

Immediate Loading of Two Single Tooth Implants in the Maxilla: Preliminary Results After One Year

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Abstract

This clinical report describes the traumatic avulsion of the left maxillary central and lateral incisors with minimal tissue trauma, followed by placement of provisional restorations of two root-form implants in a 14-year old female patient. Ten days following the avulsion, implant therapy was performed with Summers osteotomes and flapless technique using a root-form 3i osseotite NT. Angulated abutments and acrylic provisional crowns were placed. No occlusal contact was detected. An impression was made 30 days after implant insertion and ceramic restorations were placed 3 months later. No significant soft tissue contraction was observed during the provisional period. The patient exhibited no clinical or radiologic complications for 8 months after loading. In carefully selected under-aged patients implant therapy and immediate loading in the anterior maxilla for traumatic tooth avulsion may prove to be valuable to avoid soft tissue contraction, alveolar bone resorption, and positive esthetic/psychological response.

Keywords: Implant therapy, immediate loading, flapless technique, under aged patient, root-form implants

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Introduction

Immediate-loading post-extractive implant therapy has several indications. Primary among them is the absence of immediate functional loading.^{1,3,7} This objective can be easily realized when dealing with anterior incisors. Incomplete skeletal development is a contraindication to implant therapy. In fact one may find dislocations of implant-supported teeth relative to adjacent natural structures, for example in the apical level of the maxillary incisors.

This clinical report describes the traumatic avulsion of the left maxillary central and lateral incisors with minimal tissue trauma, followed by placement of provisional restorations of two root-form implants in a 14-year old female patient.^{4,9}

Case Report

Following a traffic accident, the 14-year old female patient lost the left maxillary central and lateral incisors (Figures 1-3).

She presented 10 days after the accident and was fitted with a removable provisional prosthesis with clasps. The patient had no significant medical history. However, she chose not to use the removable prosthesis and her parents described relational problems with reduced emotivity and signs of depression. Following extensive discussion with the parents and the patient, informed consent was obtained for implant therapy despite her age. The parents were informed that in view of the patient's age implantology did not have an absolute contraindication, but because of her incomplete skeletal development, it was possible changes would occur in the tissue surrounding the implant-supported crowns, including a difference in level between the incisor margins and those on the contralateral incisors.

Nonfunctional immediate loading implant treatment was scheduled to address esthetic and psychological needs of the patient as well as elimination of the handicap associated with the loss of the two incisors. Her adolescent age should have represented an obstacle to implant treatment. However, the repercussions on her relational life at the very delicate adolescent developmental stage and the desire not to lose



Figure 1. Preoperative photograph of the patient.



Figure 2. Anterior view.



Figure 3. Palatal view.

alveolar bone with subsequent resorption and gingival remodeling prompted this treatment decision.

After a radiographic evaluation (Figures 4 and 5), a flapless surgery approach^{2,8} was performed to obtain an immediate esthetic result.



Figure 4. Preoperative panoramic radiograph.



Figure 5. Preoperative periapical radiograph.



Figure 6. Site preparation with Summers osteotomes.

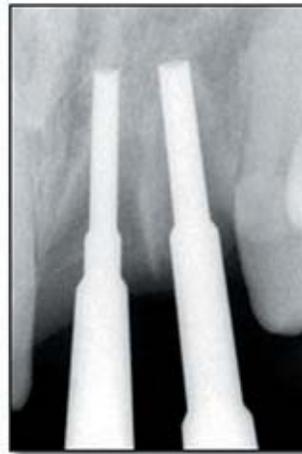


Figure 7. Osteotomes in situ.

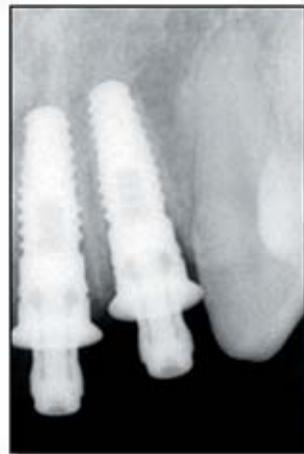


Figure 8. Ossetite NT implants in place.

