Clinical Realities

Fixed Provisionalization With Transitional Implants for Partially Edentulous Patients: A Case Report

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The provisional restoration during Stage I and Stage II implant surgery is often a dilemma for the restorative clinician. In the absence of natural abutments, in a distal extension edentulous area, or in an edentulous quadrant where abutments are unrestored, a removable prosthesis is typically fabricated as an interim restoration for the patient. These prostheses are less than favorable due to their lack of stability, interference with soft tissue healing, transmucosal loading, and the inherent difficulty involved in the fabrication of a unilateral edentulous prosthesis. Immediate loading of selected implants for provisionalization or the use of modular transitional implants (MTI) (MP, Dentatus USA, New York, NY) have been reported for full-arch cases. Nevertheless, the risk for partial edentulous cases with straight line temporization puts the implants at high risk for fibrous encapsulation. This case report documents the use of transitional implants with a zigzag placement. Prosthetic components for the modular transitional implants are used in this partially edentulous patient, who refused to wear a removable partial denture.

This is the first case report of the use of transitional implants for a partially edentulous arch without straight-line placement. The transitional implants used are only 1.8 mm in diameter, which allows them to be placed between or next to the permanent implants. The altered buccolingual placement in this case report is possible because of the wide ridge present in the patient's mandible. The transitional implants are made of extruded, commercially pure machined titanium and can be self-tapped into position after the use of one pilot drill. If the implants cannot be reverse torqued easily, they can be cored with a small 2 mm trephine. Either way, they do not interfere with the healing of the adjacent permanent implant.

Case Presentation

A 54-year-old male patient presented for the restoration of edentulous areas in the maxillary right (teeth #2[17] through #5[14]) and mandibular left (teeth #18[37] through #20[35]) quadrants. Following comprehensive clinical and radiographic examination, the patient was treatment planned for implant therapy.

Figure 1A. Preoperative radiograph demonstrates the presence of edentulism in the mandibular region.

Figure 1B. Postoperative radiograph following the placement of modular transitional implants and definitive prosthesis.

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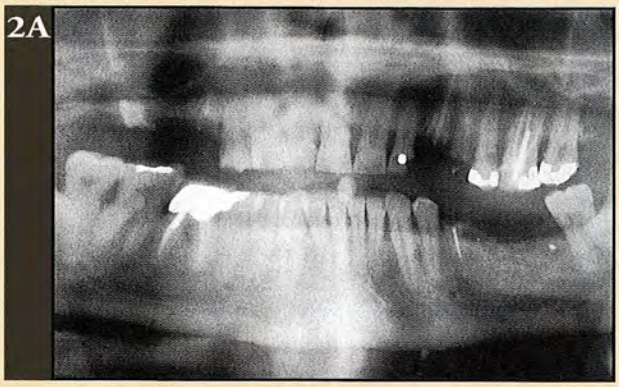
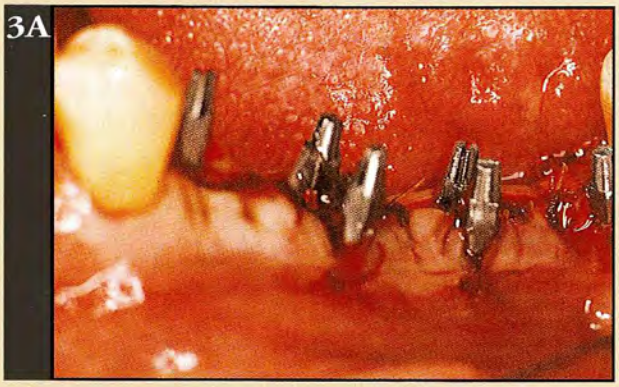

