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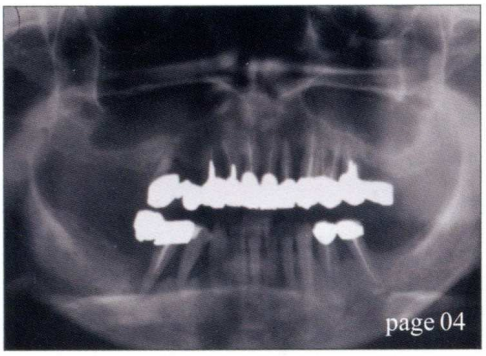
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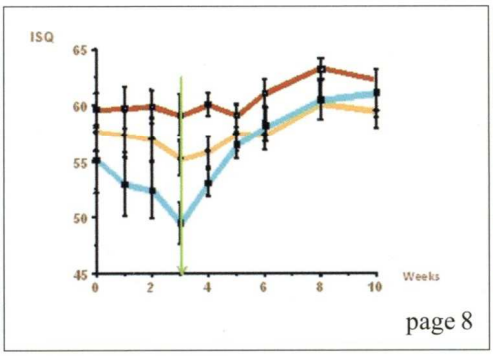

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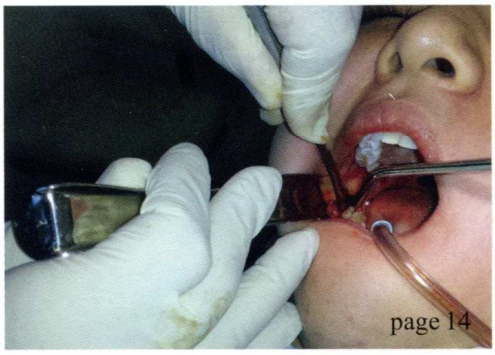
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Cover image provided by Glidewell Laboratories. To learn more about the Hahn Tapered Implant, see page 18.

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Intraoral welding and lingualized (lingual contact) occlusion: A case report

Authors_Luca Dal Carlo, DDS, Franco Rossi, DDS, Marco E. Pasqualini, DDS, Mike Shulman, DDS, Michele Nardone, MD, Tomasz Grotowski, DDS, and Sheldon Winkler, DDS

_c.e. credit part I

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_Intraoral welding was developed by Pierluigi Mondani[1] of Genoa, Italy, in the 1970s to permanently connect submerged implants and abutments to a titanium wire or bar by means of an electric current (Fig. 1). The current is used to permanently fuse the titanium to the abutments in milliseconds, so the heat generated does not cause any pathology or patient discomfort.

If possible, the implants are placed without flaps. The titanium wire or bar is bent and aligned passively to the contour of the labial and lingual surfaces of the implants before applying the electric current to permanently connect titanium implants.

The technique follows a strict surgical and prosthodontic protocol, which includes using a number of implants as close as possible to the number of teeth to be replaced, achieving primary stability by engaging both cortical plates (bicorticalism), immediate splinting of the implants utilizing intraoral welding and immediate insertion of a fixed provisional prosthesis with satisfactory occlusion. The technique provides for immediate loading and does not jeopardize the integration process.[2]

Although intraoral welding has been used successfully in Europe, especially Italy, for many years, it has yet to achieve everyday use in the United States.

Members of the Italian affiliate of the American Academy of Implant Prosthodontics, NuovoGISI, have long and successful experiences with immediate loading of maxillary implants connected together by intraoral welding.[2]

By inserting the prosthesis with adequate retention and stability the same day as the surgery, patient complaints and discomfort can be avoided or substantially reduced. The instantaneous stability that results from the splinting can reduce the risk of failure during the healing period. Intraoral welding can also eliminate errors and distortions caused by unsatisfactory impression making, as the procedure is performed directly in the mouth.

Intraoral welding can fulfill a great need for business and socially active persons, as the surgical and prosthodontic procedures are accomplished on the same day. Patients can leave the dental office with a stable, esthetic and retentive prosthesis.

