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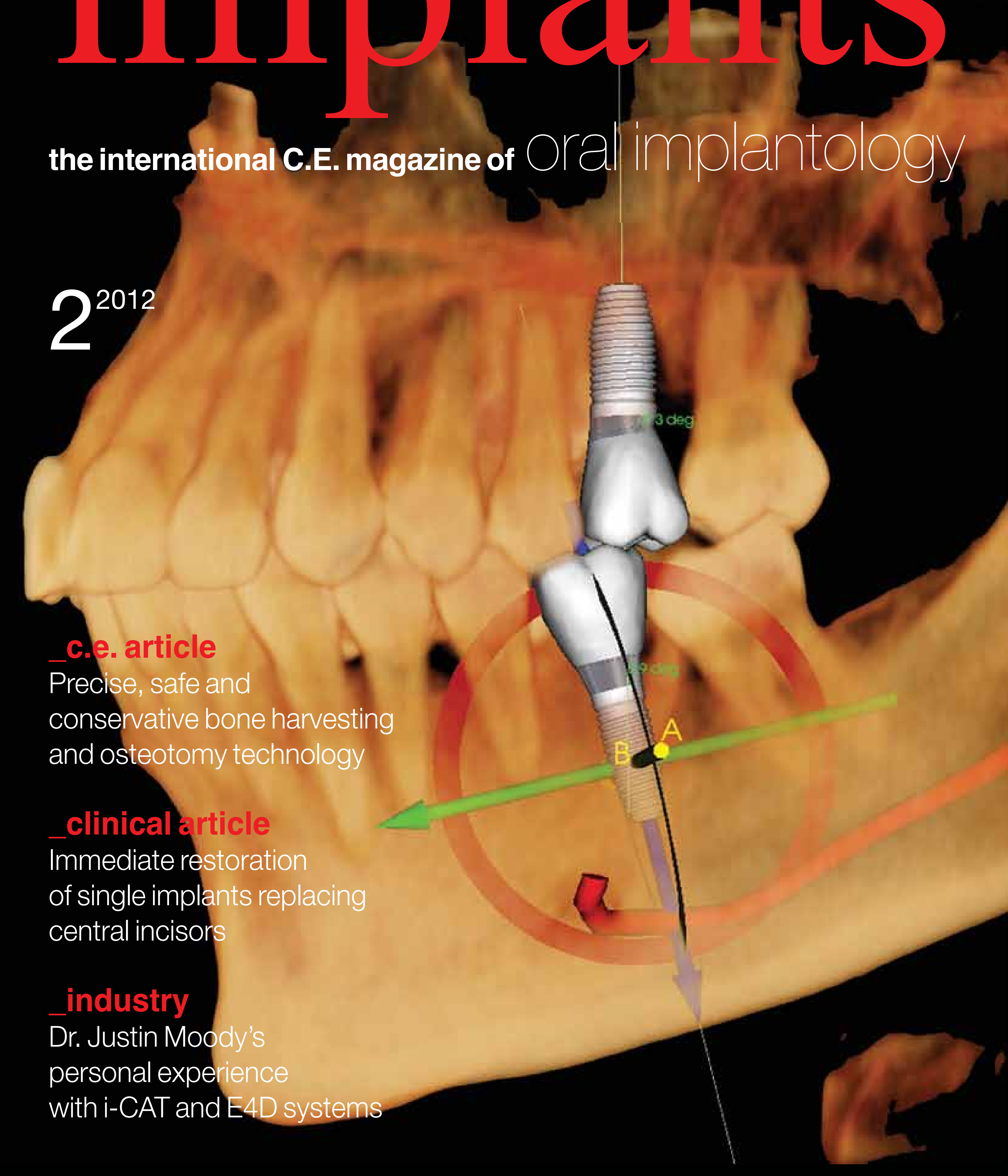
implants

