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implants

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Torsten Oemus
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_Thanks to continous advancing technology, the field of implant dentistry is always growing, changing and evolving. Clinicians need to be vigilant in their efforts to keep up with the new techniques, new products and new technology that could affect how they plan implant treatment.

That's just one reason the publication you are holding right now is so valuable.

As always, in this issue of *implants*, we've assembled a collection of articles from a variety of respected names and companies in dentistry. These expert clinicians are sharing their first-hand knowledge and expertise with you. In this issue, you can read about small-diameter implants, and you can also learn about immediate implant placement and provisionalization. We also have news on implant events and technology.

But that's not all.

Every issue of *implants* magazine also contains a C.E. component. By reading the articles (beginning on Page 6) on "Long-term clinical success in the management of compromised intertooth spaces utilizing small-diamter implants," by Dr. Paul Petrungaro, and "Immediate implantation and provisionalization: Single-tooth restoration in the esthetic zone," by Dr. Susan McMahon and Karrah Petruska, and then taking short online quizzes on the articles at *www.DTStudyClub.com*, you will gain one ADA CERP-certified C.E. credit.

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Finally, if you are interested in becoming a published author, we are always looking for experienced clinicians to write C.E. articles and offer their expertise to our readers. Contact Managing Editor Sierra Rendon at *s.rendon@dental-tribune.com* for more information on submitting an article.

I hope you enjoy this issue of *implants* and that it enhances your daily life in the dental office.

Sincerely,

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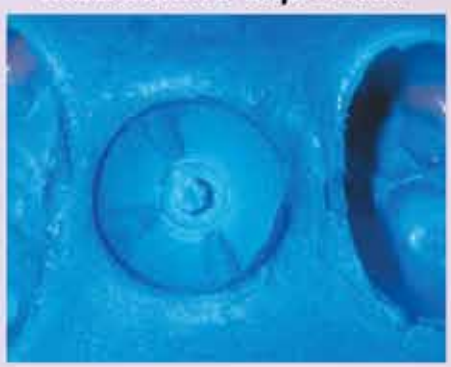

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DENTSPLY IMPLANTS

Long-term clinical success in the management of compromised intertooth spaces utilizing small-diameter implants

Author_Paul S. Petrungaro, DDS, MS

_c.e. credit part I

This article qualifies for C.E. credit. To take the C.E. quiz, log on to *www.dtstudyclub.com*. Click on 'C.E. articles' and search for this edition (Implants C.E. Magazine — 4/2014). If you are not registered with the site, you will be asked to do so before taking the quiz. You may also access the quiz by using the QR code below.

_Management of edentulous sites in the oral cavity with dental implants has been well documented in dental literature during the past 25-plus years[1-3]. Patients seeking tooth replacement for partial or totally edentulous situations have been able to enjoy natural appearing and functioning prostheses that are fixed, stable and, in some cases, so natural it's difficult to ascertain a dental implant restoration from a tooth restoration.

Using dental implants to replace the natural tooth system in the esthetic zone has also seen an increase in restorative treatment plans and, with the advent and perfection of immediate restoration protocols initially reported in the literature[4-7], achieving natural soft-tissue esthetics around dental implants can be predictable and successful. However, certain clinical situations can complicate or negate the procedure altogether.

One of these complications is insufficient intertooth spacing between natural teeth and, most commonly, with congenitally missing lateral incisors following orthodontic treatment[8]. Often as a solution to this, the dentist chooses a removable partial denture or some type of resin-bonded bridge, both of which may not be appealing to younger individuals. In extreme cases, the dentist may elect to proceed with a fixed bridge, which would cause excessive destruction to the natural teeth serving as abutments and, for a young individual, this could be devastating to these teeth during a 40-50 year period, if not sooner.[8]

To properly form an ovate pontic type emergence profile in the soft tissue, which is required for a fixed bridge to have a natural clinical appearance, consideration must be given to the intertooth edentulous space.[9-12] This is also very important when choosing dental implants for natural tooth replacement. Wallace, Misch and Salama, et al,[9-11] stated that for a normal two-piece implant, the implant should be placed at least 1.5 mm from the adjacent teeth.