The flapless technique, first proposed by Tramonte[3], can be performed when the bony crest is wide and an adequate amount of attached gingiva is

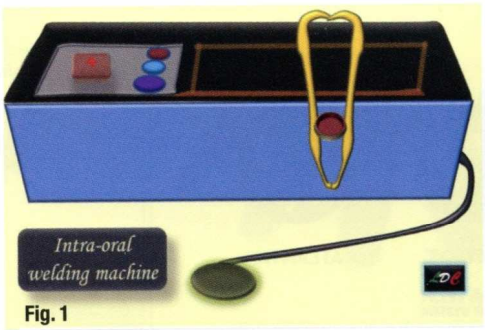

Fig. 1

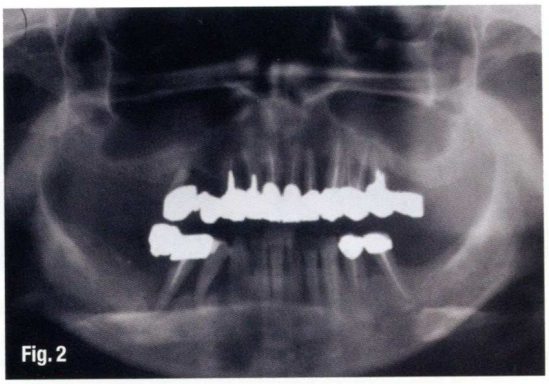
Fig. 2

Fig. 1_Schematic drawing of Mondani intraoral solder unit.

Fig. 2_Preoperative panoramic radiograph of 50-year-old caucasian woman.

(Photos/Provided by Dr. Shulman, *et al*)

Fig. 3

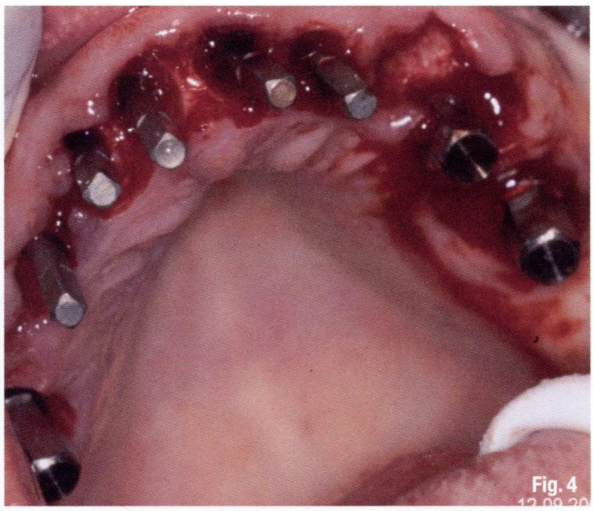
Fig. 4

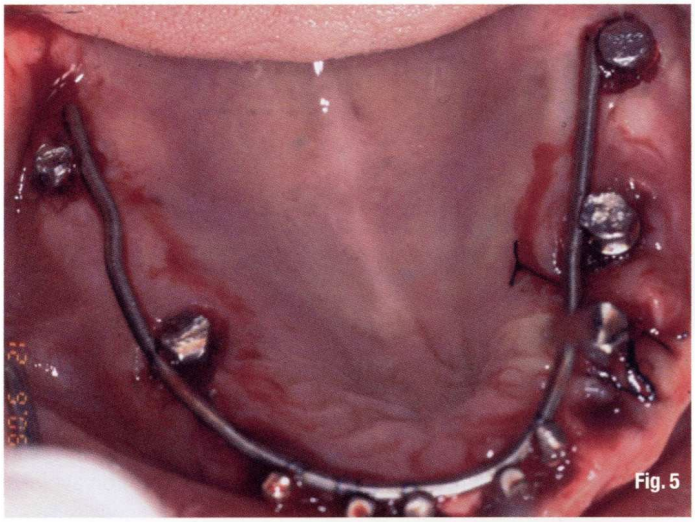
Fig. 5

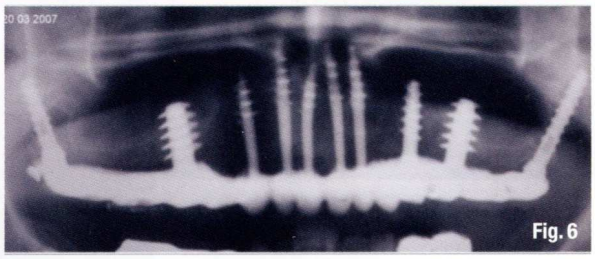
Fig. 6

present. The technique allows for uneventful healing, a reduction of postsurgical inflammation and only moderate inconvenience for the patient, who can eat efficiently the same day.

_Provisional prosthesis and tooth arrangement

During the surgical session, a temporary resin prosthesis is inserted. Occlusal plane height must be correct. A lingualized (lingual contact) scheme of occlusion is recommended. The upper anterior teeth are best arranged without any vertical overlap. The amount of horizontal overlap is determined by the jaw relationship. A vertical overlap for appearance can be used, provided that an adequate horizontal overlap is included to guard against interference within the functional range.[4]

_Lingualized (lingual contact) occlusion

Lingualized (lingual contact) occlusion maintains the esthetic and food penetration advantages of anatomic teeth while maintaining the mechanical freedom of nonanatomic teeth. Among the advantages of a lingualized occlusion are occlusal forces that are centered over the ridge crest in centric occlusion, a masticatory force that is effectively transferred more "lingual" to the ridges during working side excursions, the "mortar and pestle" type of occlusion that minimizes the occlusal contact area providing for more efficient food bolus penetration and the elimination of the precise intercuspation that can complicate the arrangement of anatomic denture teeth.