the international C.E. magazine of oral implantology



2 2012

_c.e. article

Precise, safe and conservative bone harvesting and osteotomy technology

_clinical article

Immediate restoration of single implants replacing central incisors

_industry

Dr. Justin Moody's personal experience with i-CAT and E4D systems practice

technology

efficiency

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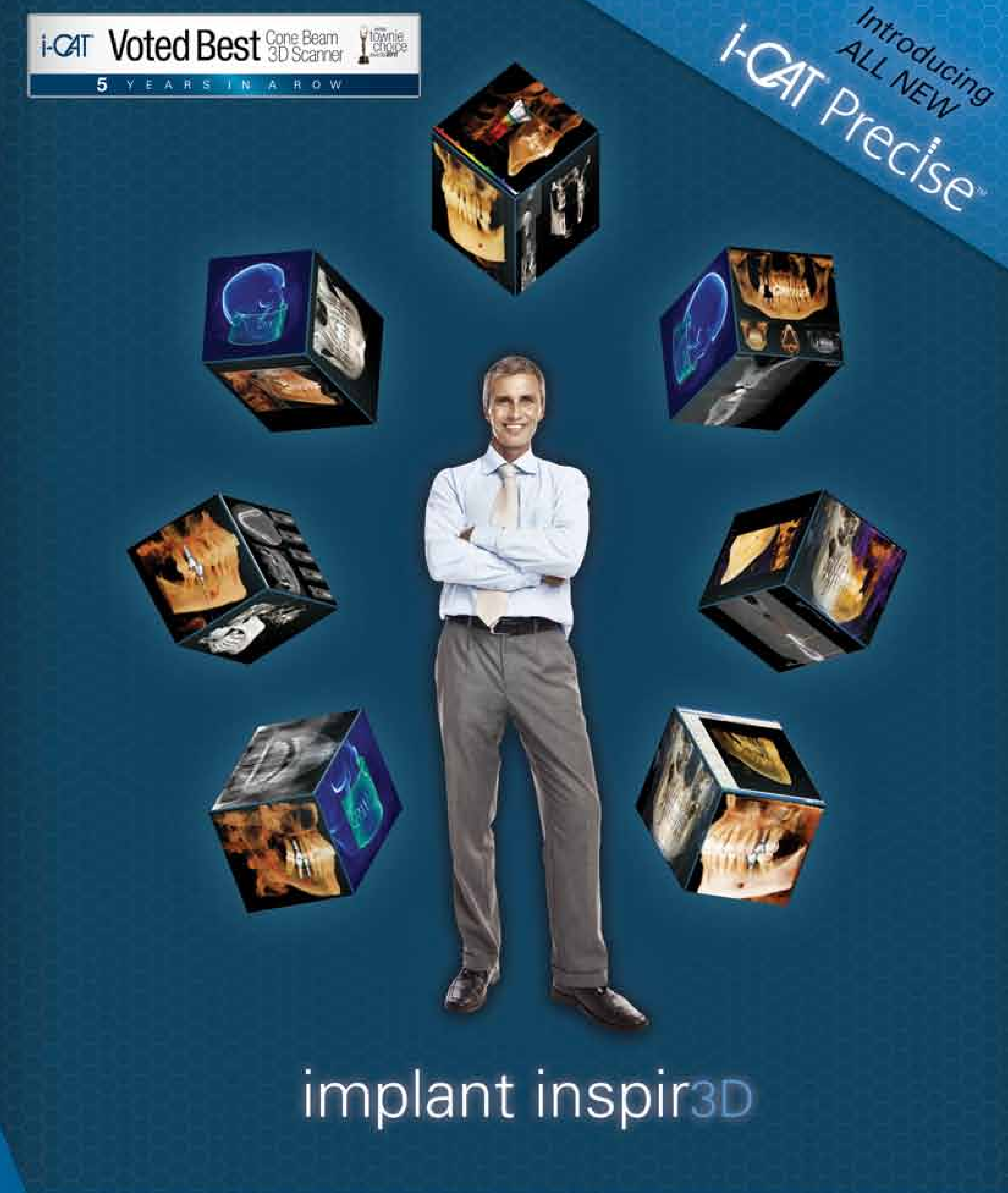
i-CAT Voted Best Cone Beam 3D Scanner
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The world of *implants* is ever changing, evolving


Publisher Torsten Oemus

_Thanks to rapidly advancing technology, the field of implant dentistry is always changing and evolving. Clinicians must be vigilant in their efforts to keep up with new techniques, new products and new technology that could affect their treatment planning.

And that's what makes the publication you are holding right now so valuable.

For this issue of *implants*, we've assembled a collection of articles from a variety of respected names in dentistry. These expert clinicians are sharing their first-hand knowledge and expertise with you. Within this issue, you can read about bone harvesting and osteotomy technology; you can learn about multidisciplinary implant treatment; and you can also read about the immediate restoration of single implants replacing central incisors compromised by internal resorption.

We also have important information on upcoming implant-focused events and about new implant products and technology.

But there's more.

Every issue of *implants* magazine also contains a C.E. component. By reading the article (beginning on Page 8) on "Precise, safe and conservative bone harvesting and osteotomy technology" by Dr. Pankaj Singh, and then taking a short online quiz about this article at *www.DTStudyClub.com*, you will gain one ADA CERP-certified C.E. credit. Keep in mind that because *implants* is a quarterly magazine, you can actually chisel at least four C.E. credits per year out of your already busy life without the lost revenue and time away from your practice.

