

Single Tooth Replacement In The Esthetic Zone Utilizing The Socket-Shield Technique, Case Series



Seunghwa S. Shin, Wilfred Cheng, Fathi Elgaddari

Department of Periodontology and Oral Implantology, Temple University Kornberg School of Dentistry, Philadelphia, USA

Objective

- Case series illustrating the clinical management of a non-restorable maxillary anterior tooth using the socket-shield technique.

Introduction

- Single tooth replacement in the anterior maxilla is considered for many clinicians as one of the most challenging tasks in implant dentistry. Different treatment options and techniques have evolved over the years to address this concern. Partial Extraction Therapy (PET) is still considered to be controversial among academicians and clinicians. In the past few years, however, there has been an increasing body of evidence testing and validating the PET concept. PET includes root submergence, pontic-shield, and socket-shield technique.
- Many studies have proved that successful osseointegration of an implant can be achieved using the socket-shield technique. Furthermore, the buccal-palatal ridge dimension including hard and soft tissue contours can be maintained to a great extent when the technique is performed.
- Three cases using the socket-shield technique will be demonstrated in this series.

Material and Methods

- Three different patients were referred to the Department of Periodontology to replace a non-restorable single anterior tooth in the maxilla.
- (Fig. 1) A. Case 1: 70-year-old male, tooth #7, B. Case 2: 40-year-old female, tooth #9, C. Case 3: 77-year-old male, tooth #9
- Patients' medical history was noncontributory. All the patients denied smoking and had no known food or drug allergy. Periodontal evaluation demonstrated 1-4mm probing depths and no mobility. Radiographic evaluation did not demonstrate any apical pathology. In all cases, CBCT analysis confirmed the presence of the buccal plate of the non-restorable tooth. Treatment options of replacing a non-restorable tooth were discussed in detail with each patient. Socket-shield technique as described by Gluckman et al. (2017) was performed.

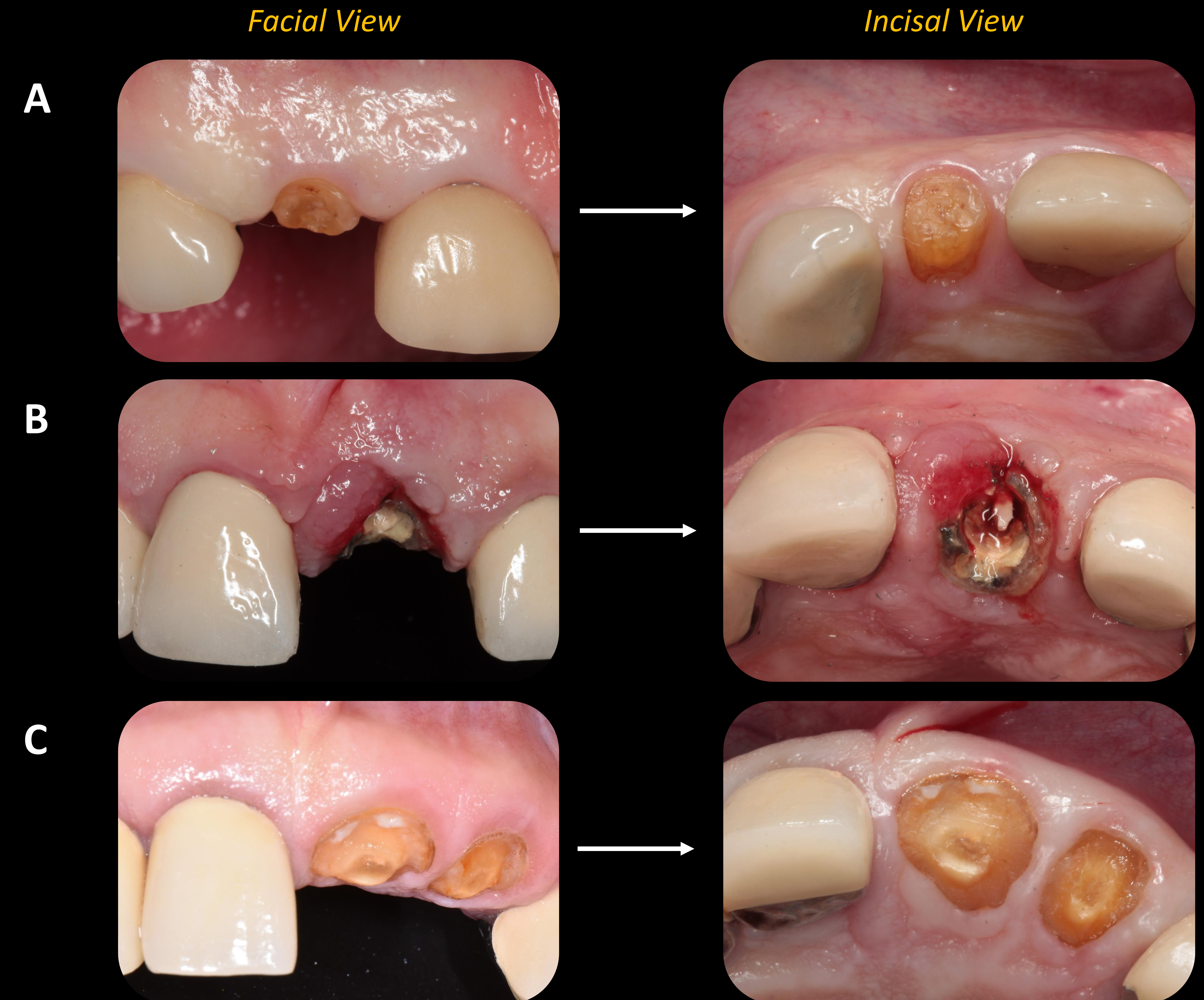


Figure 1. Initial presentation of patients with non-restorable maxillary tooth treated utilizing the socket shield technique. A. Case 1, B. Case 2, C. Case 3

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Case 1 #7

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Department of Periodontology and Oral Implantology, Temple University Kornberg School of Dentistry, Philadelphia, USA