Lingualized occlusion also prevents cheek biting by holding the buccal mucosa off the food table by eliminating occlusal contacts on the maxillary buccal cusps; minimizes occlusal disharmonies created from errors in jaw relationships, denture processing changes and settling of the denture base; and simplifies setting of denture teeth, balancing the occlusion and any subsequent occlusal adjustment procedures.[5]

_Clinical report

A healthy 50-year-old caucasian woman pre-

Fig. 3_Nonrestorable teeth visible after removal of the patient's prosthesis.

Fig. 4_Eight titanium one-piece implants are inserted.

Fig. 5_Immediate stabilization of the eight implants and two additional implants previously inserted in the posterior regions, by welding each implant to a 1.5 mm supporting titanium bar.

Fig. 6_Panoramic radiograph after 90 days suggests complete integration.

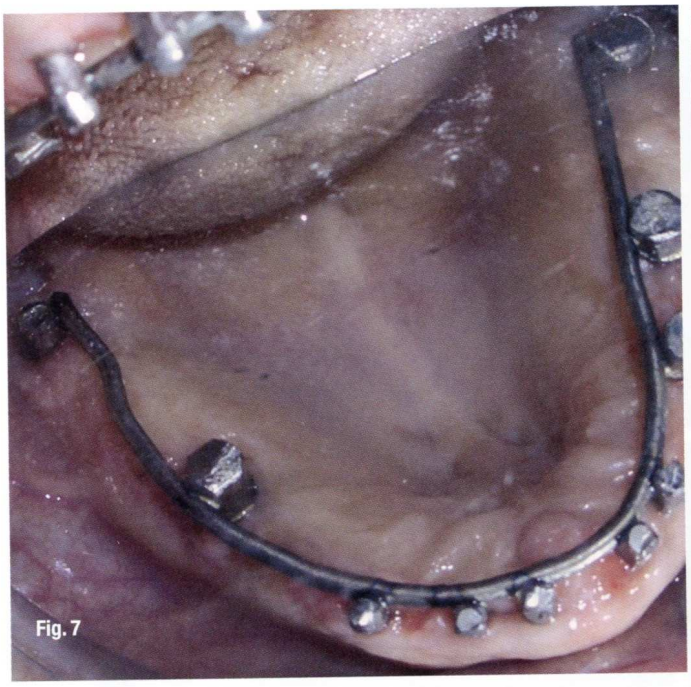
Fig. 7

Fig. 8

Fig. 9

Fig. 7_Healthy gingiva was observed after 90 days.

Fig. 8_Lower implants welded together intraorally.

Fig. 9_Three-tooth mandibular fixed prosthesis.

sented for treatment at the office of one of the co-authors (LDC) with a mobile, painful, 12-tooth semiprecious alloy-ceramic fixed prosthesis (Fig. 2). The prosthesis was removed and all of the remaining abutment teeth were found to be nonrestorable with extraction indicated (Fig. 3). After removal of the retained teeth, eight titanium one-piece implants were inserted in one session (Fig. 4).

Immediate stabilization of the eight implants and two additional implants that were previously inserted in the posterior regions was achieved by welding each implant to a 1.5 mm supporting titanium bar, which previously had been bent to fit passively on the palatal mucosa (Fig. 5).

A provisional resin prosthesis was inserted, which provided an acceptable vertical dimension and lingual contact occlusion. Oral hygiene procedures were demonstrated to the patient and reviewed at all future appointments.

After 90 days, a panoramic radiograph suggested complete integration (Fig. 6) and a healthy mucosa was observed. (Fig. 7). The definitive full-arch gold-ceramic maxillary prosthesis was inserted, which greatly pleased the patient and her family.

In the lower arch, the right first and second bicuspids were extracted and implants placed in the first bicuspid and first molar regions. The implants were welded together intraorally (Fig. 8), followed by the fabrication and cementation of a three-tooth fixed prosthesis (Fig. 9).

A seven-year follow-up radiograph (Fig. 10) shows satisfactory preservation of bone surrounding all of the implants. An intraoral photograph of the definitive prosthesis shows healthy gingival tissue (Fig. 11).