To learn more about how you can take advantage of this C.E. opportunity, visit *www.DTStudyClub.com*. Annual subscribers to the magazine ($50) need only register at the Dental Tribune Study Club website to access these C.E. materials free of charge. Non-subscribers may take the C.E. quiz after registering on the DT Study Club website and paying a nominal fee.

I know that taking time away from your practice to pursue C.E. credits is costly in terms of lost revenue and time, and that is another reason *implants* is such a valuable publication.

I hope you enjoy this issue and that you get the most out of it.

Sincerely,

Torsten Oemus
Publisher

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The Singh Guided Pin Surgery system (Meisinger USA) was developed out of the need for a simplified and conservative surgical system for implant dentistry and to minimize the need for non-autogenous-sourced hard-tissue grafting material. The eventual benefit would be a faster and safer method to create an ideal osteotomy while simultaneously collecting and harvesting substantial volumes of autogenous bone for grafting purposes.

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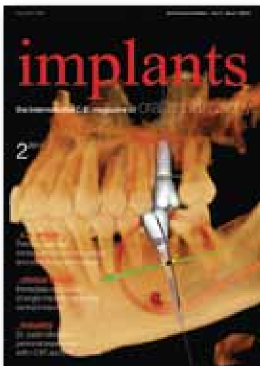

on the cover

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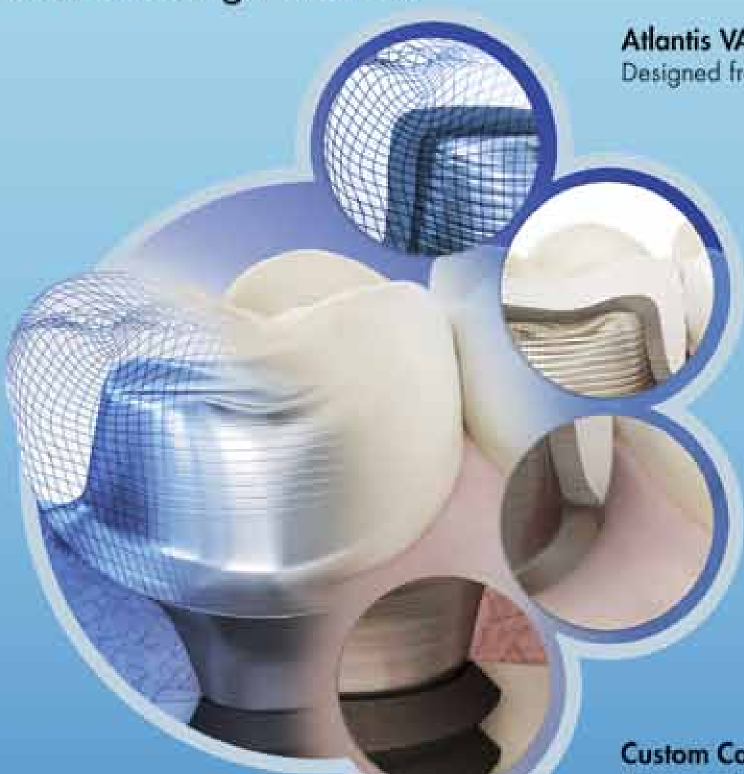

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Precise, safe and conservative bone harvesting and osteotomy technology

Authors_Pankaj Singh, DDS, DICOI, DABOI, FAAID, and Christine W. Chu, DDS

_c.e. credit

This article qualifies for C.E. credit. To take the C.E. quiz, log on to *www.dtstudyclub.com*. The quiz will be available on April 25.

Study: harvesting autogenous bone from the osteotomy site for minimally invasive implant placement using guided precision surgical trephines, and case report: osseous conservative crestal approach sinus lift

Fig. 1

Fig. 2

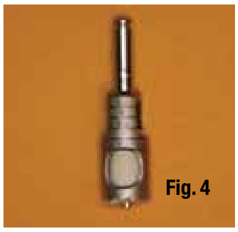
Figs. 1,2_GPS (Guided Precision Surgery, Meisinger) Trephines, side view. (Photos/Provided by Pankaj Singh, DDS, DICOI, DABOI, FAAID, and Christine W. Chu, DDS)

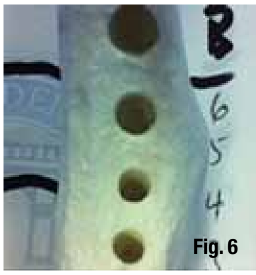
_Abstract

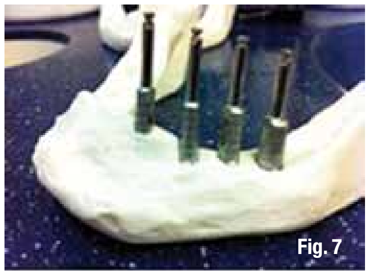
The specific aim of the this project is to evaluate and substantiate the effectiveness and simplification of the osteotomy creation process using the newly designed and engineered Guided Precision Surgical (GPS) Trephines drills for the purpose of placing a dental implant, while simultaneously collecting substantial volume of autogenous bone that otherwise would have been discarded during the current osteotomy creation method using sequentially enlarging diameter spade drills.[3] Included is a case report on how these drills can be used to prepare an osteotomy for a crestal approach sinus lift while simultaneously using the harvested bone for augmentation.