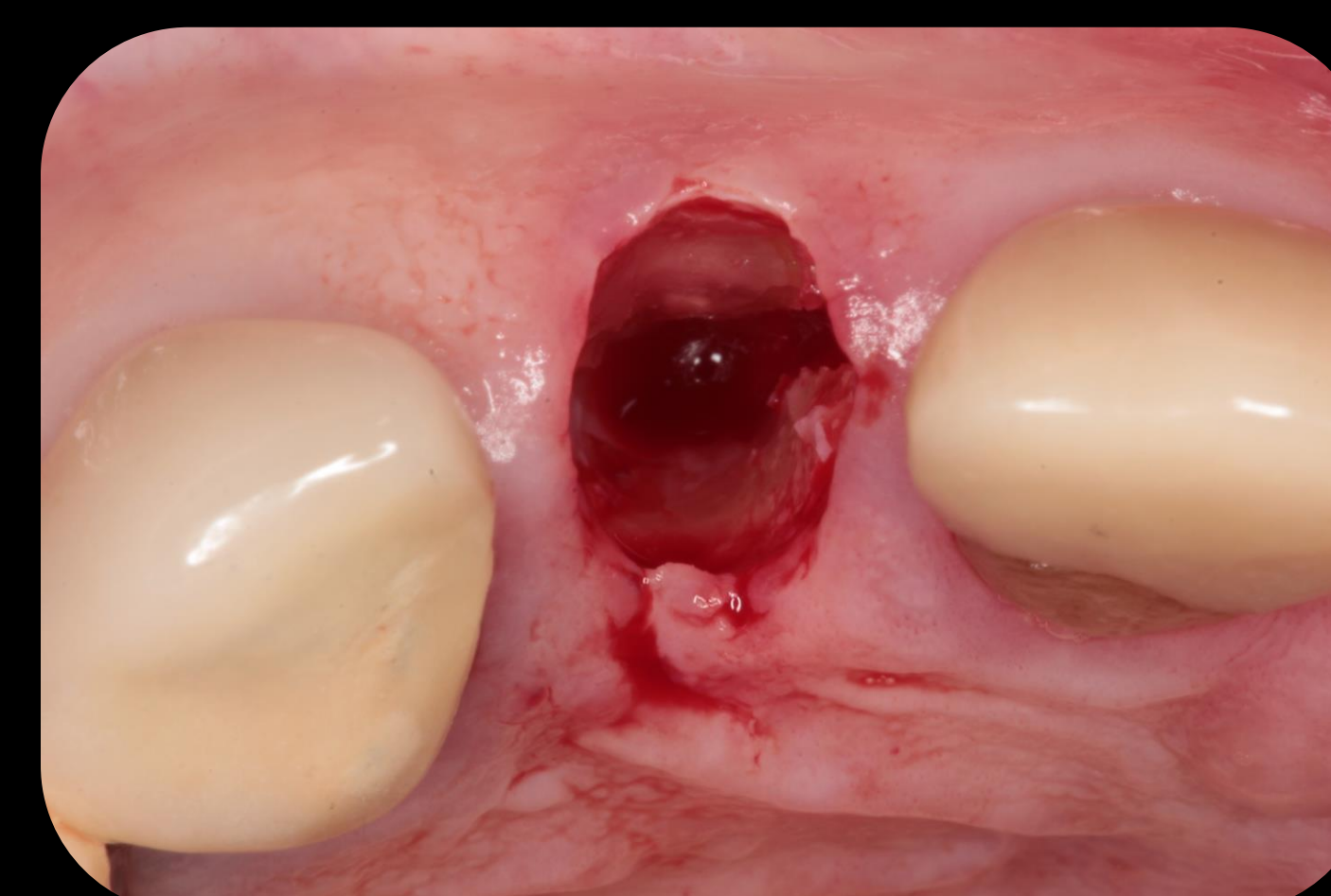
Pre-op facial view



Pre-op incisal view



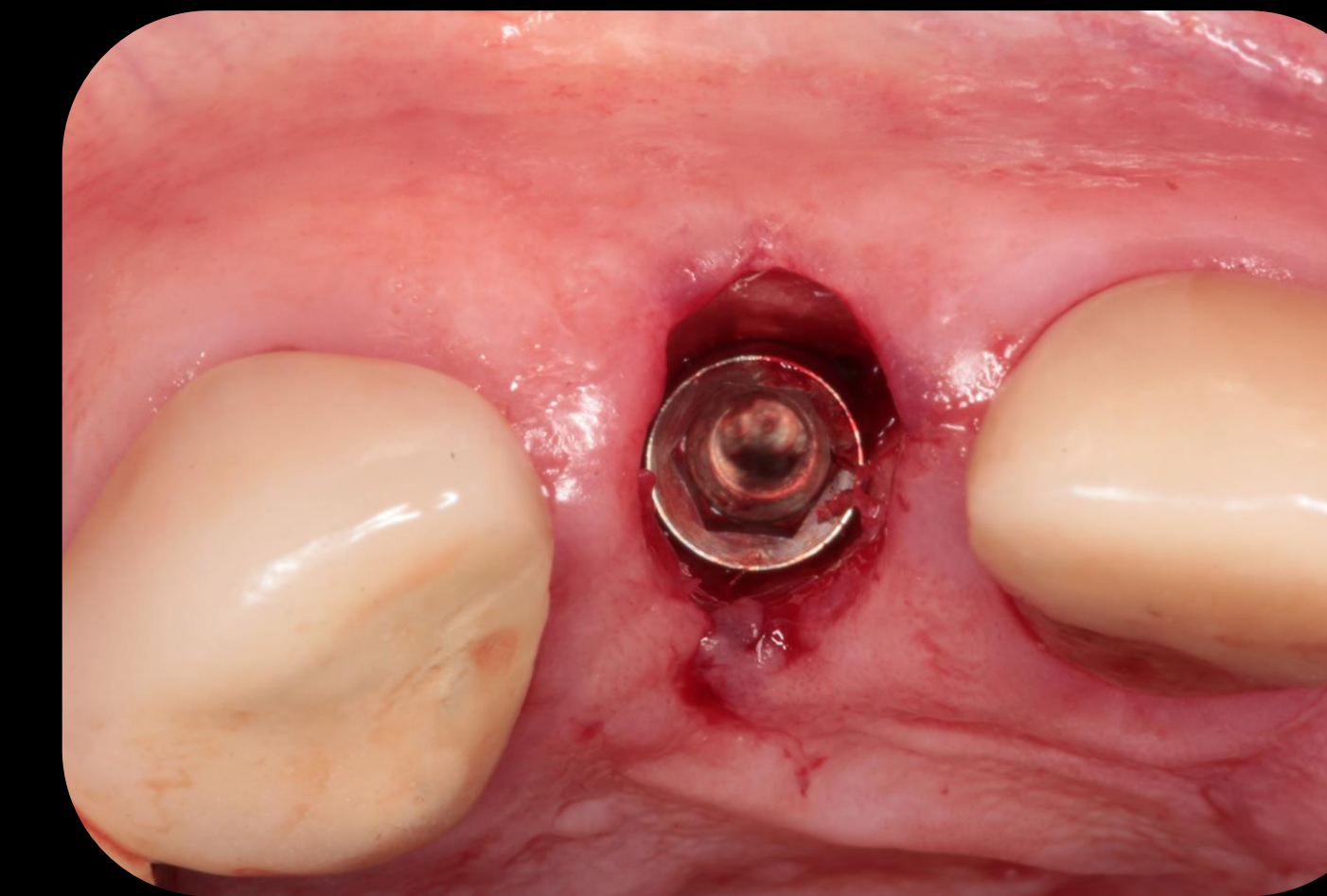
Root sectioning M-D



Shield preparation



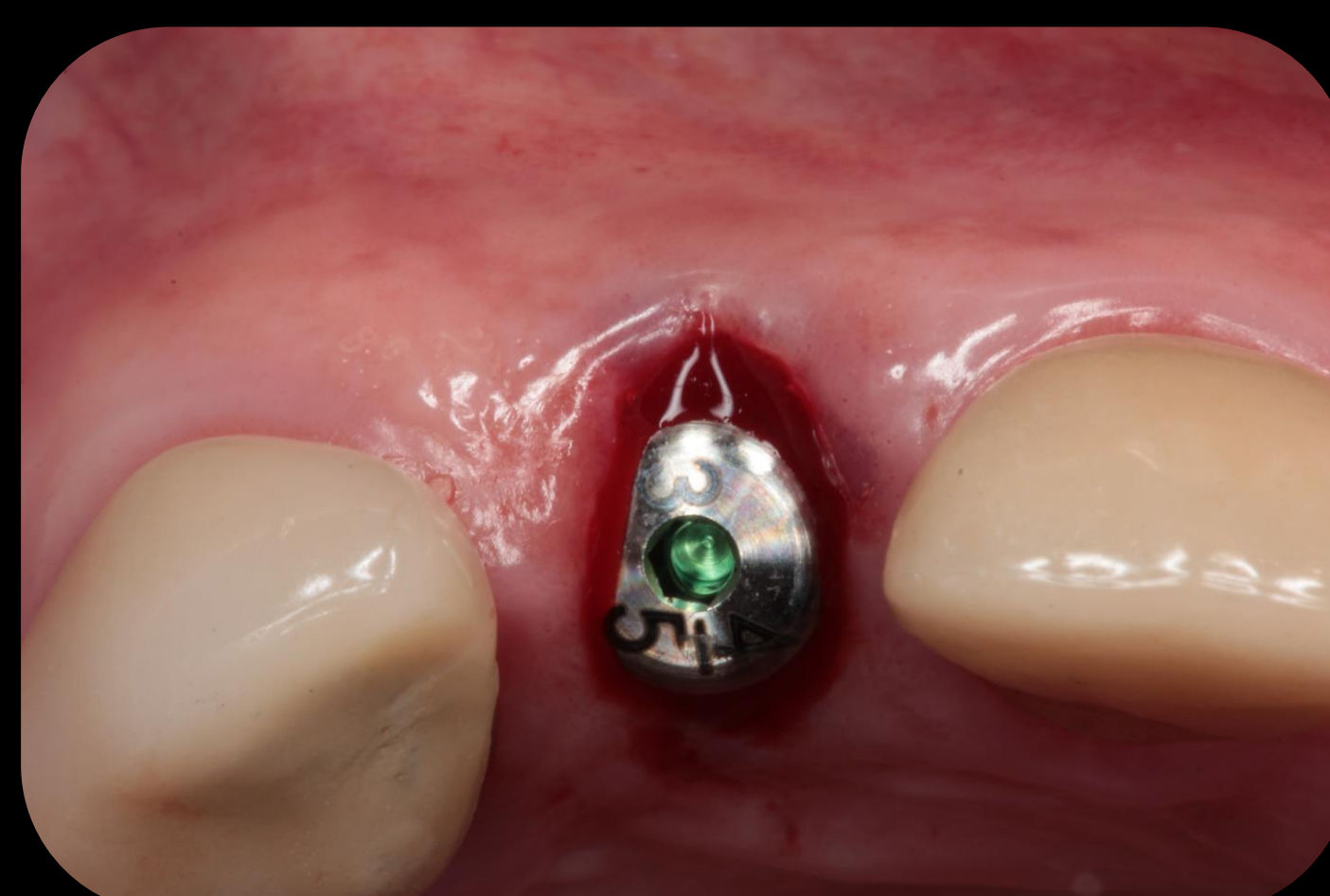
Implant placement M-D



