) has become a quite popular alternative from past few decades as it can accomplish both functional and esthetic demands. Amidst many other factors, primary and long-term stability play a vital role in the immediate and long-term success of DI, which further decided by quality and quantity of the native bone next to the DI. The current study aims at estimating the Cortico-Cancellous Ratio (CCR) of the bone surrounding the DI and its association with the primary and long-term stability of the same. Cone beam computed tomography (CBCT) records of 140 DIs, placed at the level of the crest of the alveolar bone were analyzed immediately after placing. Both mandibular and maxillary DI sites were analyzed. CCR was measured at four specific points circumferentially around the implant, means were noted. Primary stability values were evaluated using insertion torque (IT) and implant stability quotient (ISQ) values; long-term stability was measured using only ISQ values after four months for the mandible, six months for maxilla and after two years for both arches. Statistical analysis was done. Results shows significantly higher mean IT and ISQ values with higher CCR. Secondary stability, though significantly not affected, mean ISQ values were improved with higher CCR. Mandibular implants showed higher primary stability values compared to maxillary. Astonishingly, at long-term follow-up, no significant difference was observed between maxillary and mandibular DI's mean ISQ values. Within the limitations, this study concludes, primary stability may directly associate to CCR. However, long-term stability may not significantly link with CCR.

Biography

Sunil Kumar Vaddamanu has completed his graduation from Dr NTR Health University, India in 2008 and Post-graduation from Rajiv Gandhi Health University, Karnataka, India in 2012. He had received best paper and poster presentation awards at national conferences held in 2011 and 2012. Furthermore, he is an Author and Co-author of many publications which were published in many reputed international indexed journals. Formerly, he was working as Consultant Prosthodontist in Tamil Nadu, India. Currently, he is working as an Assistant Professor in Department of Dental Technology, Applied Medical Science, King Khalid University, Abha, Saudi Arabia.

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