

# IMPLANT TRIBUNE

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## Inside this issue

### Run another practice?



What would you say if someone asked you to run two dental practices? Guess what? You already do! This article explains why implant dentistry is essentially an entirely separate practice within your practice.

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### Osteogenics event



Soak up the sun, the sights and new skills at Osteogenics Biomedical's first ever Global Bone Grafting Symposium in Scottsdale, Ariz.

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## AO in San Diego next month

2009 annual meeting to serve as testing ground for new treatments

The Academy of Osseointegration's 2009 Annual Meeting will offer attendees an intensive three-day scientific program that taps the expertise of renowned international speakers and serves as a testing ground for a range of new implant therapy technologies.

It will take place Thursday, Feb. 26 through Saturday, Feb. 28, at the San Diego Convention Center.

The meeting's theme, "A New Wave in Implant Therapy," reflects the program committee's goal of presenting a world-class program that offers new evidence for contemporary treatment, Program Chair-

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Picturesque San Diego is the site of the Academy of Osseointegration's February meeting.

## The Ankylos-SynCone Overdenture System: the biology, diagnosis and treatment

By David P. DiGiallorenzo, DMD

The SynCone Over Denture System is one restorative implant-supported removable option within the Ankylos Dental Implant System. The SynCone Over Denture System refers to the unique abutment-retainer design (Figs. 1, 1a).

SynCone has been developed for mandibular dentures with acceptable esthetics, phonetics and vertical dimension to be relined immediately and loaded at implant placement.<sup>1,2,18-21</sup>



Fig. 1: Syncone abutments.

However, a delayed approach can be utilized if needed and SynCone can be utilized on the maxillary arch as well.

The protocol utilizes four implants inserted between the men-

tal foreman. The technique is cost-effective and can be completed in a single visit. This is extremely advan-

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Fig. 1a: SynCone retainers and abutments.



Fig. 2: Locators attachments.



Fig. 3: Horseshoes Flangeless Ovate Pontic Locator retained.

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tageous for the baby boomer and elderly population, where immediacy is important.

The SynCone system relies on a unique stock pre-machined titanium abutment, which comes in either a 4- or 6-degree taper. The abutments come in a 15-degree angle correction if needed and can be rotated 360 degrees for precise alignment. The corresponding gold retainers come in either a 4- or 6-degree matching taper (Fig. 1a). The unique fit of the gold retainers on the titanium abutments ensures an unimpeded fit. A settling phenomenon improves the retention as the patient functions over time.

Patient selection should include healthy patients with adequate bone quality and quantity, healthy tissues and a stable existing denture and therapeutic occlusion.

Preoperative assessments must include bone quality, quantity, occlusion and keratinized tissue location on the residual ridge crest. If the existing denture is going to be used for the immediate chairside relines, then there must be enough room for the abutment and retainer height of 5 mm, otherwise a new denture must be fabricated. If this is the case, then a delayed approach is prudent. Another option, when there is limited space within the denture, would be to use a locator attachment on the Ankylos implant, which will require only 3.14 mm of height. This becomes important when utilizing a maxillary flangeless ovate pontic design horseshoe denture (Figs. 2, 3).

If conventional radiography is used, the existing denture or a duplicate denture can be used as a surgical guide. A crestal incision will be indicated. Splitting the mucosa on the ridge crest may be indicated to create a broader zone of keratinized tissue on the facial or lingual.

Moreover, consideration should be given to allowing the ridge to granulate in by secondary intention to create a broader zone of keratinized tissue when there is lack of peri-implant keratinized tissue. Without a CAT scan, surgical visualization and identification of the mental foramen is crucial at surgery through full thickness blunt dissection (Fig. 4). This will reduce any chance of paresthesia. Implant placement should begin 5 mm anterior to the neurovascular bundle and proceed forward from this implant (Fig. 5). Early cadaver and CT scanning studies have indicated an anterior loop of the neurovascular bundle in a small percentage of the population.<sup>22</sup>

CT scanning technology such as SimPlant (Materialise Dental) is the preferred option for treatment planning. Here you have a choice of either a tissue-supported surgical guide or bone-supported surgi-

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guide. With this software, virtual placement of the implants and development of the surgi-guide will ensure a precise understanding of implant angulation, available bone, regenerative needs and abutment selection (Fig. 6). When diagnosed, incision-less techniques can be utilized. Because alignment must be within 5 degrees with the SynCone technique, a surgi-guide will ensure success (Fig. 7).