Implant not in contact with shield



HA in place facial view



HA in place incisal view



Post-op 4 months facial view



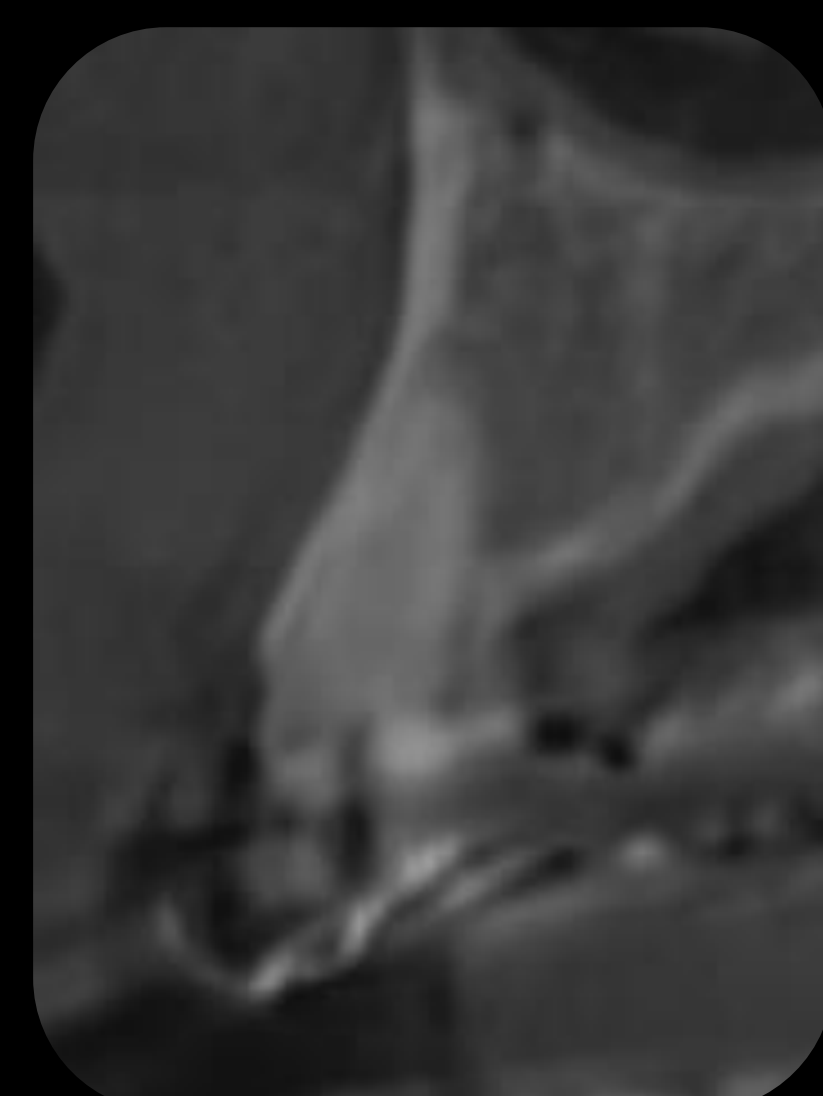
Post-op 4 months incisal view



Post-op 1 year facial view



Post-op 1 year incisal view



