



Flapless, Immediate Implantation & Immediate Loading with Socket Preservation in the Esthetic Area Using the Alpha-Bio Tec's NeO Implants



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Senior Medical and R&D Consultant at Alpha-Bio Tec's Dr. Schneider was in charge of the medical and clinical development of the various implants. Dr. Schneider is a leading international lecturer in the field of complicated implant surgical procedures, and has published more than 50 clinical studies, cases and articles. Dr. Schneider manages a private practice that specializes in Periodontics and Implantology.

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Abstract

Success rates of between 93-100% in cases of implant placement have been referenced in dental literature in the last recent years. Today, it is widely accepted that stability of the hard and soft tissues around the implant depends not only on the bone volume in the relevant area, but also on the buccal bone width.

The decisions a specialist must make prior to beginning such procedures include:

- Immediate vs. delayed implantation
- Immediate vs. delayed loading
- Flap vs. flapless procedure
- Bone augmentation or none

All of these decisions depend on clinical parameters such as ridge dimensions, buccal bone volume, thickness of the soft tissue, occlusion, reason for the extraction, and absence of active inflammation.

Flap vs. Flapless Procedure

The flapless procedure has significant advantages which include the preservation of soft and hard tissue volume around the implant, decreased surgical time, improved patient comfort, and reduced recovery time.^[1] In multiple studies, flapless implant placement yielded improved clinical, radiographic, and immunological results when compared with flapped implantation. Current research also suggests that non-invasive implant surgical techniques contribute to early rehabilitation, pleasing esthetics and satisfactory

functional outcomes.^[2] Submerged flapless surgery may allow better vascularization of the peri-implant mucosa and therefore obtain more richly vascularized supracrestal connective tissue around the implant.^[3]

Significant disadvantages of flapless implant placement include the inability to visualize anatomic landmarks and vital structures, potential for thermal osseous damage from the obstructed external irrigation, inability to contour bone morphology, increased risk of implant misplacement in relation to angulation or depth, keratinized gingival tissue loss, and the inability to manipulate soft tissues around emerging implant structures.^[1]

Essential Clinical Considerations

① Position of the implant

When placing implants in the maxillary anterior area (the "esthetic zone"), it is important to remember that implants placed closer to the palatal aspect of the crestal bone, as well as those more apically positioned, according to dental literature, demonstrated less buccal implant exposure over time.^[4]

② Diameter of the implant

Similarly, crestal bone resorption and resulting implant exposure at the buccal aspect have been reported to be significantly greater when using wider implants (2.7 ± 0.4 mm) than when using narrower implants (1.5 ± 0.6).^[5] Therefore, it may be preferable to use as narrow implants

as possible in the esthetic zone. The following cases all used Alpha-Bio Tec. NeO implants, available in Ø3.75, Ø3.5 and Ø3.2 mm diameters.^[5]

③ Immediate or delayed implantation

According to dental literature, superior crestal bone preservation can be obtained by placing the implant immediately after extraction.^[6]

④ Auxiliary procedures

A width of at least 2 mm of buccal bone width is recommended in immediate placement of implants. However, according to dental literature, (97.4%) of the buccal bony walls of anterior extraction sites holds a width of less than 2 mm and only 2.6% of the walls were 2 mm wide.^[7] In other words, only a limited number of extraction sites in the anterior maxilla can be considered for immediate placement of an implant without auxiliary procedures. In most situations, procedures such as guided bone regeneration will be required to achieve adequate bone contour around the implant and optimal esthetic outcome in sites where immediate implants are considered. Ridge preservation with an intra socket osseous graft and a membrane should strive to preserve the original ridge dimensions and contours.^[8]

Clinical Cases Demonstrating Flapless Procedures in the Esthetic Area

The treatment plan in all of the following cases included: periodontal treatment, extraction, immediate implantation, placement of an abutment, socket preservation using bovine bone and immediate loading. NeO Ø3.75, Ø3.5 and Ø3.2 mm implants were used in all cases.

Following extraction of the relevant tooth or teeth, the intrasocket soft tissue was removed and the extraction site was completely cleared. The drilling sequence was a 2 mm drill followed by a 2.8 mm drill at 1000 RPM into the mid palatal wall of the socket. The implants were inserted from the buccal direction into the osteotomy and the direction was then changed towards a more palatal position and inclination.

All implants were placed 1-2 mm subcrestally at a torque greater than 35Ncm. After the final positioning of the implant, a 15 degree Alpha-Bio Tec. abutment was placed and then closed at a 20 Ncm torque.

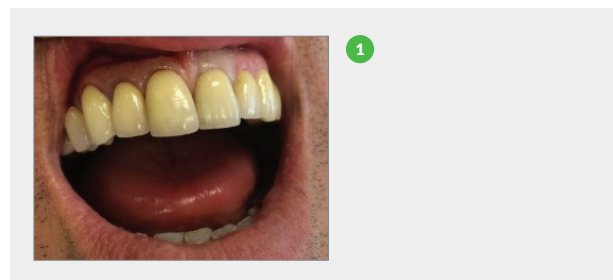
Buccal bone width was narrower than 2 mm in all of the cases below, therefore, the clinical decision was to perform a socket preservation technique in order to reduce the resorption of the buccal plate. Based on the recommendations in dental literature, bovine bone was added to the gap between the implant and the socket.

Finally, the implants were immediately loaded with the previous crowns or with temporary crowns. The crowns were adjusted to minimize contact in centric occlusion as well as to eliminate any contact during lateral and protrusive movements.

Post-operative instructions: Augmentin 875 mg twice daily (in cases of penicillin allergy, 600 mg Dalacin daily was substituted) starting from the day before surgery and continuing for a total of 10 days, chlorhexidine mouthwash twice a day for 10 days, and Nsaids for pain relief. Patients were requested not to chew or cut food with the implanted teeth. Periapical or panoramic X- rays were taken both immediately following the surgery and again after 4 months.