Preoperative medications include amoxicillin 500 mg one day prior and then every six hours and Motrin 800 mg beginning the day of procedure and additionally as needed. Finally, Peridex rinses three times daily until wound closure or complete healing. A Medrol Dose Pack can be considered as well.

**Case 1**

This edentulous 60-year-old female presented with a chief complaint: "I cannot eat; my lower denture moves during function" (Fig. 7a). After bilateral mandibular blocks and localized infiltration, a crestal incision is extended on the edentulous ridge. The residual alveolar ridge is leveled utilizing piezosurgery to create a broad flat ridge to begin the initial osteotomies (Figs. 7b, 7c).



Fig. 4: Cadaver view of mental foremen.



Fig. 5: Place first implant 5 mm anterior to mental foremen.



Fig. 6: SimPlant software.



Fig. 7: SimPlant Surgi-guide Bone Supported.

The optimal configuration is four implants placed from mental foreman to foremen (Fig. 8). Four 3.5 mm diameter by 11 mm high are a minimum requirement for the SynCone technique. If 14 mm implants are possible, this is ideal, as most of the early fixation is mechanical in nature. A longer and/or wider

implant will provide more primary stability reducing any chance of excessive micro-movement at the bone implant interface as secondary biologic fixation occurs.

The unique surgical protocol is to place the Ankylos implant 1 to 2 mm below the crest of bone<sup>1,2</sup> (Fig. 9). The unique sub-crestal positioning

is possible as a result of horizontal and vertical room created by the medialized implant abutment connection. This offset creates the necessary room for the soft tissue to reattach. Thus, there is a supra-cre-

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stal biologic width, without the accommodative bone loss seen in many conventional implant designs<sup>8-17,19</sup> (Fig. 10, 10a). In addition, the close tolerance of the abutment implant connection creates an invisible micro gap<sup>1-19</sup> (Fig. 10b).

Clinically we have an opportunity to optimize the surgical requirements (primary stability, sub-crestal placement) and utilize any abutment anywhere as the negative cervical design is the same for all abutments (Fig. 11). The clinical result of this 20-year-old passive biologic design is crestal bone maintenance. If we preserve bone, then we understand that soft tissue stability will follow without long-term unwanted soft tissue changes.

The simple surgical technique for a 3.5 mm implant includes the 1.8 mm twist, 2.8 twist, conical reamer and tap-in type 1 and 2 bone. Placement of the first implant is suggested 5 mm anterior to the identified mental foramen bilaterally (Fig. 11a). Then the anterior two implants should be placed with even distribution (Fig. 11b). The SynCone abutment is placed and then long paralleling pins are placed on the abutments. These pins aid in keeping the implant within five degrees

of each other, a prerequisite for SynCone success (Fig. 12).

The Ankylos implant has a pre-mounted cover screw below the fixture mount. After removal of the fixture mount, the cover screw is removed with the cover screw removal tool. This requires a force of 10 ncm. If the implant spins out of the osteotomy, then we know 10 ncm of primary stability has not been achieved. It is prudent to reseat the implant and utilize a delayed protocol. But a recommended primary stability of 24 ncm is the minimum I use to provide immediate denture loading.

If an incision-less technique is not possible, then consider using a durable suture material such as silk, gortex or PGA, avoiding any short-term resorbables, such as gut. The author uses a surgical adhesive as well, such as periacyl, only on the tissue (Fig. 13).

Place the SynCone abutments into the implants with a .01 driver and finger pressure. My recommendation is to begin with four 6-degree abutments. Placing all 4-degree abutment and retainers is extremely retentive and may be difficult to remove. So placing all 6-degree abutments is prudent.

There is no need to torque the abutments with a driver, as the design and precision of the morse



Fig. 7a: Initial presentation.



Fig. 7b: Ridge at exposure.



Fig. 7c: Ridge after alveoplasty with piezosurgery.



Fig. 8: SynCone.



Fig. 9: Ankylos position below crest of bone.

Fig. 10: Histology of supracrestal fiber attachment.

Fig. 10a: Bone maintenance without cupping.

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Fig. 10b: Morse taper invisible micro-gap.



Fig. 11: Ankylos cervical abutment design.



Fig. 11b: Implants with SynCone abutments.



Fig. 11a: Begin first implants 5 mm anterior to mental foreman bilaterally.



Fig. 12: Parallel pins.

taper internal connection does not require any more than 15 ncm, which can be achieved with a handheld driver. Placement of the SynCone rubber spacers onto the abutments protects the surgical wound during reline procedures. Place the SynCone gold retainers with finger pressure onto the abutments (Fig. 14). Relieve the entire denture at least 2 mm and be sure to create enough room over each retainer. Reduce any excessive flanges areas on the denture or undercut areas that will only provide too much retention (Fig. 15).