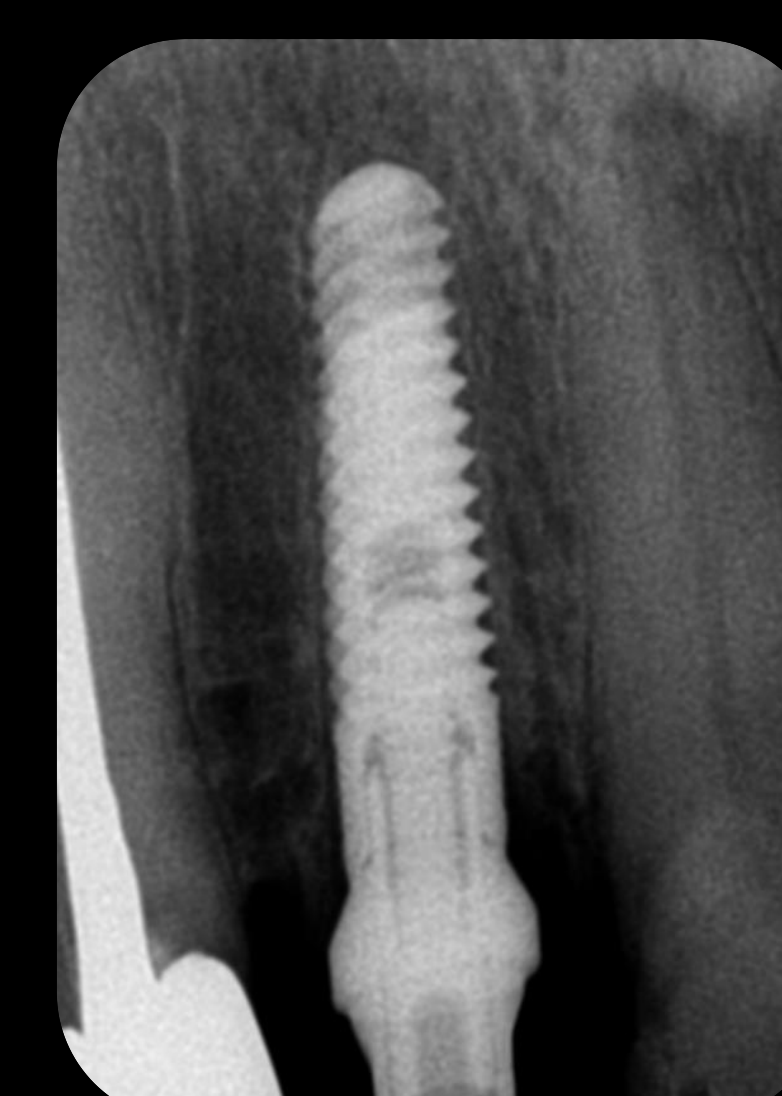
CBCT



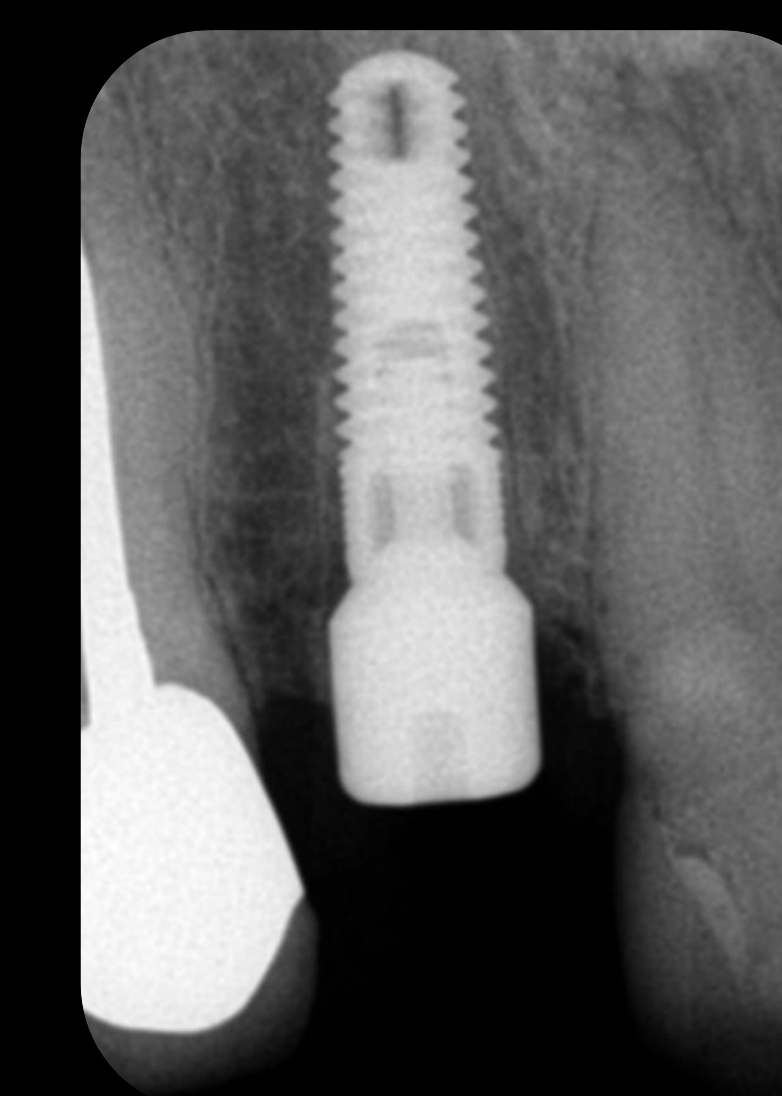
Pre-op



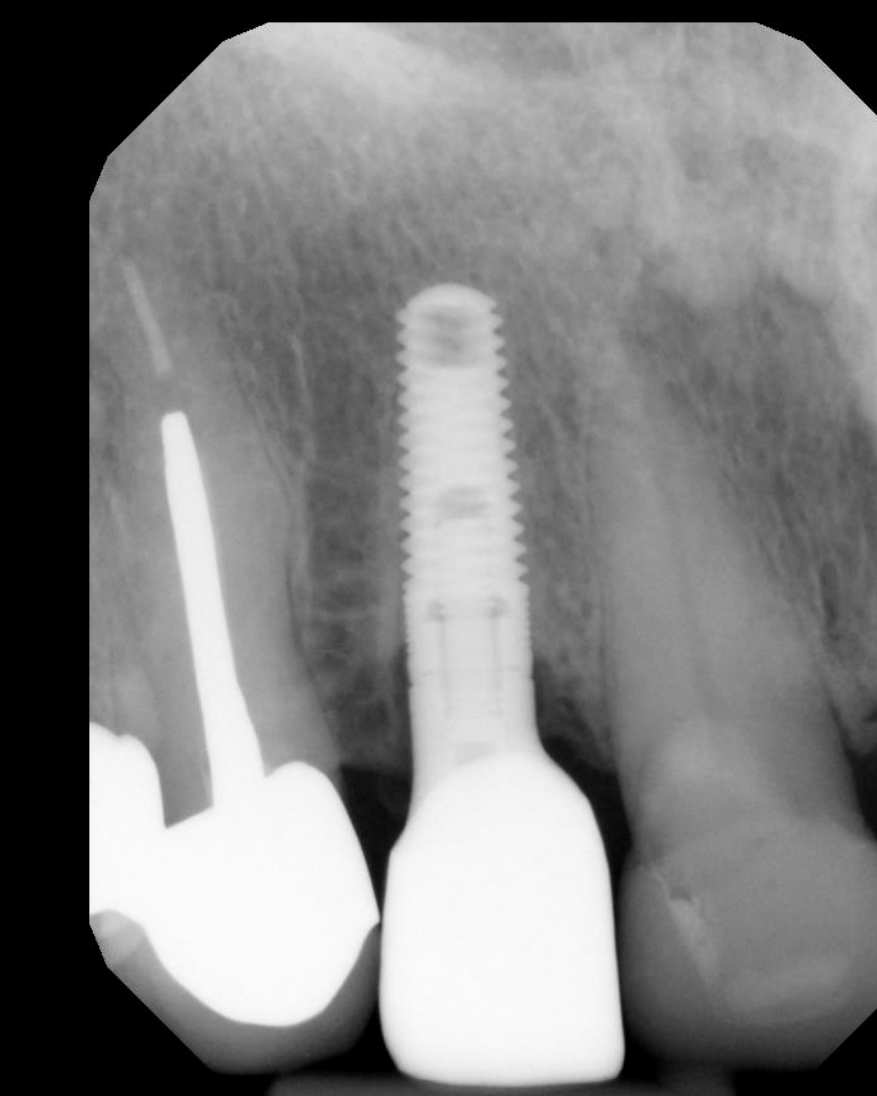
Intra-op shield preparation



Implant placement



HA placement at the end of surgery



Post-op 1 year