_Materials and methods

The current method of creating a receptor site for a dental implant results in severe trauma (destruction and loss) to the host bone in the process. Depending on operator experience and bone type, it is very possible to oversize the osteotomy resulting in a non-optimum fit of the implant, which can cause failure due to non-integration.







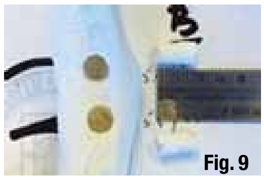


Fig. 3_Five trephine drills with outer diameters of 4.0 mm to 6.0 mm in 0.5 mm increments.

Fig. 4_Side view showing simulated bone captured during the drilling of the osteotomy.

Fig. 5_Aerial view showing captured bone surrounding the central guide pin.

Fig. 6_Crestal view of the osteotomy's created by the GPS drills.

Fig. 7_Side view of the GPS drills in the osteotomy sites.

Fig. 8_Crestal view of the side-by-side osteotomies created by the proprietary protocol on side A and GPS on side B

Fig. 9_Simulated bone cores removed from the GPS created osteotomies and measured for length.

Occasionally, there is need for hard-tissue augmentation of the implant; however, harvesting autogenous bone from a secondary site is not without significant morbidity and risk.

This study was designed to compare osteotomy creation and simultaneous bone harvesting using the newly introduced GPS (Guided Precision Surgery, Meisinger) Trephines (Figs. 1, 2) vs. traditional osteotomy using spade drills.

Use of the GPS Trephines: 1) simplifies and streamlines the surgical placement of implants, 2) minimizes trauma to the surgical site by using fewer instruments while simultaneously collecting vital autogenous, and 3) enables the harvesting of autogenous bone from the osteotomy site eliminating/decreasing the need for a secondary donor site or the use of alternative bone-grafting materials. Additionally, autogenous bone, considered to be the "Gold Standard"[1] in bone grafting, is invaluable in Guided Bone Regeneration[2] and further decreases the costs of bone-grafting materials.

The GPS Trephine system was developed out of the need for a simplified and conservative surgical system for implant dentistry and to minimize the need for non-autogenous sourced hard-tissue grafting material.[4] The eventual benefit is a faster and safer method to create an ideal osteotomy while simultaneously collecting and harvesting substantial volumes of autogenous bone for grafting purpose.

The system allows the implant surgeon to accomplish the preparation of an osteotomy for the placement of an implant[5] in only two steps, utilizing only two surgical drills, irrespective of the implant system and size of the implant being used.

The system consists of a 1.3 mm pilot drill (two pilot drills are included as part of the system package, which function as guide and paralleling pins), five trephine drills with outer diameters of 4.0 mm to 6.0 mm in 0.5 mm increments (Fig. 3) and an autoclavable organizational bur block. The trephine allows for the capture of the bone block,[6] 1 mm less in diameter (representing the internal diameter of the trephine) than the osteotomy (outer diameter of the trephine) (Figs. 4,5).

The trephines have a parallel walled 1.3 mm central guide pin that protrudes 1 mm past the cutting ends and is flat (non cutting). The unique aspect of this system is that the entire trephine with the central guide pin is fabricated in one piece using CAD/CAM manufacturing out of a single block of high strength metal. The parallel walls of the guide pin allow the trephine to advance along the shaft left from the pilot drill, preventing misdirection, and the extended flat-ended pin allows the trephine to advance to the depth defined by the pilot drill. Once "bottomed out," the trephine freely rotates around its central axis without risking extension of the osteotomy's depth or width.

This was a primary study using dense plastic simulated bone model mandibles, from which the data obtained would be used to submit for an IRB-approved human trial. Ten simulated bone mandibles were used to conduct a quantitative analysis of the amount of simulated bone salvaged during the osteotomy creation process, five different proprietary implant system drilling protocols were used and compared to newly introduced GPS Trephine system and drilling protocol for the same diameter implants.

Each mandible was designated a control (right) side and an experimental (left) side, and each implant system was allowed two mandibles with a minimum of four osteotomy sites per implant diameter. The drilling was carried out in sequence as per the pro-