As a result, using a 3.5 mm diameter implant, the minimum inter-tooth space to support interproximal bone and natural soft-tissue papillary contours should be 6.5 mm, and with a 3.0 mm diameter implant, 6.0 mm for the edentulous space. Often, the intertooth space in these types of cases is smaller than 6.0 mm.

Taking these parameters into account, small-diameter implants (3.0 mm is the smallest from most dental implant manufacturers) should not be used in cases with less than 6.0 mm of intertooth space, to prevent potential tooth root damage, crestal bone loss and unnatural-appearing gingival tissues and papillae.

Small-diameter, or mini, implants were de-


Fig. 1


Fig. 2


Fig. 3


Fig. 4

veloped more than 20 years ago and, initially, the recommended use was to support temporary removable prostheses during the healing phase for advanced bone-grafting procedures and/or conventional implant placement.[12-13]

Their use was later expanded into immediate conversion of full dentures into implant-supported dentures, support for partially edentulous cases and for anchorage of single tooth implant restorations in compromised intertooth spaces.[14-15]

Implants are available from 1.8 mm diameter to 2.8 mm diameter and offer a fixed permanent tooth replacement option for patients who otherwise would not be able to have implants placed and restored. Their ease of use and atraumatic placement utilizing a flapless approach, with only one coring procedure, as well as simplistic abutment transfer and provisional construction make the use of these implants in the aforementioned sites a must for the dental implant practice.

The following case report will demonstrate the use of the Dentatus ANEW (Dentatus USA, Ltd, New York, N.Y.) implant for the management of the compromised, congenitally missing lateral space in a 17-year-old young woman with a 10-year clinical follow up.

_Case report

A 17-year-old, non-smoking female presented for tooth replacement in the congenitally missing maxillary left lateral incisor site (Fig. 1). The patient had recently completed orthodontic therapy, and the orthodontist and general practitioner had agreed this was the final obtainable result in regard to the remaining intertooth space between the maxillary left central incisor and maxillary left canine (Fig. 2).

The resultant intertooth space was less than 5.0 mm, and conventional two-stage implants with abutment options were ruled out. The patient and her parents ruled out conventional tooth-replacement options and chose the minimally invasive procedure: a small-diameter implant,

Fig. 1_Pretreatment clinical view. (Photos/Provided by Dr. Paul S. Petrungaro)

Fig. 2_Preoperative periapical radiograph.

Fig. 3_Ovate pontic type defect created.

Fig. 4_Dentatus ANEW implant seated minimally invasive protocol.

Fig. 5_Immediate postoperative clinical view.

Fig. 6_Immediate postoperative radiograph.

Fig. 7_Lab-processed, long-term provisional restoration.

Fig. 8_10-year postoperative clinical view.

1.8 mm in diameter, which would allow for natural papillary contours to be developed.

After administration of an appropriate local anesthetic, an ovate pontic contour was created utilizing a football-shaped diamond in the attached, keratinized tissue of the edentulous site (Fig. 3). This scalloped-type tissue contour helps in the creation of the natural-appearing papillary contours.

The small-diameter implant chosen, a 1.8 mm x 14 mm Dentatus ANEW Implant was then placed after a single coring of the site with a 1.4 mm needlepoint CePo to full depth, within the sculpted tissue emergence profile previously created (Fig. 4). Conversion to an esthetic provisional restoration was completed by placing an abutment coping with a delrin retention screw (Dentatus USA, New York, N.Y.).

An ion shell provisional crown was then hollowed out and retrofitted to the abutment coping with flowable composite. The margins of the provisional were corrected and provisional contoured out of the mouth.

The restoration was polished and seated with the set screw from the palatal. The immediate postoperative clinical view is seen in Fig. 5. The immediate postoperative periapical view is seen in Fig. 6.

The patient then went through the three-month healing and observation phase prior to construction of a lab-processed provisional restoration (Fig. 7). One year later, the patient underwent final restoration fabrication at the left lateral incisor site. A 10-year postoperative clinical image can be seen in Fig. 8 and a 10-year postoperative CT scan of the implant in Fig. 9.

Please note the beautiful soft-tissue esthetic result obtained and excellent maintenance of the crestal and lateral contours.