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Case 2 #9

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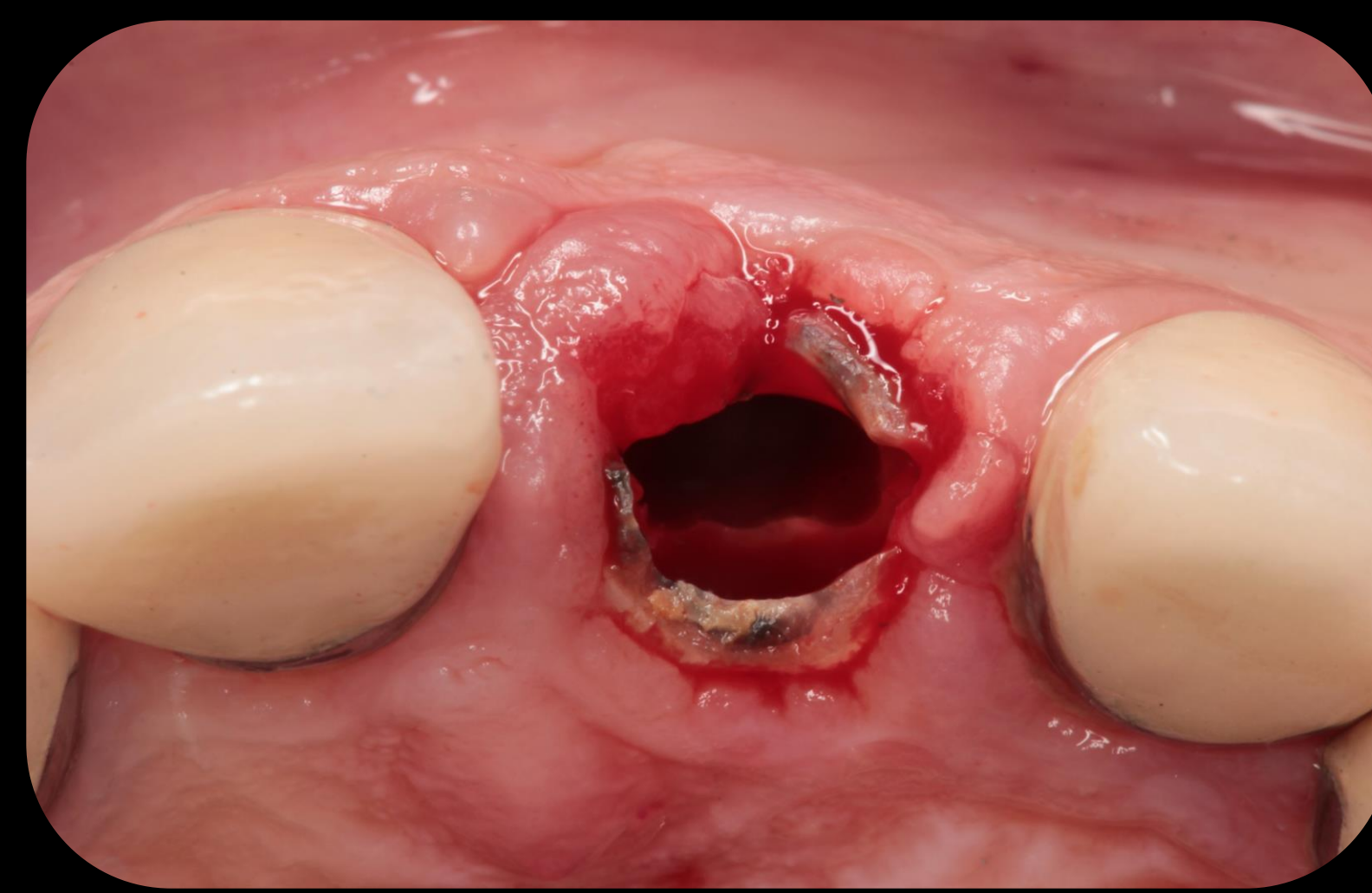
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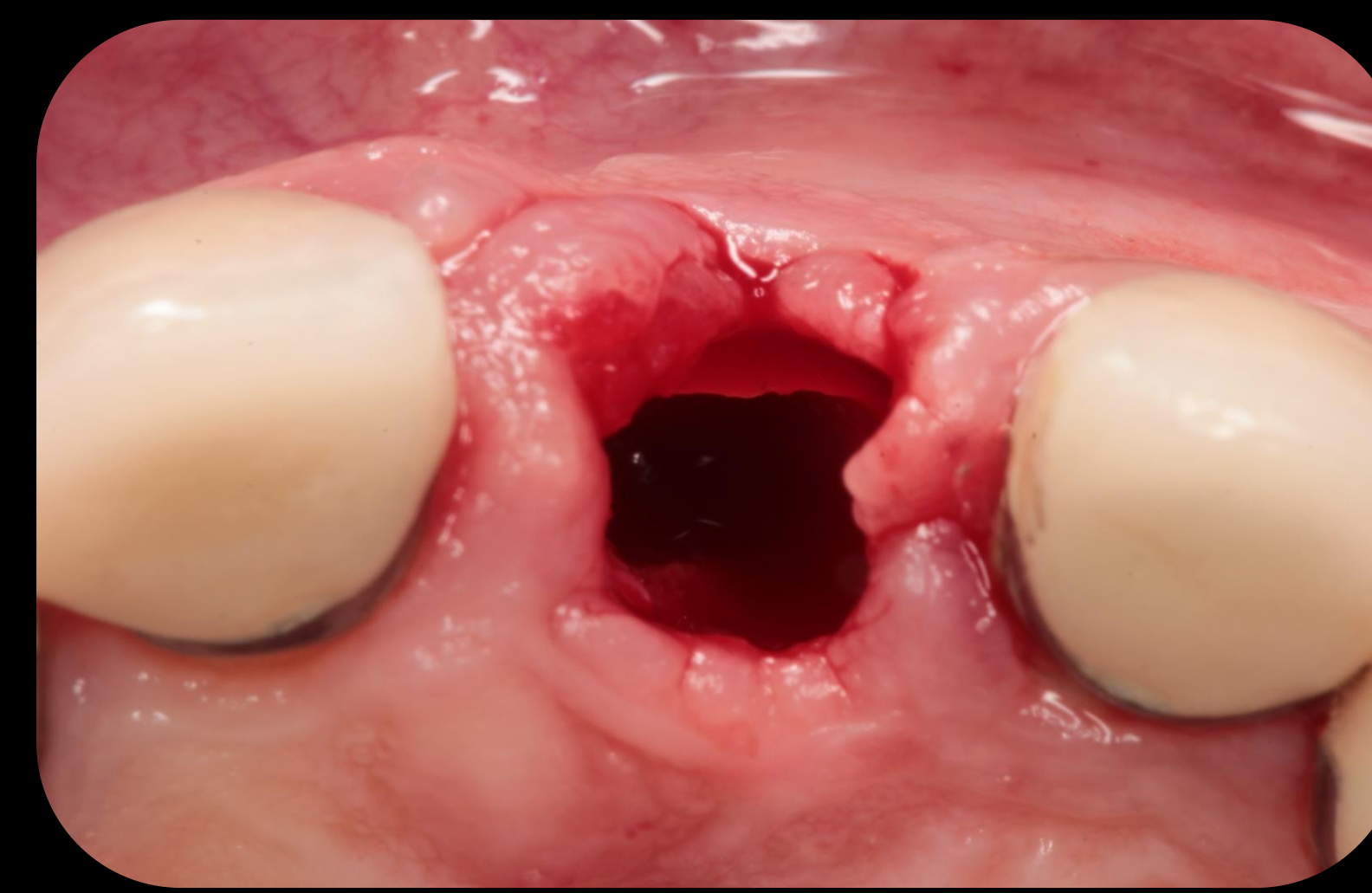
Pre-op facial view



