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ICOI in Vancouver
Group plans its World Congress in August
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Training is critical to the future of implant practices
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Adjustable wrench
Torque control is a premiere feature of Precise product
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Implant market to exceed $1B by 2013

According to Millennium Research Group's (MRG's) new "US Markets for Dental Implants 2009" report, although the current economic crisis is resulting in lower growth in the short term, the U.S. dental implant market will recover after 2010 and exceed $1 billion by 2013.

With economic recovery expected to begin in 2010, market growth will be stimulated by a preference for minimally invasive procedures that offer improved esthetic results and shorter treatment lengths.

"The growing population of general practitioners (GPs) placing dental implants will also lead to steady market growth, particularly with small-diameter implants that are easier to place and less invasive," said Poonam Jassi, senior analyst at MRG. "More GPs will learn to place dental implants because of the profit potential compared to alternative treatments, driving this market into 2013."

(Courtesy: Millennium Research Group)

Study: Implant placement results in minimal bone loss

Marginal bone remodeling occurs between implant placement, prosthesis placement

Dental implants are frequently used as a replacement for missing teeth in order to restore the patient's tooth function and appearance.

Previous research demonstrates that the placement of a dental implant disrupts the host tissue in the area of the implant, so practitioners often focus their treatment planning to carefully maintain the patient's bone and gum tissue surrounding the implant.

A recent study published in the Journal of Periodontology found that the majority of bone remodeling occurred in the time between the implant placement and final prosthesis placement.

Subsequently, little mean bone change was observed in the five years following the implant placement, independent of type of restoration or implant length.

The study, conducted at the University of Texas Health Science Center at San Antonio, evaluated 596 dental implants placed in 192 patients older than 18. Patients were screened for adequate oral hygiene and bone volume. Exclu-

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Miniscrews: a focal point in practice

Part one in a six-part series

By Dres. Björn Ludwig, Bettina Glasl, Thomas Lietz and Prof. Jörg A. Lisson

In view of the plethora of publications, courses and advertising material on this subject, it would seem that miniscrews are widely used. Once some candid questions have been asked and answered, however, it becomes apparent that the reality is quite different. It seems evident that there are valid reasons that miniscrews are not yet in daily use in many practices.

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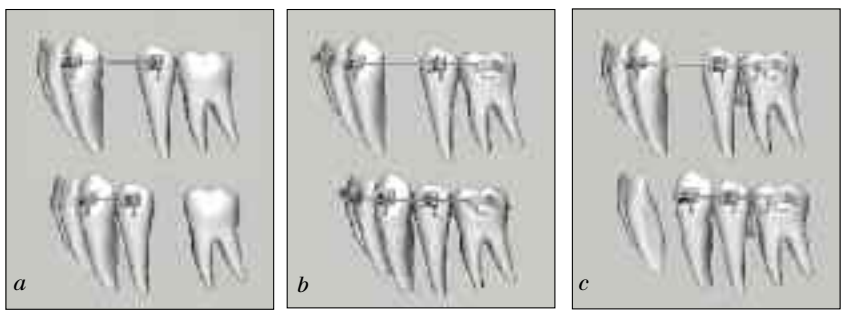

Figs. 1a–c: After removal of the first premolar, the canine is to be retracted; results for a) minimum, b) medium or reciprocal and c) maximum anchorage.

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ICOI heads to Vancouver

By R. Craig Johnson, ICOI Executive Director

Vancouver, Canada ... Site for ICOI World Congress XXVI, 12th Annual IPS Symposium and 12th Congress of Asia Pacific Section.

If early interest/registration are any indication, this will be the ICOI's *best* World Congress to date!

This modest prediction from the author is supported by the following:

- Vancouver is one of the most desirable cities in the world.
- August in Vancouver promises ideal weather conditions.
- Our scientific program is superb with a host of world class speakers (see more details below).
- The site for the congress, the brand new West Wing of the Vancouver Convention Centre, and its views of the harbor and mountains will delight delegates and exhibitors alike.
- This congress will unite our annual implant prosthodontic section meeting *and* will serve as our Asia-Pacific section congress (a large contingent from the Far East is expected to attend this World Congress).
- Our fastest-growing component society, the Association of Dental Implant Auxiliaries (ADIA), will hold a three-day program in conjunction with the doctors' session.
- The social program has been expanded to include a dinner cruise, in addition to our welcome reception, awards ceremony and gala dinner. A wide array of tours is being promoted for accompanying persons.

