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EDITORIAL

OSSEODENSIFICATION – A PARADIGM SHIFT IN IMPLANT DENTISTRY

Convention surgical procedure in implant dentistry involves osteotomy preparation by subtraction of bone to create room for implant to be placed. The primary mechanical stability considered a prerequisite for successful osseointegration is achieved through undersized drilling protocol or with a special thread design of implants. Osteotomies drilled with this protocol into deficient bone may produce dehiscence, buccally and lingually, which reduces primary stability and will require additional bone augmentation procedures.[1]

Osseodensification is a technique that aims at bone preservation and compaction of cancellous bone through non-subtractive drilling thus increasing the quantity and density of peri-implant bone. The cortical bone withstands torsional loading and enables high initial implant stability. The cancellous bone with rich cellular content and vasculature provides good viscoelastic and plastic deformation characteristics. For successful osseodensification, a sufficient amount of cancellous bone is a prerequisite.[2]

The technique of osseodensification involves the use of special drills (Densah™) that run in a counter-clockwise direction at the osteotomy site leading to expansion of osteotomy site. Regular twist drills or straight fluted drills have 2-4 lands while Densah™ Burs are designed with 4 or more lands, which precisely guide them through bone leading to less potential chatter. They can be used in counterclockwise (densifying mode) or clockwise (cutting mode) with copious irrigation in a bouncing-pumping motion.[3]

Various instruments like osteotomes and specialized kits are available for sinus lift procedures. The Densah™ bur facilitated sinus lift procedure in pneumatised sinuses with inadequate residual bone height is a game changer with minimum risk of sinus perforation if proper protocol is followed.[4]

A systematic review showed that osseodensification presented consistently higher ISQ at baseline and at 4 to 6 months after implant placement compared with conventional drilling.[5] Another study showed that, osseodensification group yielded higher osseointegration rates, as distinguished through qualitative assessment, bone-to-implant contact, and bone-area-fraction occupancy, indicating an increased osteogenic potential in osteotomies prepared using the osseodensification technique.[6] From a histologic and biomechanical standpoint, osseodensification drilling-alveolar ridge expansion technique showed increased evidence of osseointegration and implant primary stability.[7,8]

The limitations of osseodensification is that it doesn't work in cortical bone and cannot densify xenograft.

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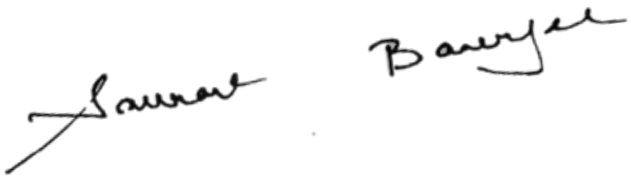

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