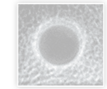
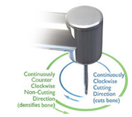
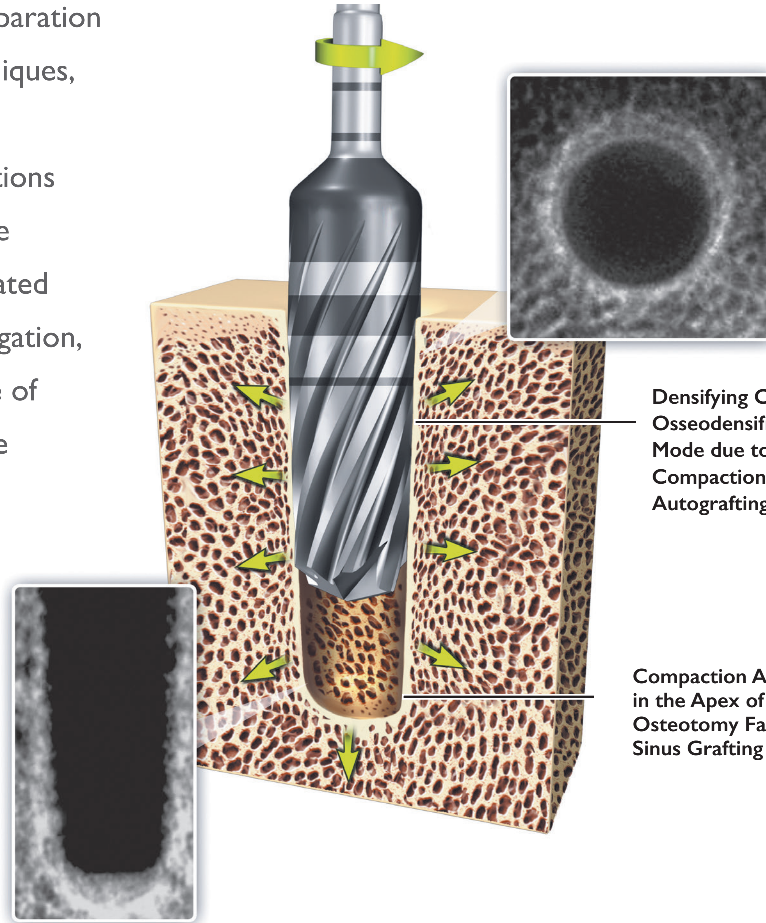





I. Osseodensification and the Densah® Bur Overview

The Densah® Bur technology is based on a novel biomechanical bone preparation technique called "*osseodensification*." Unlike traditional dental drilling techniques, osseodensification does not excavate bone tissue. Rather, bone tissue is simultaneously compacted and auto-grafted in outwardly expanding directions from the osteotomy, somewhat akin to a traditional hammered osteotome but without the trauma and other limitations. When a Densah® Bur is rotated at high speed in a reversed, non-cutting direction with steady external irrigation, a strong and dense layer of bone tissue is formed along the walls and base of the osteotomy. Dense compacted bone tissue produces stronger purchase for your favorite dental implant and may facilitate faster healing.



A biomechanical as well as histological validation study of the osseodensification technology and the Densah® Bur was performed by the Experimental Biomechanics Laboratory at Lawrence Technological University in Southfield, Michigan, in 2013–2014. Study concluded that, in porcine tibia, osseodensification increases primary stability and creates a densification crust around the preparation site by compacting and autografting bone along the entire depth of the hole.

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OSSEODENSIFICATION

Hydrodynamic Bone Preparation

Compaction Autografting / Condensation [1, 2, 3, 4]

Maintaining Bone Bulk Results In Higher BIC

Enhance Bone Density [5, 6, 7]

Accelerates Bone Healing

Increase Residual Strain [8, 9, 10]

Enhances Osteogenic Activity Through Mechanobiology

Increase Implant Stability [11, 12, 13]

Higher Insertion Torque & ISQ Reduces Micromotion

01. Todisco, M. and P. Trisi, Bone mineral density and bone histomorphometry are statistically related. Int J *Oral Maxillofac Implants,* 2005. 20(6): p. 898-904.

02. Frost HM. A brief review for orthopedic surgeons: fatigue damage (microdamage) in bone (its determinants and clinical implications). *J Orthop Sci*. 1998;3(5):272-281.

03. Kold S, et al. Bone compaction enhances fixation of hydroxyapatite-coated implants in a canine gap model. *J Biomed Mater Res B Appl Biomater*. 2005;75(1):49-55.

04. Schlegel KA, et al. Bone conditioning to enhance implant osseointegration: an experimental study in pigs. *Int J Oral Maxillofac Implants*. 2003;18(4):505-511.

05. Nkenke E, et al. Histomorphometric and fluorescence microscopic analysis of bone remodelling after installation of implants using an osteotome technique. *Clin Oral Implants Res*. 2002;13(6):595-602.

06. Frost HM. *Intermediary Organization of the Skeleton*. 1st ed. Boca Raton, FL: CRC Press; 1986:109-164.

07. Burri C, Wolter D. [The compressed autogenous spongiosis transplant (author's transl)]. Unfallheilkunde. 1977;80(5):169-175.

08. Halldin A, et al. The effect of static bone strain on implant stability and bone remodeling. *Bone*. 2011;49(4):783-789.

09. Duncan RL, Turner CH. Mechanotransduction and the functional response of bone to mechanical strain. *Calcif Tissue Int*. 1995;57(5):344-358.

10. Kold S, et al. Compacted cancellous bone has a spring-back effect. *Acta Orthop Scand*. 2003;74(5):591-595.

11. Trisi P, et al. Implant micromotion is related to peak insertion torque and bone density. *Clin Oral Implants Res*. 2009:20(5):467-471.

12. Pagliani L, Sennerby L, Petersson A, et al. The relationship between resonance frequency analysis (RFA) and lateral displacement of dental implants: an in vitro study. *J Oral Rehabil*. 2013;40(3):221-227.

13. Trisi P, Colagiovanni M, Perfetti G. Implant Stability Quotient (ISQ) vs Direct in Vitro Measurement of Primary Stability (Micromotion): Effect of Bone Density and Insertion Torque. *Journal of Osteology and Biomaterials*. 2010;1(3).

NOTE: The references cited illustrate general principles of bone Biomechanics and implant treatment and are not specific to the Densah® Bur