And now the details:

The World Congress will be held Aug. 20–22 at the Vancouver Convention Centre. The host hotels are the Pan Pacific and the Fairmont Waterfront — both just steps from the centre. Cruise ships berth beside the Pan Pacific almost daily. Consider that cruise to Alaska pre- or post-congress.

Dr. Scott Ganz, with the help of Dr. Hom-Lay Wang and Dr. Kenneth Judy, has designed an excellent scientific program for this congress, which will start on Aug. 20 at 1:30 p.m. and will run through Aug. 22. The program is entitled, "Defining New Paradigms in Implant Dentistry: Interdisciplinary Concepts for Success."

Perhaps the letter to delegates best describes the mission of this congress:

Dear Colleagues:

The future of implant dentistry is constantly evolving through the efforts of visionaries who continue to push the boundaries of science. The Vancouver World Congress has been designed to educate, entertain and energize through thought-provoking presentations delivered by world-class speakers representing many disciplines and many countries. The program has been divided into four distinct sections; Esthetic Paradigms, Prosthetic Paradigms, Occlusion Paradigms and Surgical Paradigms. The interdisciplinary nature of implant dentistry will be explored, examined and presented to enlighten attendees about current concepts of successful reconstruction. This exciting program has been designed for clinicians of all levels. From the novice to the expert, the surgeon to the restorative dentist, the information will be important, timely and relevant regardless of your experience. The World Congress also combines the ICOI, its IPS Implant Prosthodontic Section and its Asia-Pacific Section while providing a wonderful opportunity to bring the entire staff to the ADIA Auxiliary Program.

We welcome the opportunity to provide a first-class educational experience for all attendees. Additionally, it would not be possible to extend such hospitality without the loyal support of our sponsors who always make our meetings successful. In the exhibit hall, the Vancouver World Congress will showcase the top companies involved with every aspect of implant dentistry today.

On behalf of the entire program committee,

Drs. Hom-Lay Wang, Scott D. Ganz and Ken Judy

For any information on ICOI's World Congress or hotel registration, visit the Web site at *www.icoi.org*.

STUDY

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sion criteria included heavy smoking, chewing tobacco use, drug abuse and untreated periodontal disease, amongst others.

Study author David Cochran, DDS, PhD, chair of the Department of Periodontics at the University of Texas Health Science Center at San Antonio, and president of the American Academy of Periodontology (AAP), believes this study provides additional support for the use of dental implants to replace missing teeth. "As a periodontist, I am committed to saving my patients' natural dentition whenever possible. However, the results of this study help further indicate a dental implant is an effective and dependable tooth replacement option."

NOTE: *A copy of the JOP article "A Prospective Multi-Center 5-Year Radiographic Evaluation of Crestal Bone Levels Over Time in 596 Dental Implants Placed in 192 Patients" is available to the public. Non-AAP members can view a study abstract online and the full text of the study may be accessed online for $20 at* http://www.joponline.org/.

(Source: American Academy of Periodontology)

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IT Corrections

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- Viability: Greater than 70% cell viability
- Positive osteogenesis: In vitro cell culture assay


Before: exposed implant


Osteocel bone graft in place prior to mesh fixation


4 months: After mesh removal

Ridge Augmentation clinical case.

[1] Histologic Evaluation of a Stem Cell Based Sinus Augmentation Procedure: A Case Series. – McAllister, Haghighat, Gonshor. – Journal of Perio., April 2009

Dentistry meets its 'cloud computing' match in DentalCollab by Modulus Media

TORONTO, CANADA, JUNE 8 — Modulus Media, a Toronto-based technology development and marketing company, announced the June 26 launch of DentalCollab — a Web-based software available at *www.DentalCollab.com* — which finally unites a centralized, treatment management system with an online social networking system to create the ideal "Treatment Workspace" for the field of dentistry.