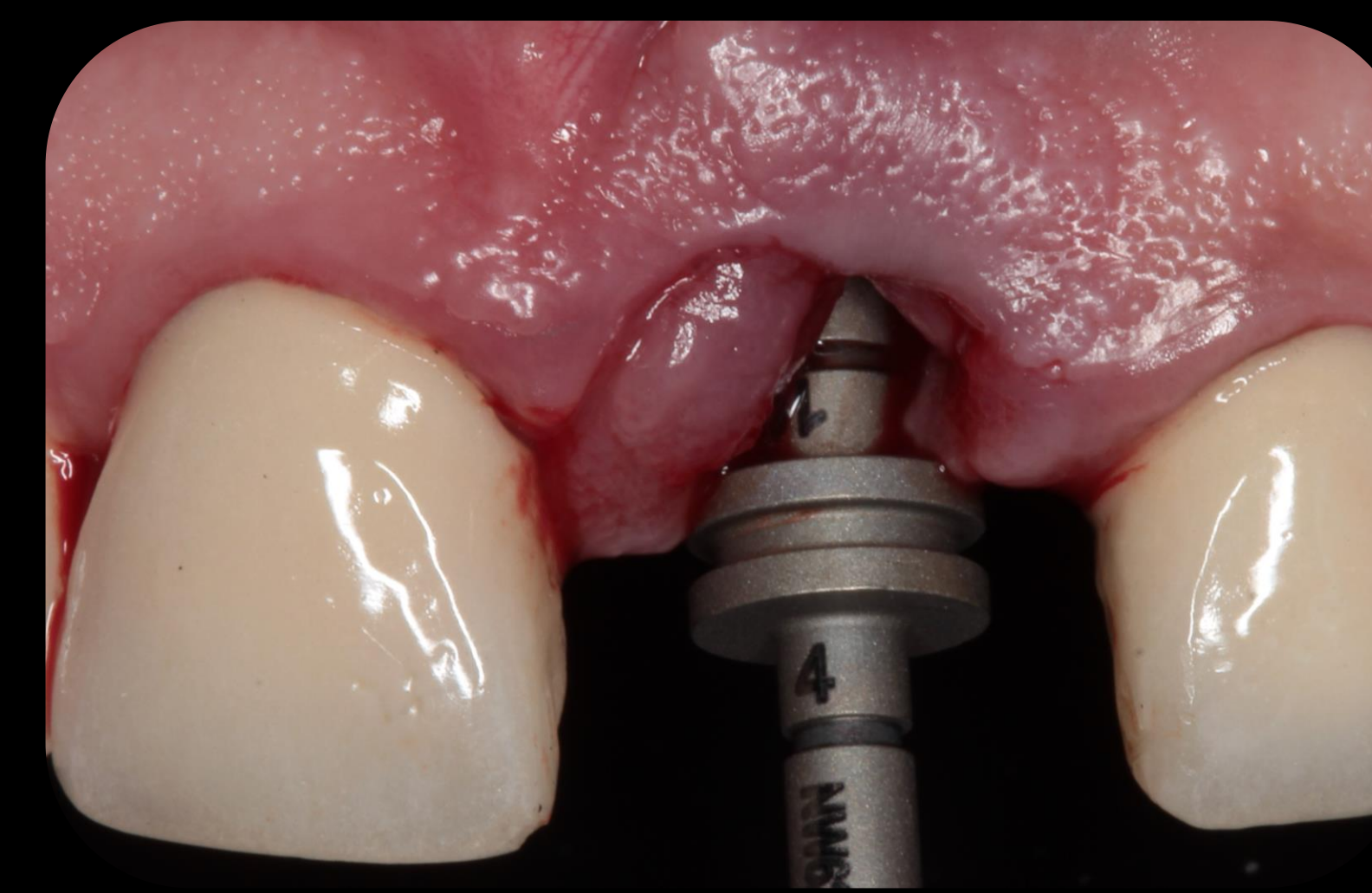
Pre-op incisal view



Root sectioning M-D



Shield preparation



Guide pin placement M-D



Guide pin placement B-P



Immediate provisionalization facial view



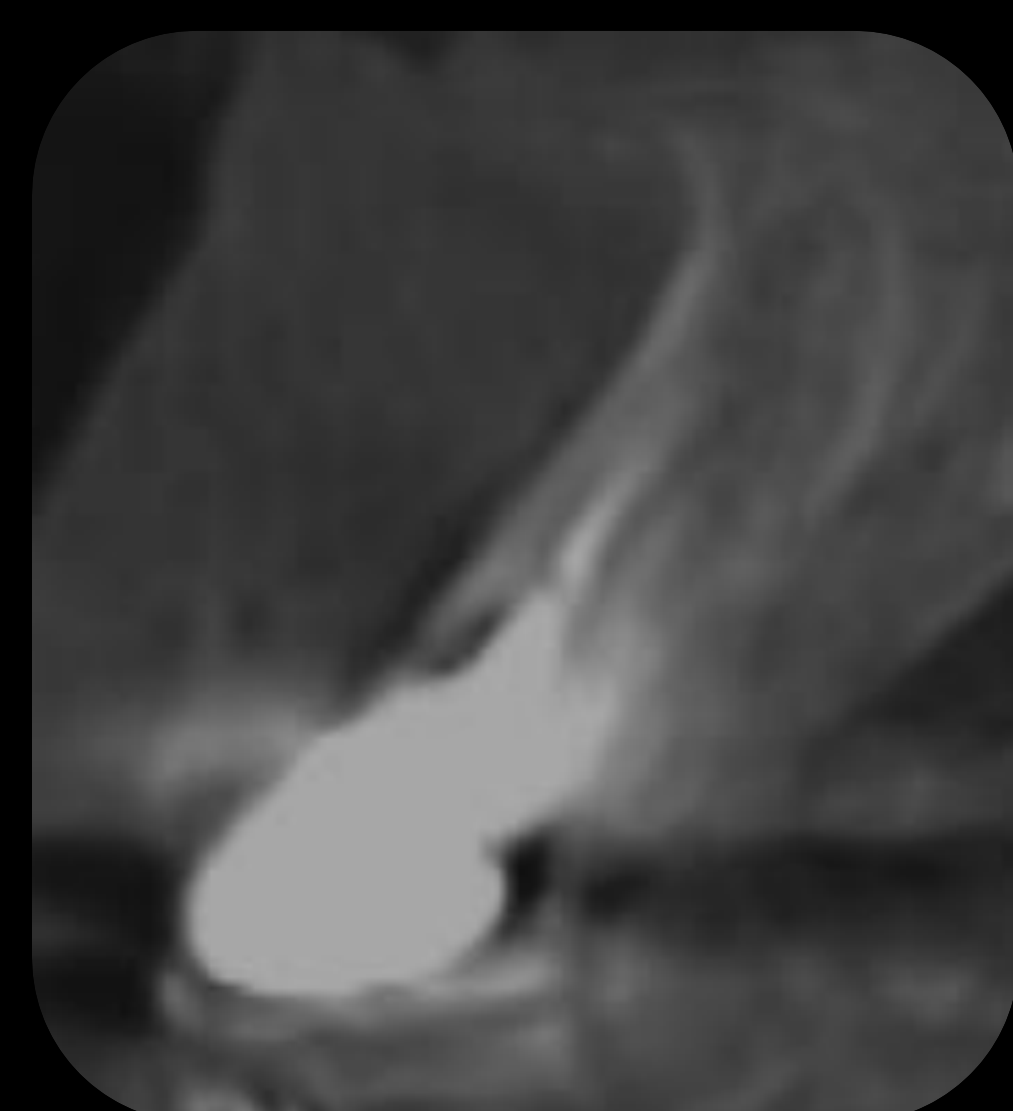
Immediate provisionalization incisal view