Acknowledgement: The technique utilized in the clinical report follows the Auriga procedure developed by Dr. Luca Dal Carlo._

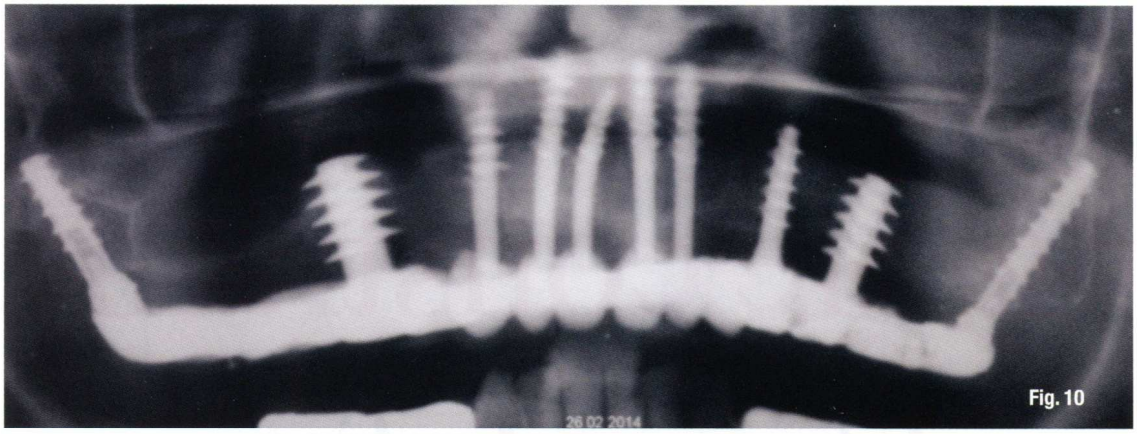

Fig. 10

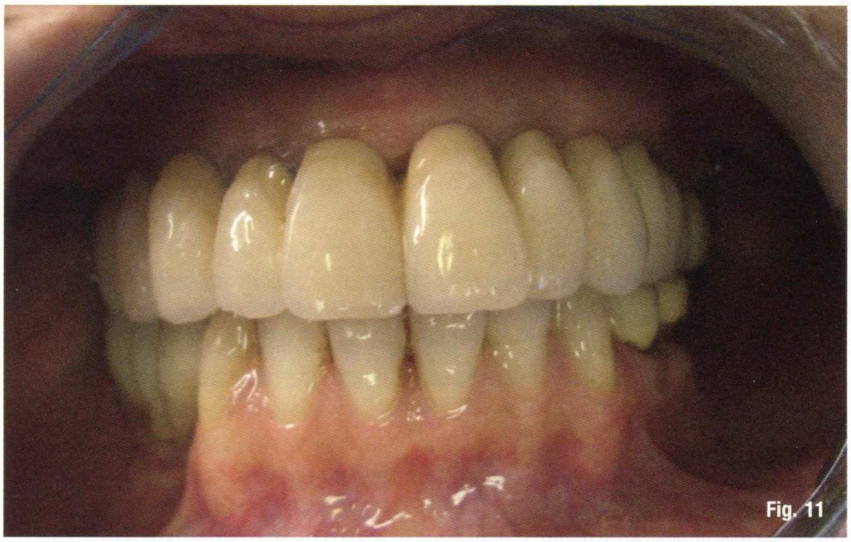

Fig. 11

Fig. 10_Seven-year follow-up radiograph shows satisfactory preservation of bone surrounding all of the implants.

Fig. 11_Intraoral photograph of the definitive prosthesis shows healthy gingiva.

_References

1) Mondani PL, Mondani PM. The Pierliugi Mondani intraoral electric solder. Principles of development and explanation of the solder using syncrystallization. Riv Odontostomatol Implantoprotesi. 1982;4:28-32.
2) Rossi F, Pasqualini ME, Dal Carlo L, Shulman M, Nardone M, Winkler S. Immediate loading of maxillary one-piece screw implants utilizing intraoral welding: A case report. J Oral Implantol (in press).
3) Tramonte, S. A further report on intraosseous implants with improved drive screws. J Oral Implant Transplant Surg. 1965;11:35-37.
4) Winkler S, ed. Essentials of Complete Denture Prosthodontics. 3rd ed. Delhi, India: AITBS Publishers; 2015.
5) Lang BR, Lauciello FR, McGivney GP, Winkler S. Contemporary Complete Denture Occlusion, Revision 4. Amherst, NY: Ivoclar Vivadent, 2012.

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'Although intraoral welding has been used successfully in Europe, especially Italy, for many years, it has yet to achieve everyday use in the United States.'