For those new to this terminology, the "cloud" in cloud computing is a metaphor for the Internet. As an expression, cloud computing entails offering Web-based software services via the Internet where the data and software are stored on servers managed by the service provider. Thus, cloud computing users do not need to spend untold dollars on hardware, software, upgrades or ancillary support services, but need only to pay for the services they use.

Some of the more trusted and familiar cloud computing services are online banking, e-mail accounts such as Gmail™ or Yahoo! Mail®, social portals such as Facebook and MySpace and Internet-based photo albums on sites such as Webshots or Flikr®.

Similarly, DentalCollab is a cloud computing service that allows the dental community to not only facilitate all aspects of treatment management, but also to collaborate with specialists, consult with patients, coordinate with referrals, mentor or be mentored by peers, and share cases with labs and suppliers.

To get started, sign up at the home page at www.DentalCollab.com.

Through its creation of a shared Treatment Workspace, DentalCollab allows practitioners completely secure patient information management and includes seamless treatment planning, while also facilitating networking with experts anywhere on the planet who have a computer with Internet access.

The Treatment Workspace is an easily navigated mini-Web page where all those involved in a patient's care can coordinate their efforts as well as share and manage vital information. Additionally, the practice can schedule appointments, follow-ups and reminders, consult with patients and manage multiple schedules for even the busiest practice.

"Our comprehensive software allows you to easily interface many of your other programs such as charting systems, digital X-rays and patient-financing services, thus consolidating your information," said DentalCollab founder Shane Powell.

DentalCollab uses the same hardware and software security provisions that online banking providers use — end-to-end encrypted data infrastructure; back-ups/data redundancy; 24/7 system monitoring; permissions/roles-based user management; and 256-bit bank-grade security certificates with a $100,000 warranty.

Finally, dentists have a place to do everything they need, and want, to provide the utmost in treatment planning and meet the modern needs of their techno-savvy patients by going beyond the traditional method of contact via telephone and snail mail.

Using DentalCollab means dentists can avoid costly software upgrades, hardware upkeep and the time wasted seeking out technical support or repairs. "The DentalCollab software functions like a basic Web page, so it feels as if it is running on your own computer. This translates into a very short and fast learning curve," Powell explained.

For more information, please visit *www.DentalCollab.com* or e-mail sales@dentalcollab.com.

(Source: Modulus Media)

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July 17 - RTG Lab - Rochester, NY
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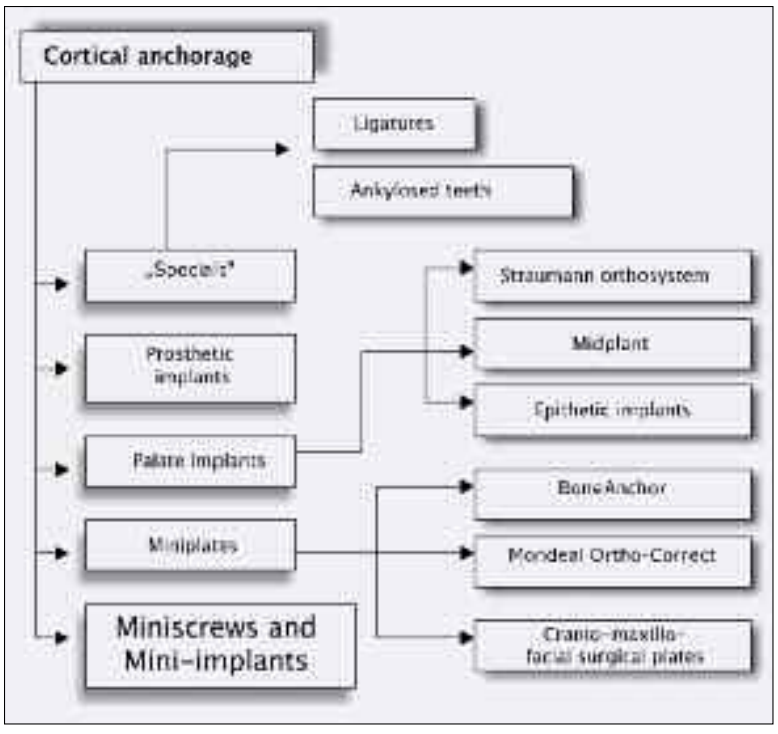

Fig. 2: Overview of the range of cortical anchorage options.

