COMPUTED TOMOGRAPHY-GUIDED SURGERY AND ALL ON FOUR

To the Editor:—We read with interest the recent report by Jensen et al in the July 2011 issue of the Journal titled, "Buccal to Lingual Transalveolar Implant Placement for All on Four Immediate Function in Posterior Mandible: Report of 10 Cases." We applaud the recent reports by Jensen et al[1] related to the "all on 4" and "all on 4 shelf" techniques for implant placement. We have used these techniques and technologies very successfully in our practices.

In this most recent report, we do question the following statements: "The question arises: why not use a guided surgery approach for all on 4 treatment to help solve the problem (implant angulations)? This can sometimes be performed in an edentulous setting. However, when there is significant bone reduction required to create the all on 4 shelf and provide inter-restorative space, the use of computer-guided systems becomes nearly impossible. Many all on 4 patients are dentate, making guided surgery difficult. Also, computers do not sense the insertion torque or the primary fixation requirement for immediate function, which relies on the tactile sense of the surgeon."

Having performed hundreds of fully computed tomography (CT)-guided implant cases, both edentulous and partially edentulous, including all on 4 cases with and without bone removal, using almost all the current CT-guided surgery technologies and instrumentation sets on the market, we believe very strongly that the all on 4 technique, with or without bone reduction, and CT-guided implant surgery are 2 technologies made for each other. CT-guided surgery has been shown to have increased accuracy and precision in implant placement[2,3] and in identifying anatomic variations before implant placement.[4,5] The accurate identification of vital structures such as the inferior alveolar nerve, mental foramen, maxillary sinuses, buccal–lingual width, and mesial–distal spacing are just a few of the anatomic landmarks and measurements that are crucial pieces of information for the surgeon before placing dental implants. This information is critical in the placement of the 30° angled implants used in the all on 4 technique and, we believe, even more important for implant accuracy using the technique described in their report. Additionally, the NobelClinician software (Nobelbiocare, Geneva, Switzerland) has the ability to virtually place an implant at exactly the correct 30° angulation.

Regarding the statement in their report that discusses the problem regarding bone reduction for the all on 4 shelf technique, many CT-guided surgery systems (eg, Simplant, Materialise, Leuven, Belgium) can currently fabricate bone reduction guides that guide the surgeon to reduce the exact amount of bone planned in the CT-guided surgical plan. These appliances can easily be used in dentate all on 4 cases, followed by a guide to place the implant into the ideal planned position.

The authors state that CT-guided surgery is much more difficult in a dentate patient. Yes, CT-guided surgery can be more difficult, from an interocclusal space standpoint, in a dentate patient. However, as we have stated many times, CT-guided surgery is primarily a partially edentulous technology. Most of our implant patients are partially edentulous. The technology is ideal for positioning implants accurately and 3 dimensionally, with teeth in the treatment areas. The technologies are ideal for implant placement in fully edentulous patients, with or without bone reduction or tooth extractions. Implants can be placed flaplessly, with or without extractions, and immediately loaded with provisional restorations that are made before implant placement surgery.

Regarding the statement that computers do not have the tactile sense of the surgeon to determine insertion torque and primary stability when inserting an implant, obviously that is true. However, when performing CT-guided surgery, the insertion torque of an implant and primary stability of the inserted implant can be checked once the guide has been removed from the patient's mouth after implant insertion. Additionally, if using the NobelGuide for NobelActive technology for placing NobelActive implants, the insertion torque can be monitored closely when placing the implant to the correct depth.

GARY ORENTLICHER, DMD
Scarsdale, NY

MARCUS ABBOUD, DMD
Stony Brook, NY

References

1. Jensen OT, Adams MW, Cottam JR, et al: The all on four shelf: mandible. J Oral Maxillofac Surg 69:175, 2011
2. van Steenberghe D, Glauser R, Blombäck U, et al: A computed tomographic scan derived customized surgical template and fixed prosthesis for flapless surgery and immediate loading of implants in fully edentulous maxillae. A prospective multicenter study. Clin Impl Dent Rel Res 7(Suppl. 1):S111, 2005
3. Sarment DP, Sukovic P, Clinthorne N: Accuracy of implant placement with a stereolithiographic surgical guide. Int J Oral Maxillofac Implants 18:571, 2003
4. Orentlicher G, Goldsmith D, Horowitz A: Applications of 3-dimensional virtual computerized tomography technology in oral and maxillofacial surgery: Current therapy. J Oral Maxillofac Surg 68:1933, 2010
5. Sonick M, Abrahams J, Faiella R: A comparison of the accuracy of periapical, panoramic, and computerized tomographic radiographs in locating the mandibular canal. Int J Oral Maxillofac Implants 9:455, 1994

doi:10.1016/j.joms.2011.09.017

THE SPHENOMANDIBULARIS MUSCLE: THE CONTROVERSY CONTINUES

To the Editor:—I read with great interest the article by Benninger and Lee[1] titled "Clinical Implications of Morphology and Nomenclature of Distal Attachment of Temporalis Tendon," published in a recent 2011 issue of the *Journal of Oral and Maxillofacial Surgery*. These authors noted that the description of the "distal attachment of the temporalis muscle" is often "unclear and inconsistent" in published studies and that the "deep portion of the temporalis muscle can be considered as a separate muscle, the sphenomandibularis muscle." Their excellent report brings much needed light to this controversial area; however, they did not reference the seminal work describing the sphenomandibularis muscle in their report.

In 1996, my colleagues and I described a functionally distinct craniomandibular muscle originating from the base of the skull and inserting onto the temporal crest of the mandible, having a unique origin, insertion, and vector force, which we termed the "sphenomandibularis muscle."[2] Benninger and Lee[1] describe a "bifurcation" of the temporalis tendon. However, rather than a bifurcation and in agreement with our observations, Sicher[3] describes an additional temporal tendon, the "deep tendon," inserting on