_Conclusion

The management of compromised intertooth spaces presents a challenge for the contemporary dental implant team. These spaces have limits on how they are handled and require implants 3.0 mm wide or less, as was demonstrated in the text of this article. Availability of smaller-diameter implants allows patients who normally would have to proceed with a fixed bridge, or resin-bonded bridge, the luxury of dental implants with no preparation and/or reduction to the adjacent natural dentition.

Proper placement procedures and restorative techniques can lead to very esthetic results, allowing for natural tissue contours and emergence profile formation, reminiscent of the natural tooth._

_Acknowledgement

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_References

1) Branemark P-I, Zarb GA, Albrektson T, eds. Tissue-Integrated Prosthesis: Osseointegration in Clinical Dentistry. Carol Stream, IL: Quintessence Publishing: 1985:11-81
2) Adell R, Lekholm U, Rockler B, *et al.* A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. Int J Oral Surg. 1981; 10(6):387-416.
3) Babbush CA. Dental Implants: The Art and Science. Philadelphia, PA: WB Saunders Co. 2001:201-216.
4) Kan JY, Rungcharassaeng K. Immediate placement and provisionalization of maxillary anterior single implants: A surgical and prosthetic rationale. Pract Periodontics Aesthet Dent. 2000; 12:817-824.
5) SaadounAP.Immediateimplantplacementandtemporization in extraction and healing sites. Compend Contin Educ Dent. 2002; 23:309-323.
6) Petrungaro PS. Immediate implant placement and provisionalization in edentulous, extraction and sinus grafted sites. Compend Contin Educ Dent. 2003; 24:95-113.
7) Petrungaro PS. Immediate restoration of implants utilizing a flapless approach to preserve interdental contours. Pract Proced Aeshtet Dent. 2005; 17:151-158.
8) Misch CE. Treatment options for a congenitally missing lateral incisor. A case report. Dentistry Today. 2004; Vol 23, No.8 pp 92-95.
9) Wallace SS. Significance of the "biologic width" with respect to root form implants. Dent Implantol Update. 1994;5:25-29.
10) Misch CE. Early bone loss etiology and its effect on treatment planning. Dent Today. Jun 1996; 15:44-51.
11) Salama H, Salama M, Garber D, et al. Developing optimal peri-implant papillae within the esthetic zone: guided soft-tissue augmentation. J Esthet Dent. 1996; 8: 12-19.
12) Petrungaro PS. Fixed temporization and bone-augmented ridge stabilization with transitional implants. Pract Periodontics Aesthet Dent. 1997;9(9):1071-1078
13) Froum S, Emtiaz S, Bloom MJ, et al. The use of transitional implant for immediate fixed temporary prosthesis in cases of implant restorations. Pract Periodontics Aesthet Dent. 1998; 10(6):737-746.
14) Petrungaro PS. Management of the Compromised Implant Site with Small-Diameter Implants. Inside Dent. March 2006, 78-80.
15) Petrungaro PS. Management of the Compromised Intertooth Space with Small-Diameter One-Piece Implants in the Esthetic Zone. Funct Esthet & Rest Dent; 1 (2):70-75.

Fig. 9_10-year postoperative CT serial view.

_about the author

Paul S. Petrungaro, DDS, MS, FICD, FACD, DICOI, is internationally recognized for his educational and clinical contributions to modern dentistry. He graduated from Loyola University Dental School in 1986, where he completed an independent study of periodontics at the Welsh National Dental School in Wales, U.K. He completed his residency in periodontics and has a specialty certificate in addition to a master's of science degree in periodontics from Northwestern University Dental School. He is the former coordinator of implantology, Graduate Department of Periodontics, Northwestern University Dental School. Petrungaro has been in the private practice of periodontics and implantology since 1988 and holds a license in both Illinois and Minnesota.

He has given numerous seminars and lectures on advanced periodontal, prosthetic and implant interrelationships, bone regeneration and esthetic tissue formation, the use of transitional implants, the immediate restoration of dental implants and the use of platelet-rich plasma in bone grafting throughout the United States, Europe, Canada, Australia, South America and Israel. In addition, he has written numerous articles on all of the above along with the topics of cosmetic bone grafting and esthetic implant procedures.

A consultant to numerous surgical companies and laboratories, Petrungaro contributes to many new innovations in the aforementioned disciplines of surgical dentistry. He is a fellow of the International & American College of Dentists and a diplomate of the International Congress of Oral Implantologists.