Figs. 3a, b: Clinical example of two typical miniscrew treatment applications: a): gap closure, b): straightening of tooth No. 7.

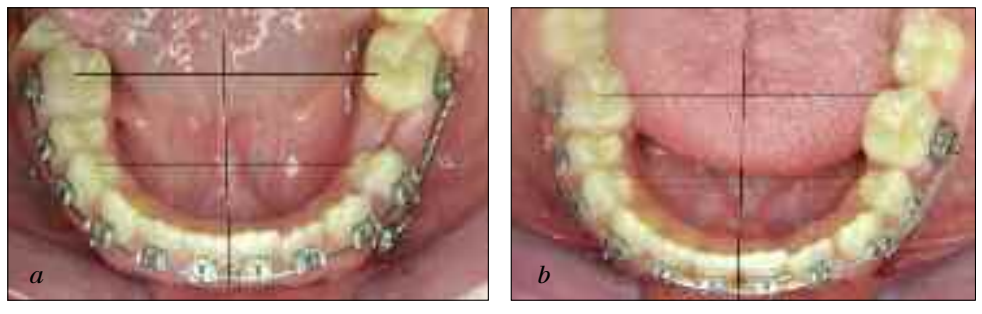

Fig. 4a, b: One-sided gap closure in the left lower jaw. Miniscrews prevented the expected reactive side effect of subsequent shifting of the middle line.

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With this series, the authors intend to encourage those practitioners who are hesitant to use miniscrews to use them routinely, by providing a compendium of experiences and new findings in this field.

Basis and history of anchorage: the selection of screws

Anchorage in general

Moving a body requires anchorage in the form of a counter support. The force required for the movement acts on both body and abutment. In his Third Law (1687), Newton specified that every action has an equal and opposite reaction. In dentofacial orthopaedics, this means that the force acts on all teeth involved in the case of the dental support of tooth movement. Thus, both bodies ultimately move. The extent of movement and countermovement does, however, depend on the anchorage strength of the individual teeth, i.e., on the number and length of the roots, the root surface and the structure of the surrounding bone.

Anchorage quality can be divided into three categories:

1. minimum anchorage;
2. medium anchorage; and
3. maximum anchorage.

These three categories can be described using the example of a conventional canine retraction after removal of a first premolar (Figs. 1a–c).

In the case of minimal anchorage, the support is provided by the individual teeth. Figure 1a shows that a single premolar is not sufficient as an abutment to distalise a canine. The premolar is clearly mesialised in reaction to the application of force.

Figure 1b shows how two, equally strong, anchorage segments are formed. Action and reaction are comparable in this case; the result is reciprocal tooth movement. In the case of maximum anchorage (Fig. 1c), the posterior group of teeth is secured and held stationary by using a miniscrew.

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Figs. 5a–h: Eight examples of the more than 700 forms of miniscrews currently available: 5a) OrthoEasy (FORESTADENT), 5b) Aarhus Mini Implant (Medicon), 5c) AbsoAnchor (Dentos), 5d) Dual-Top (Jeil Medical), 5e) LOMAS (Mondeal), 5f) Osas (Dewimed), 5g) Spider Screw (HDC) and 5h) tomas-pin SD (DENTAURUM).

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The canine can be retracted by the complete force vector, as the reactive force is completely absorbed by the anchorage block formed.

Apart from anchorage quality, the basis, i.e., the type of anchorage location, plays a role:

1. *dental or desmodontal support:*
   - use of additional intra-oral devices (nance, palatinal arch, lingual arch, lip bumper);
   - modification of fixed appliance (buccal root torque, blocking); and
   - incorporation of the teeth of the opposite jaw (Class II or III elastic bands).
2. *extra-oral support:*
   - headgear; and
   - face mask.
3. *enossal support:*
   - implants, miniscrews, etc.