2A


2B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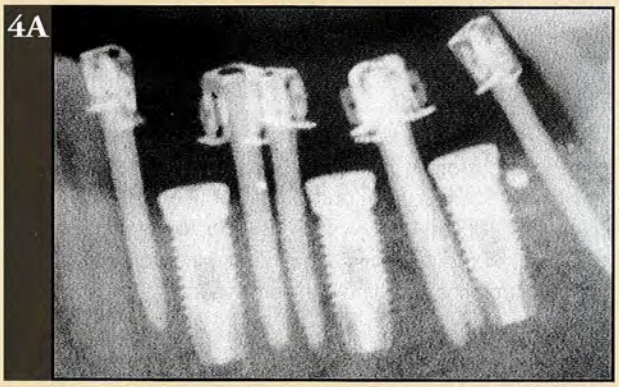
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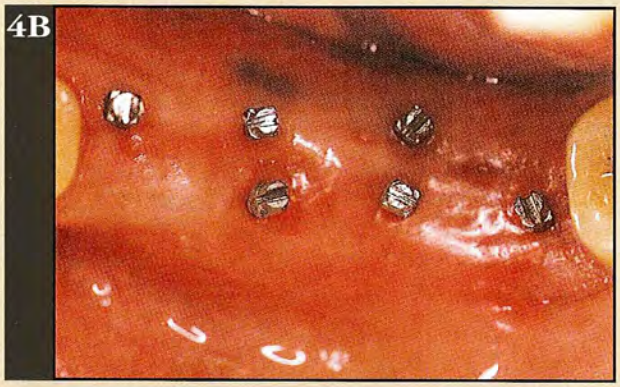
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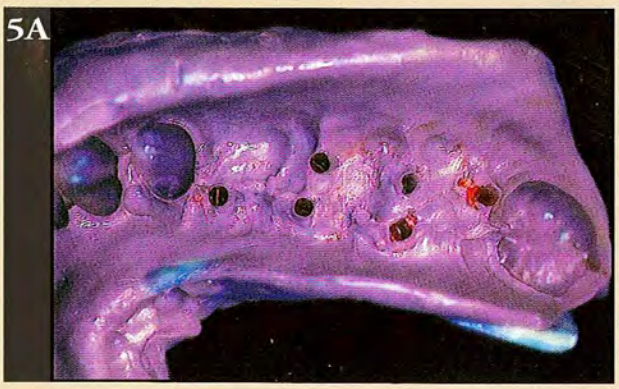
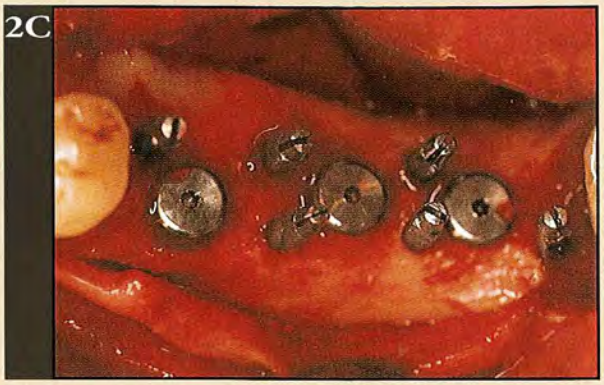
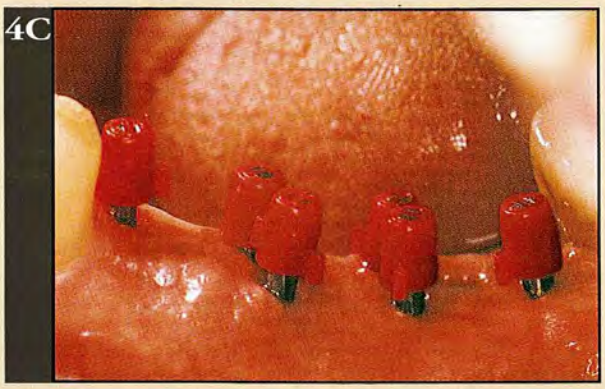
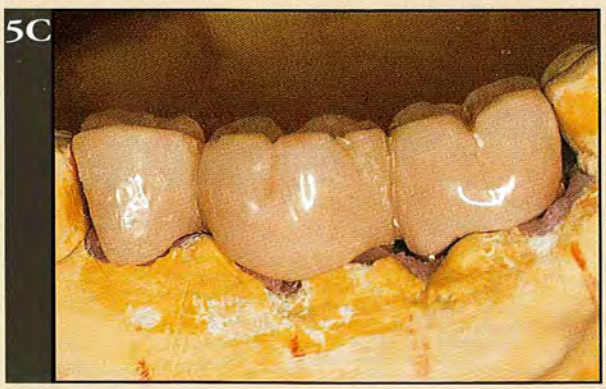

5A


5B







Figures 2A,B,C. A sinus-lift procedure was necessary in the maxillary right area prior to implant placement. Stage I therapy in the mandibular left area was initiated along with the placement of MTIs, in order to provide the patient with an interim unilateral occlusion and stable posterior support while undergoing sinus-lift therapy in the maxillary right area. Following Stage I surgical placement of three implants (Osseotite, 3i, Palm Beach Gardens, FL) with ideal positioning as determined through preoperative diagnostic procedures, the MTIs were placed in the interproximal area between the permanent implants. In this case, the wide buccolingual osseous ridge allowed a zigzag positioning of the transitional implants.