Post-op 2 months facial view



Post-op 2 months incisal view



CBCT



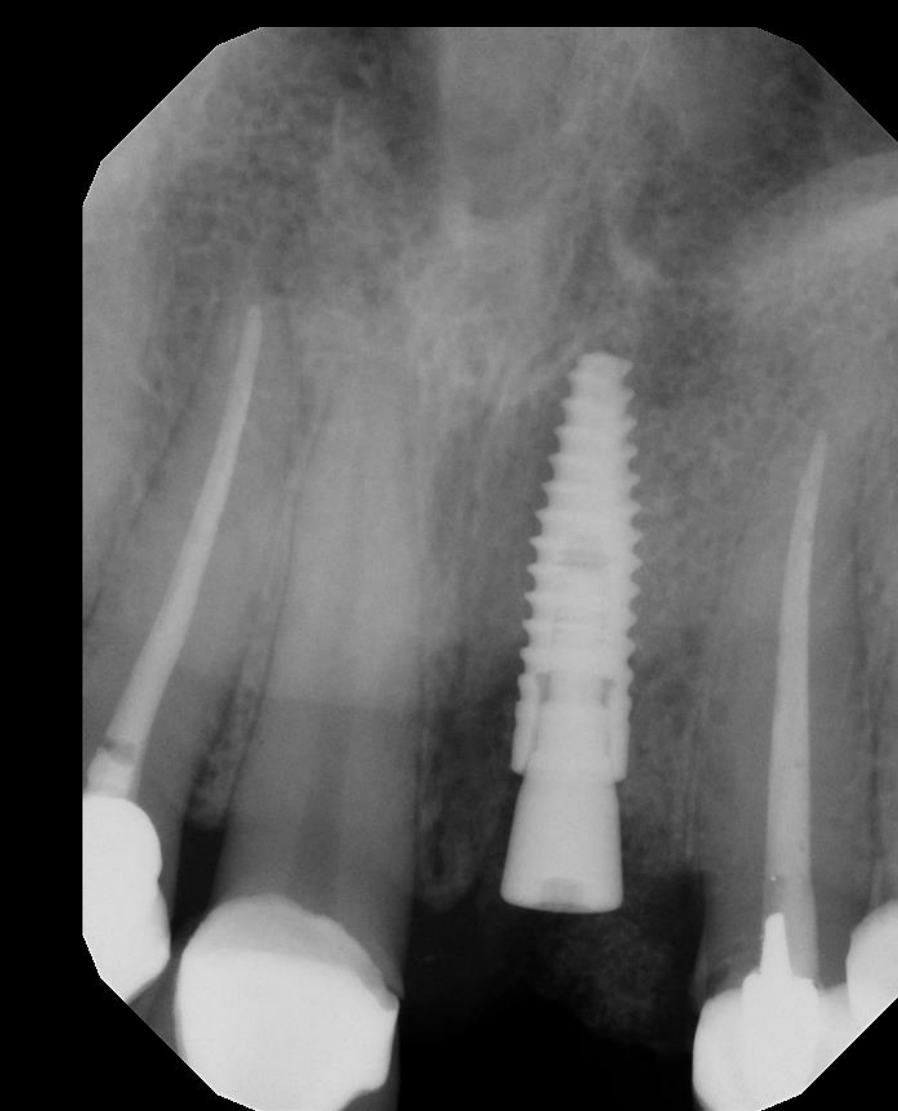
Pre-op



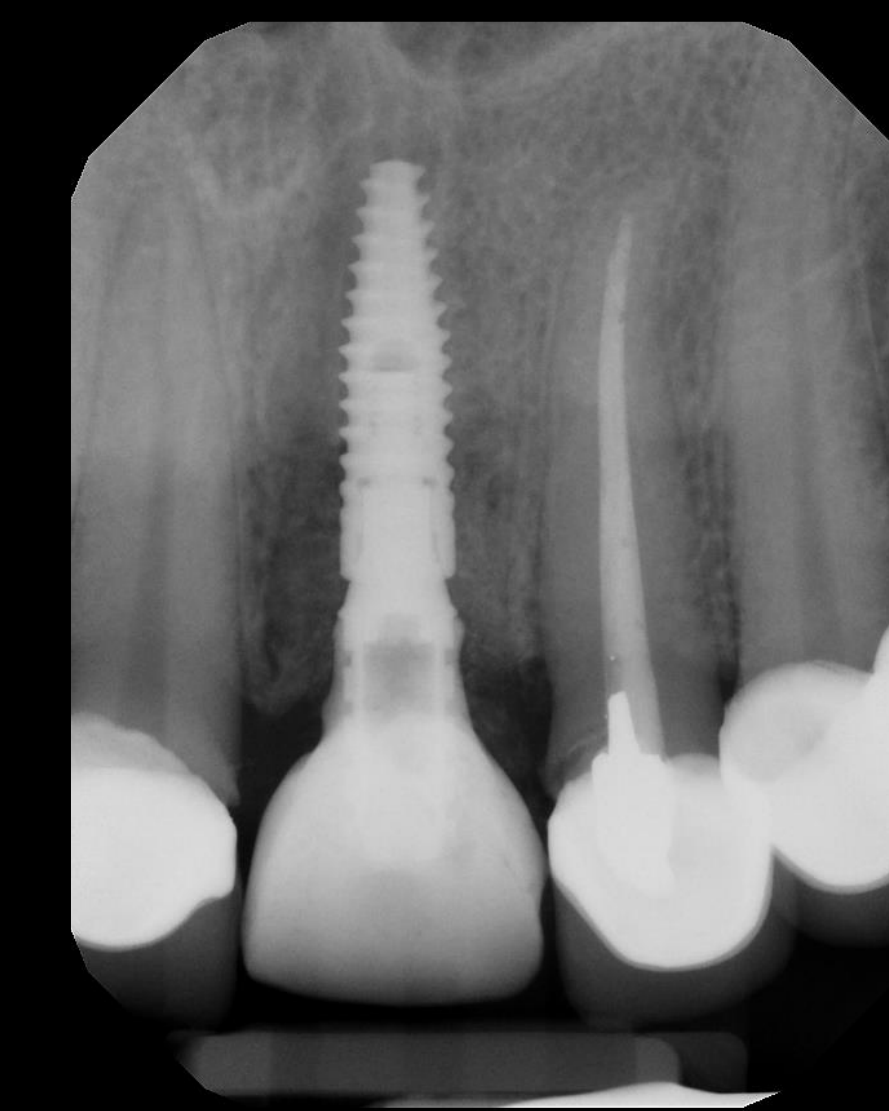
Intra-op shield preparation



Angulation/position verification



After implant placement



Post-op 2 months

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Case 3 #9

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Department of Periodontology and Oral Implantology, Temple University Kornberg School of Dentistry, Philadelphia, USA