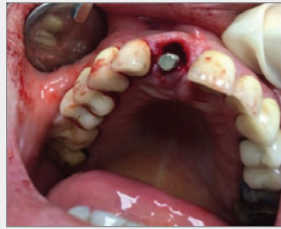
Case I:

Tooth 11 – Extraction, flapless immediate implantation and loading with socket preservation (Dr. Gadi Schneider and Dr. Yoram Brookmeyer) (**Figs. 1-3**).





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Extraction of teeth prior to immediate implantation - it is important to be as gentle and as careful as possible, since the buccal wall of bone is generally very thin (≤ 2 mm) in the premaxillary area (**Figs. 4-6**).



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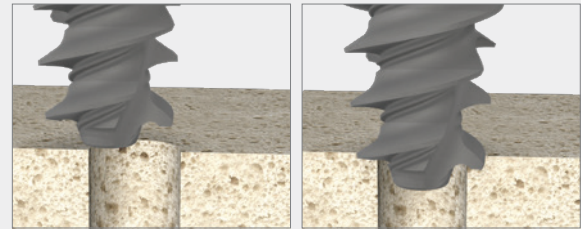


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In this case, the buccal wall was successfully preserved during extraction.

Drilling - 1000 rpm, external irrigation in the mid palatal wall of the socket using a 2 mm drill followed by a 2.8 mm drill. Parallelism should be checked from at least 2 points, generally the occlusal view and the buccal view. A NeO implant was placed using the centering feature at 45 Ncm torque.

NeO's Centering feature - a unique (patent pending) design. The centering feature takes the NeO implant exactly to the point of penetration of the bone without the need for direct visibility. This makes locating the osteotomy entrance much easier, particularly when the osteotomy is hidden by neighboring teeth or covered with blood, so that it cannot be seen.



Implant position – parameters:

- At least 1 mm deeper than crest level at a 5° palatal angulation and at more palatal position
- At least 1.5 mm between the implant and adjacent teeth (**Figs. 7-9**)



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In this case, because of the thin buccal plate ($< 2\text{mm}$), a socket preservation technique using bovine bone (Alpha-Bio Tec. Graft) was necessary in order to preserve the crestal ridge of bone (**Figs. 10-11**).



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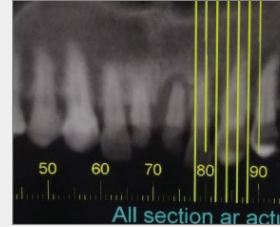


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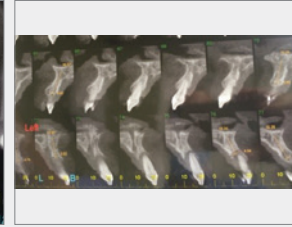
When placing the abutments, it is very important to position them correctly prosthetically. In this case, the original crown was placed as a temporary crown and adjusted to be out of occlusion. A periapical X-ray was taken postoperatively on the day of implantation.

Case II:

Teeth 11-21 – Extraction, flapless immediate implantation and loading, socket preservation (Dr. Gadi Schneider and Dr. Yoram Brookmeyer) (**Figs. 12-17**)



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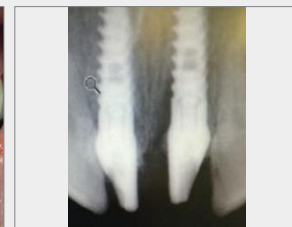


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Implant position - at least 1.5 mm between implant and adjacent teeth and 3 mm between implants (**Figs. 18, 19**)



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References

1. Sclar AG., Guidelines for flapless surgery. J Oral Maxillofac Surg. 2007 Jul;65(7 Suppl 1): 20-32. Review. Erratum in: J Oral Maxillofac Surg. 2008 Oct;66(10):2195-6.
2. Tsoukaki M, Kalpidis CDR, Sakellari D, et al. et al. Clinical, radiographic, microbiological and immunological outcomes of flapped vs flapless dental implants: a prospective randomized controlled clinical trial. Clin. Oral Impl. Res. 2013; 24:969–976
3. Kim JI, Choi BH, Li J, Xuan F, Jeong SM. Blood vessels of the peri-implant mucosa: a comparison between flap and flapless procedures. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009 Apr;107(4):508-12.
4. Tomasi C, Sanz M, Cecchinato D, Pjetursson B, Ferru J, Lang NP, Lindhe J. Bone dimensional variations at implants placed in fresh extraction sockets: a multivariate analysis. Clin. Oral Impl. Res. 2010; 21: 30–36
5. Caneva M, Salata LA, de Souza SS, Bressan E, Botticelli D, Lang NP. Hard tissue formation adjacent to implants of various size and configuration immediately placed into extraction sockets: an experimental study in dogs. Clin. Oral Impl. Res. 2010; 21:885–895
6. Antunes AA, Oliveira Neto P, De Santis E, Caneva M, Botticelli D, Salata LA. Comparisons between Bio-Oss® and Straumann® Bone Ceramic in immediate and staged implant placement in dogs mandible bone defects. Clin. Oral Impl. Res. 24, 2013, 135–142
7. Huynh-Ba G, Pjetursson BE, Sanz M, Cecchinato D, Ferrus J, Lindhe J, Lang NP., Analysis of the socket bone wall dimensions in the upper maxilla in relation to immediate implant placement., Clin Oral Implants Res. 2010 Jan;21(1):37-42.
8. Araújo MG, Linder E, Lindhe J., Bio-Oss collagen in the buccal gap at immediate implants: a 6-month study in the dog. Clin Oral Implants Res. 2011 Jan;22(1):1-8