This article only deals with anchorage in bony structures. The terms *skeletal or cortical anchorage* are used interchangeably in this case.

History and overview of skeletal anchorage

Bony anchorage has its roots in Gainsforth's unsuccessful attempt to insert screws into the jawbone as load anchors in 1945. Many later experiments were unsuccessful and the method had become obsolete by the late 1970s. From 1980 onward, various research groups (such as Creekmore, Roberts and Turley[2–7]) took up the subject once more. Creekmore published the first clinically successful patient treatment case.

There are now numerous options for cortical anchorage (Fig. 2), including (artificial or pathologically) ankylosed teeth on the basis of miniplates normally used in cranio-maxillofacial surgery and the use of prosthetic implants. Wehrbein and Glatzmaier were the first to present an implant system specifically designed for orthodontics (Orthosystem, Straumann[8–10]). These orthodontic jaw implants, which also included Midplant (HDC), are mainly inserted into the palate. This method has been found to be both safe and successful.

In recent years, the requirements for cortical anchorage techniques have been defined in the literature. However, upon closer inspection, only orthodontic mini-implants met these requirements favourably, in terms of:

- biocompatibility;
- small size;
- simplicity of insertion and use;
- primary stability;

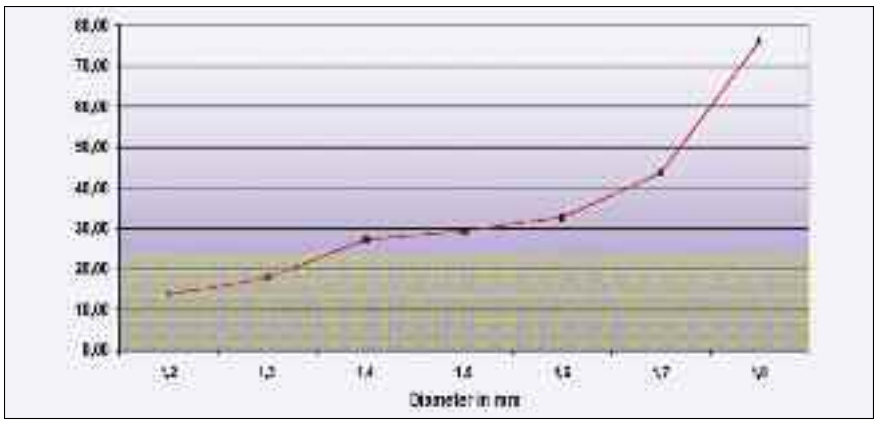


Fig. 6: The stress resistance (fracture level in Ncm) depends on the diameter of the miniscrew (according to Kyung, modification by the authors).

- immediate load capacity;
- adequate resistance against orthodontic forces;
- usability with standard appliances;
- independence from patient cooperation;
- clinically superior results in comparison with standard alternatives;
- ease of removal; and
- cost-effectiveness.

Mini-implants

Any form of skeletal anchorage, including miniscrews, is by definition an implant: "An implant is an artificial material implanted into the body, which is to remain there either permanently or for an extended period."

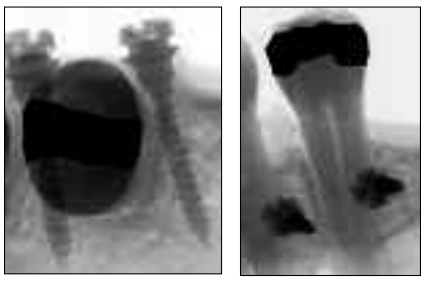
More than 30 different terms for orthodontic screws are used in the international literature. The most common of these are mini-implant and miniscrew, while the terms minipin or pin are preferred when speaking to patients. At present, there are more than 45 manu-facturers of miniscrew systems (Fig. 5). The number of screws per system ranges from two to 154 types. In order to assist practitioners in selecting such devices according to their practice's needs, the most important decision-making criteria for choosing implant systems are discussed below.