Figures 3A,B,C. This unique placement allowed the insertion of two additional MTIs and provided greater support and stability that was necessary to resist buccolingual rotation. The additional implants also provided increased retention for the provisional restoration. Once the implant surgeon had performed suturing to close the flap over the permanent implants, healing caps were placed over the transepithelial MTIs. The healing caps were necessary to prevent tongue irritation and to keep the tissue secured over the transitional implants and subsequently facilitate ease of insertion of the prosthetic components.

Figures 4A,B,C. A radiograph was subsequently taken to verify placement of the implants. After an initial healing period of 3 weeks, the healing caps were removed. Tissue healing was within normal limits. Since the individual prosthetic components were utilized for the provisional restoration rather than a connecting bar, it was not necessary for the slots on the transitional implants to be aligned. Impression copings were placed on the transitional implants to obtain the necessary information for the laboratory phase. The copings were seated fully supragingivally and did not impinge on the tissue.

Figures 5A,B,C. A pick-up type impression was made with polyether impression material, and a bite registration was recorded with a quick setting polyvinylsiloxane and forwarded to the laboratory for the fabrication of the definitive prosthesis. The soft tissue master model was retrieved using the corresponding laboratory analogs of the MTIs. In order to provide the patient with an interim solution, a waxup for the provisional restoration was created, and a heat-processed provisional restoration was fabricated.

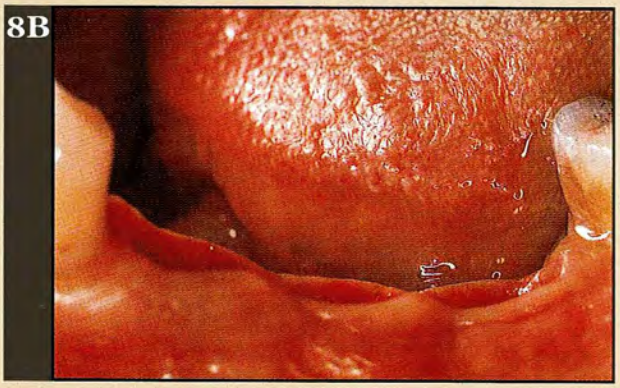

6A


6B


7A


7B


8A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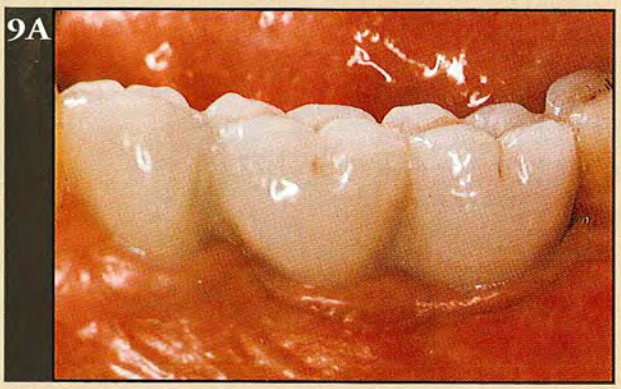
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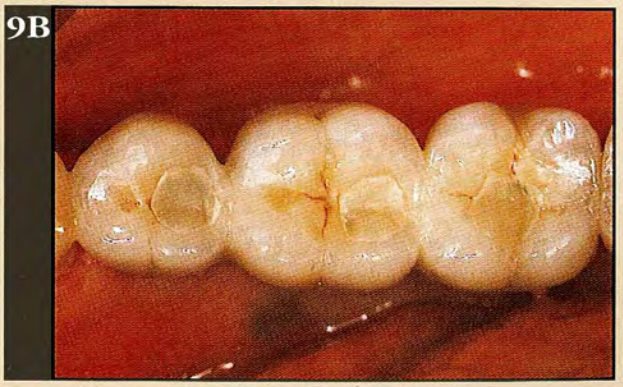
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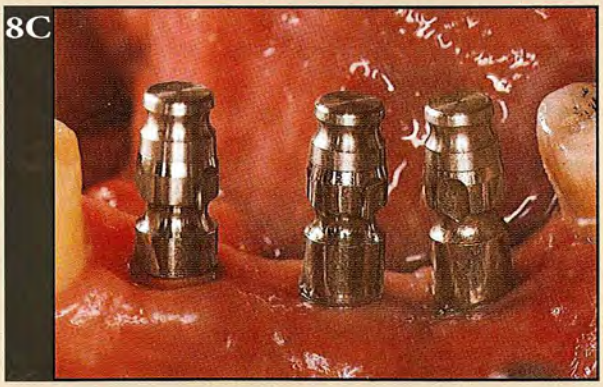

Figures 6A,B,C. When the patient returned for the insertion of the provisional restoration, the singular implant copings were seated on the transitional implants. The provisional restoration was relieved to provide space for each of the copings, and then an acrylic reline was performed to pick up the copings in the provisional restoration. The restoration was then cemented using zinc oxide eugenol temporary cement.

