Guest Editorial

Clinical implications of Implant crest module: A Clinical Note

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The ultimate success of dental implants is dependent on direct union between the implant and intraoral hard/soft tissue. Early breakdown of the implant-tissue interface usually starts at the crestal region in successfully osseointegrated endosteal implants. Therefore, sound knowledge of biomechanics seems to truly minimize the overload situations which control the long-term success of dental implants.

Implant crest module is one of the segments of a two-piece dental implant that is designed to hold the prosthetic components and to create a transition zone to the load bearing implant body.[1] Its design, position in relation to the alveolar crest, and an abutment implant interface makes us believe that, it has a major role in integration to both hard and soft tissues. Many studies in the literature have shown that mean marginal bone loss of adjacent teeth recorded over the average time of examination was 0.97± 1.46 mm and observed at upper lateral incisors facing a fixture in the canine or central incisor regions. In fact, bone loss has been observed so often, many implant crest modules are designed to reduce plaque accumulation once bone loss has occurred.[2] A smooth, parallel-sided crest module will result in shear stresses in this region, making maintenance of bone very difficult. The ultimate seal created by the larger crest module also provides for greater initial stability of the implant following placement, especially in softer unprepared bone, as it compresses the region. The larger diameter also increases surface area, which contributes to decreases in stress at the crestal region compared with crest modules of smaller diameter.[3]

A polished collar of minimum height should be designed on the superior portion of the crest module just below the prosthetic platform. Bone is subjected to unnecessary and excessive shear loading in implants characterized by a longer polished collar. Significant loss of crestal bone has been reported for implants with larger machined (smooth) corona regions.[4] It has now been a universal clinical observation that bone is often lost to the first thread, regardless of the manufacturer type or design, after loading. Bone grows above the threads during healing, but after prosthesis loading the bone loss is often observed. Even if different designs of the crest modules have been proposed in recent literature, adequate clinical researches are needed to conduct so as to explore the exact mechanism of the crestal bone loss and associated managements.

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