Material

All miniscrews are made from pure titanium or from an alloy of titanium with aluminium or vanadium. The biocompatibility of such materials, the metal surface of which is in direct contact with the bone, has been firmly established.[11–14]

Osseo-integration

Brånemark was the first to define the concept of osseo-integration, which he described as "a direct functional and structural link between living bone tissue and the surface of a force-absorbing implant."[15–17] Several authors, such as Costa and Maino, view anchoring a miniscrew not as osseo-integration, but as a skeletal resistance block.[18,19] In the opinion of Cope and Bumann, miniscrews are anchored by mechanical stabilisation and not by osseo-integration.[20,21]



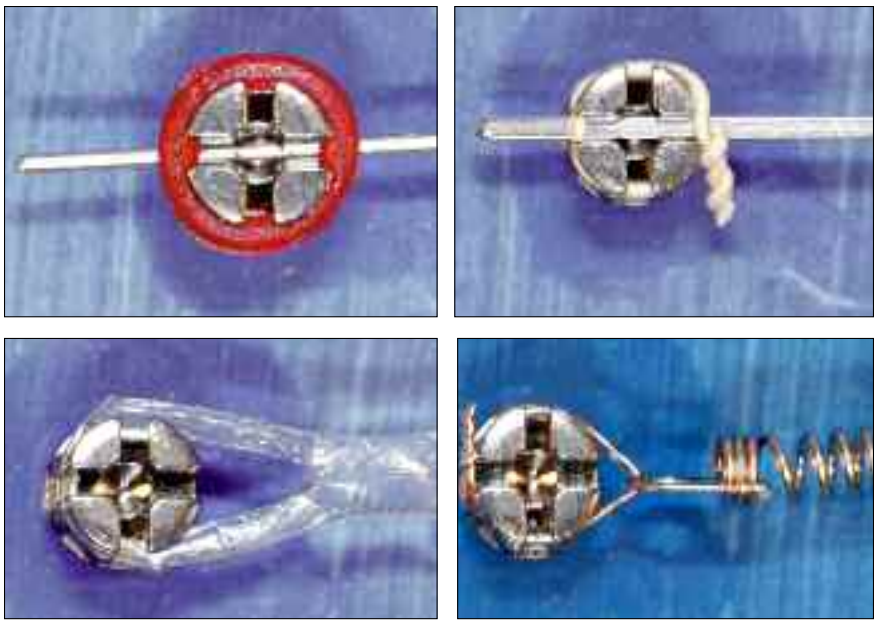
Figs. 7: Interradicular X-ray image showing spatial ratios.

Diameter of the miniscrew

The diameter of the miniscrews on the market varies between 1.2 and 2.3 mm. Diameter specifications of a screw normally refer to its outer diameter, i.e., the size of the shaft, including the thread.

For secure and primarily mechanical anchorage, a certain amount of bone is required around the screw. To date there have been no studies on the amount of bone actually required; the information available suggests 0.5 to 2 mm. At an interradicular level, the amount of space available prescribes the maximum diameter of the screw.

Poggio et al.[22], Schnelle et al.[23], and Costa et al.[24–25] provide some suggestions as to the vertical space required, i.e., the space between the enamel/cement interface and the mucogingival line. These investigations clearly indicate that the diameter of a miniscrew should not exceed 1.6 mm. It should be noted that the stability of a miniscrew in the bone depends on its diameter and not on its length.[26–27]



Figs. 8a–d: For practical reasons, it is advisable to use systems that offer only one, universally applicable head variant. This single head should allow for the attachment of all types of coupling elements (threads, elastic chains, round wires, square wires).

Length of the miniscrew

The length of the miniscrews on the market varies between 5 and 14 mm. Length specifications of a miniscrew usually refer to the shaft, i.e., the threaded section.

Like the diameter, the length of the screw selected depends on the amount of bone available. Depending on the region, the total thickness of the bone is between 4 and 16 mm.[28] The length of a screw is of secondary importance to the diameter when it comes to secure anchorage, as mentioned above. Various studies have shown it is the thickness of the cortical section that plays a more important role.[29–31] As far as the distribution of force over the body of the screw is

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