Figures 7A,B,C. The tissue surface of the acrylic provisional restoration was highly polished; care was taken to allow for ease of cleansability under the restoration between the MTIs. After 4 months of healing (at the time of Stage II surgery), the permanent implants were uncovered and the transitional implants were removed by a simple counter-clockwise rotation. During the same point in Stage II surgery, the singular copings were removed from the acrylic provisional restoration and temporary implant cylinders were seated on the permanent implants. The acrylic provisional was relieved to fit over the cylinders and relined with acrylic for incorporation into the restoration. The tissue surface of the provisional was then tapered and contoured to the head of the implants to enable ideal tooth form and tissue contours.

Figures 8A,B,C. The provisional restoration was converted onto the permanent implants, and the gingival tissue was allowed to heal for 3 weeks. No sign of the transitional implants existed. Impression copings were then attached to the permanent implants and used in the laboratory fabrication of the final 3-unit porcelain-fused-to-metal prosthesis.

Figures 9A,B,C. The definitive 3-unit prosthesis was screw-retained and tightened to 20 Ncm. Screw access holes were sealed with light-cured composite restorations to match the porcelain. The use of MTIs in a partially edentulous arch with a unique zigzag placement allowed the provisional restoration to resist buccolingual movement. This technique also incorporated new prosthetic components in the fabrication of the provisional restoration, which enabled the patient to function on this side while the permanent implants were osseointegrating.

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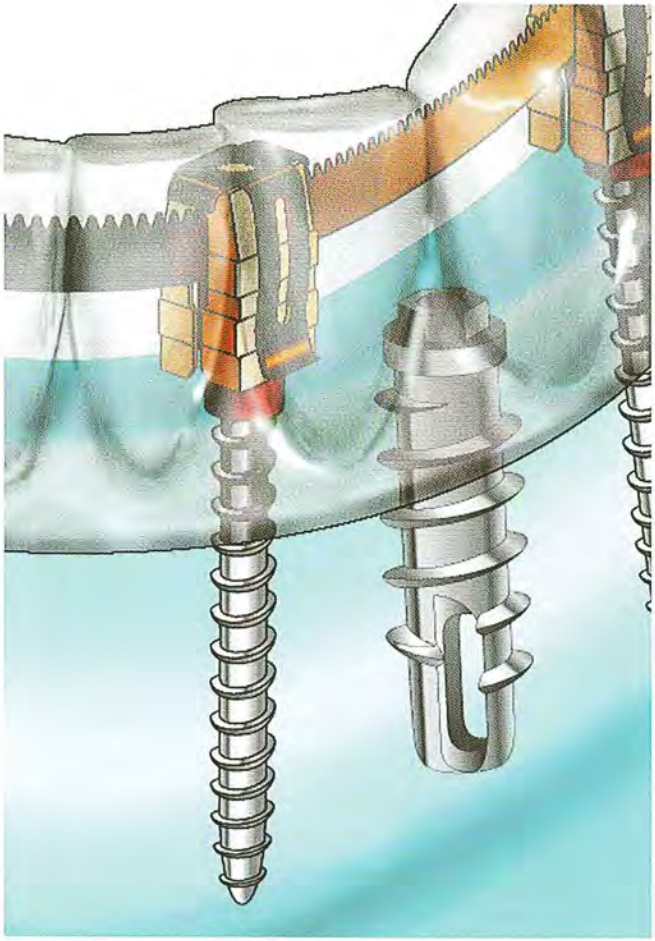

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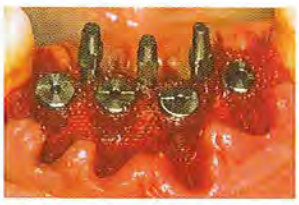

Photos courtesy Paul Petrungaro, DDS, MS, FICD, FACD.

MTI-MP, US Pat. #5,575,651 & Foreign Pat. pending

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