Perforation of the lingual area is recommended or at least a small vent to allow excess hard relines to escape. A cold cure hard reline material is mixed and placed into the denture. Seat the denture into the mouth and have the patient bite into the denture with gentle force until the material is completely set. Remove the denture and trim up any flash, continuing to reduce any unnecessary excessive flange area. Adjust the occlusion, being sure to create a balanced group function occlusion (Fig. 16).

Instruct the patient to leave the denture in for two weeks. This will provide bilateral cross arch stabilization, splinting the implants together, limiting micro-movement at the bone implant interface. The denture is a combination of tissue- and implant-supported (Figs. 16a, 16b).

Rinsing vigorously three times a day and utilizing a Waterpik® works well to keep any food debris from accumulating. A soft diet is recommended. Continue to see the patient biweekly adjusting the denture as needed.

**Case 2**

SynCone can be utilized in the maxillary arch as well. This patient presented indicating: “I would like to be able to chew without my teeth falling out” (Fig. 16c). A recommended protocol of six implants is

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Fig. 13: Closure.



Fig. 14: Retainers and rubber spaces.

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ideal to provide the necessary stability. However, the author has utilized four and five implants, which provided ample stability.

SimPlant software was utilized to determine implant angulation, implant length, bone quality, bone quantity, osseous regenerative needs and volume and abutment selection (Fig. 17). From this preliminary data, a bone-supported surgi-guide was fabricated from the stereolithic model (Fig. 18). If there is sufficient bone volume, a tissue-supported guide can be fabricated for an incision-less approach.

Five implants were placed utilizing the surgi-guide from SimPlant and guided bone regeneration was completed at that time utilizing allograft, autogenous and PRGF (PRGF protocol from BTI International) and an Ossix membrane (Orapharma

(Fig. 19–21).

A soft reliner was prepared on the abutments utilizing the old partial on the day of surgery (Fig. 22).

After a four-month healing period, SynCone 15-degree angulated abutments were placed (Fig. 23). Fabrication of a cast vitalium horseshoe maxillary prosthesis was completed with five gold SynCone retainers in place (Fig. 24). The recommendation is 6-degree abutments on the maxillary arch to begin with. This will provide ample retention without being too retentive and difficult for the patient to remove (Fig. 25).

This Ankylos SynCone Overdenture Technique is a particularly simple and efficient means to restore immediate form and function in a debilitated denture wearer. Diagnosis remains the key to success.

References available upon request at [s.rendon@dtamerica.com](mailto:s.rendon@dtamerica.com).

II About the author

Dr. David DiGiallorenzo has a unique multi-disciplinary approach to dental therapy. His training at the University of Pennsylvania in the early 1990s in the Department of Periodontics and Periodontal Prosthesis included multifaceted training in prosthodontics, orthodontics, periodontics and advanced oral reconstructive techniques including oral implantology. He is currently in private practice in the suburban Philadelphia area limited to periodontics, dental implantology, advanced reconstructive case management and TMJ. Having been in private practice for 15 years, DiGiallorenzo works with more than 60 referring doctors in Pennsylvania. He teaches at the University of Pennsylvania, Department of Periodontics and lectures both nationally and internationally. He is active with the American Academy of Periodontology, the American Academy of Osseointegration and the International Congress of Oral



Implantology. He can be reached at [dmdseminars@aol.com](mailto:dmdseminars@aol.com) and [www.perioimplants.us](http://www.perioimplants.us).



Fig. 15: Relined denture SynCone.



Fig. 16: Balanced occlusion.



Fig. 16a: Final SynCone abutments two years later.



Fig. 16b: Final X-rays.

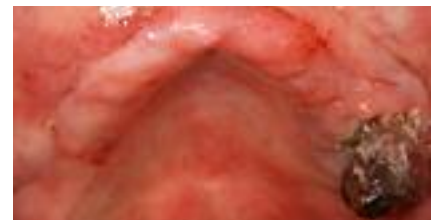


Fig. 16c: Initial presentation maxilla.



Fig. 17: SimPlant assessment.



Fig. 18: Bone-supported surgi-guide.



Fig. 19: Five Ankylos implants.



Fig. 20: Facial fenestrations as diagnosed from SimPlant.



Fig. 21: Graft and Ossix membrane.



Fig. 22: Closure and soft reliner.



Fig. 23: Final 15-degree SynCone abutment.



Fig. 24: Final horseshoe vitalium prosthetic design.



Fig. 25: Final appearance.