The two implant sites were prepared with Summers osteotomes to trace an ideal insertion axis and follow the existing alveoli (Figure 6).

A follow-up radiograph was performed with osteotomes #2 and #3 in situ, and two Ossetite NT implants were manually inserted. A periodontal probe was used to measure the thickness of the adhering gingiva (Figures 7 and 8).

The abutment posts were screwed on at an angle of 15°, and the two provisional crowns were mounted together (Figures 9 and 10).



Figure 9. Placement of the abutment posts.

After touch-up, the provisionals were cemented to the implant posts without contacts either centrally or in the lateral excursions; a follow-up radiograph was performed (Figures 11 and 12).

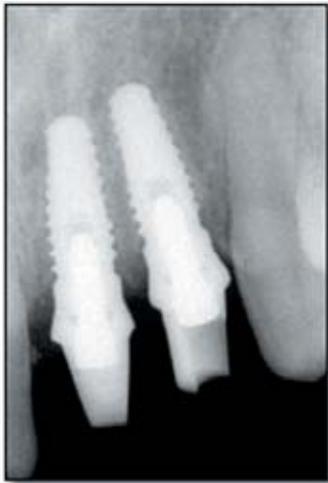


Figure 10. Periapical radiograph of posts in place.



Figure 11. Implants in place.



Figure 12. Cemented provisional restorations.

The presence of an increased overjet helped the functional absence of the two crowns. The patient was instructed not to use the teeth for 6-8 weeks. At 3 months, soft tissue development was noted as well as hard tissue stabilization at the first thread of the implants. The provisionals were modified relative to tooth 21 because of slight gingival contraction, and the patient was scheduled for monthly follow-up visits in another 3 months. At 6 months postoperatively, the definitive restoration was initiated with single



Figure 13. All ceramic Procera crowns.



Figure 14. Zirconium abutments.

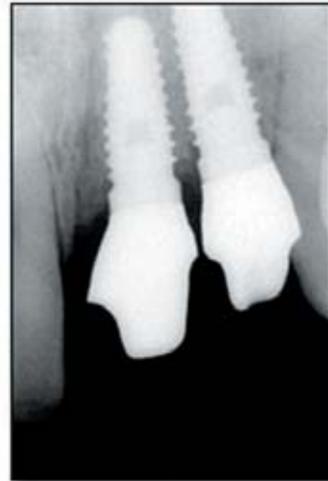


Figure 15. Follow-up radiograph with zirconium abutments in place.

all-ceramic crowns (Procera) and zirconium abutments⁵ (Figure 13 and 14).

Single crowns were chosen for esthetic reasons and to prevent obstruction of growth in the upper maxilla, which could perhaps be corrected in the future with new ceramic crowns. A follow-up radiograph was performed (Figure 15).



Figure 16. Palatal view of restorations.



Figure 17. Anterior view of restorations.



Figure 18. Palatal view of restorations.

Results

At 12 months following implant surgery, optimal development of the soft tissue is noted but with an imperfection in the cervical segment of tooth 21, which appears more apical than 22 (Figures 16 and 17).

The patient's low smile line, already noted at the first visit, helps to hide this imperfection. The patient and her parents were very satisfied with the result (Figure 18). Radiographs show optimal osseointegration of the two implants.

Conclusion

In carefully selected under aged patients implant therapy and immediate loading in the anterior maxilla for traumatic tooth avulsion may prove to be valuable to avoid soft tissue contraction, alveolar bone resorption and positive esthetic/psychological response.

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Dr. Nuzzolese graduated from the University of Bari (Italy) in 1994. He did his graduate work in Prosthetics at King's College School of Medicine and Dentistry, University of London in 1996. He is an active participant and lecturer in continuing dental education courses and at dental conferences in Italy and abroad, dealing with periodontology, implantology, and forensic odontology.

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