Pre-op facial view



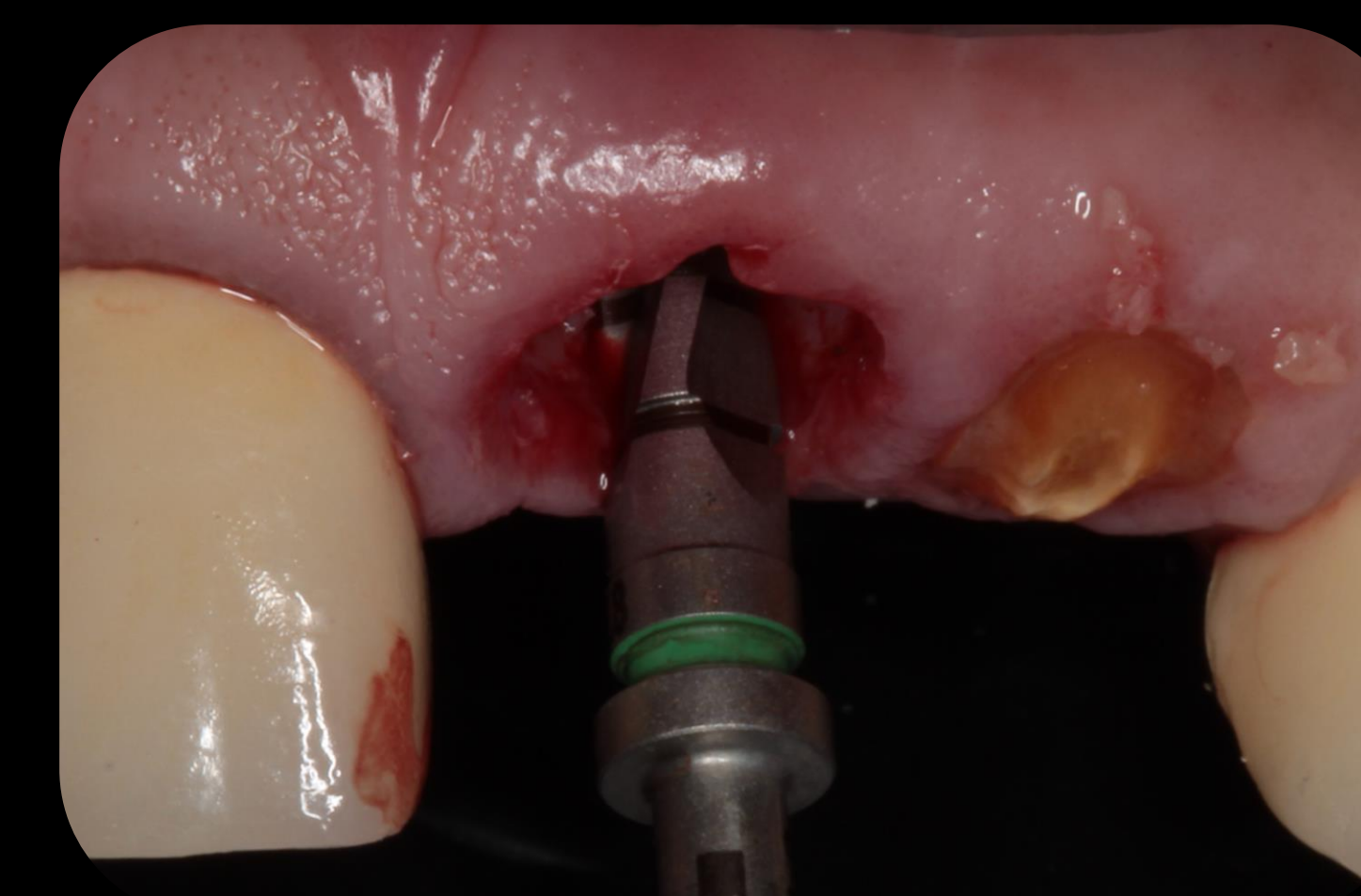
Pre-op incisal view



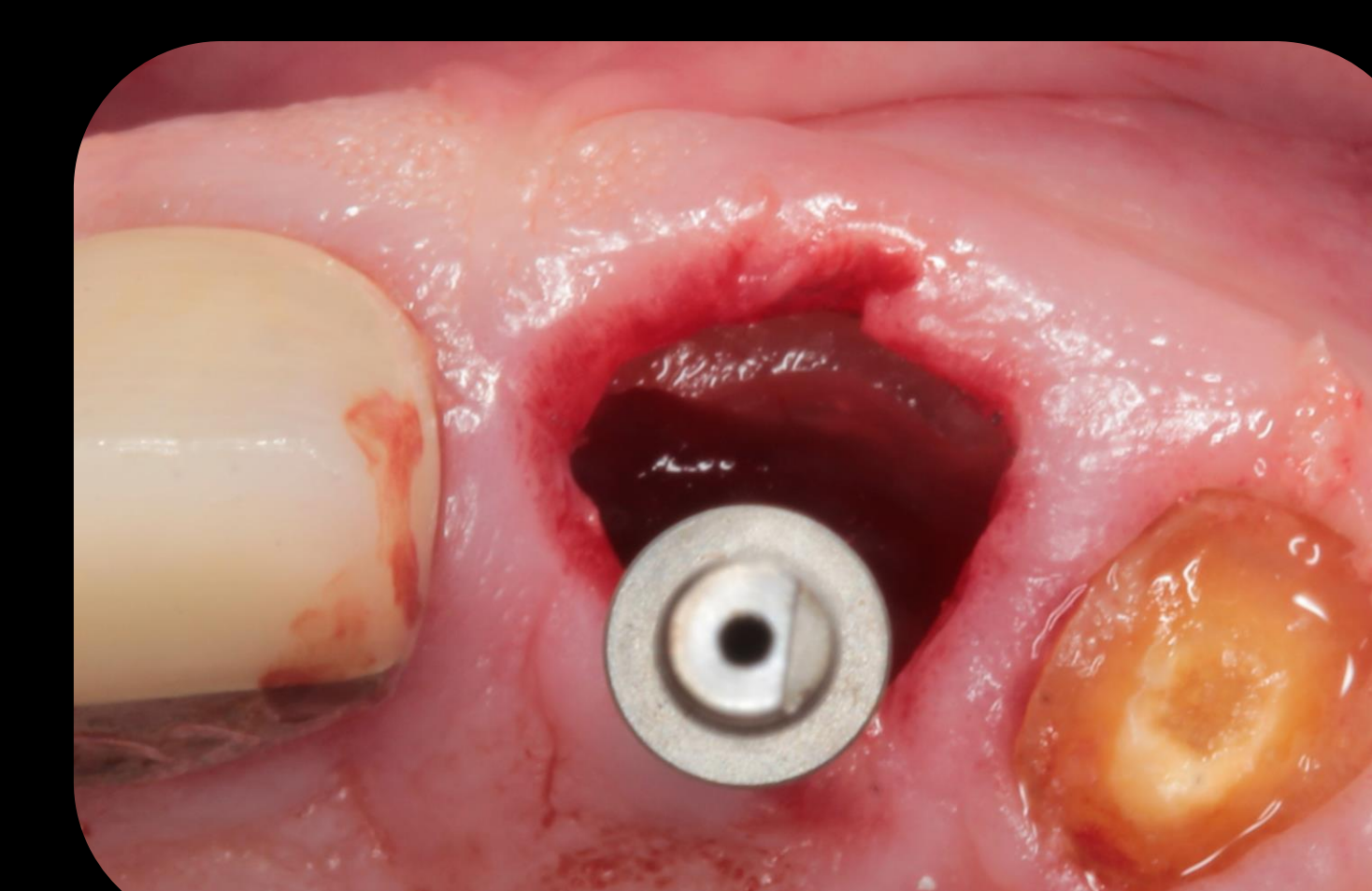
Root sectioning M-D



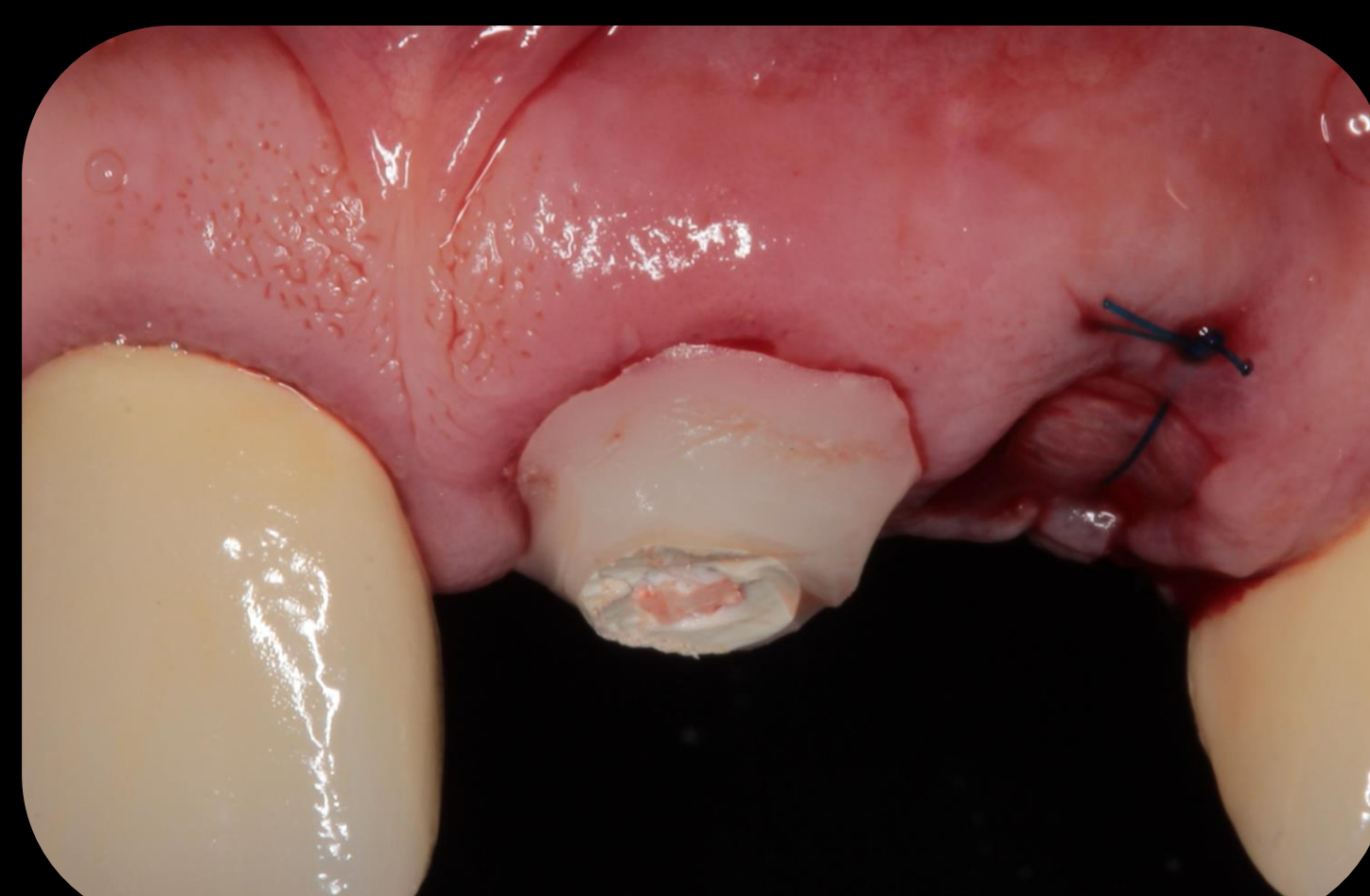
Shield preparation



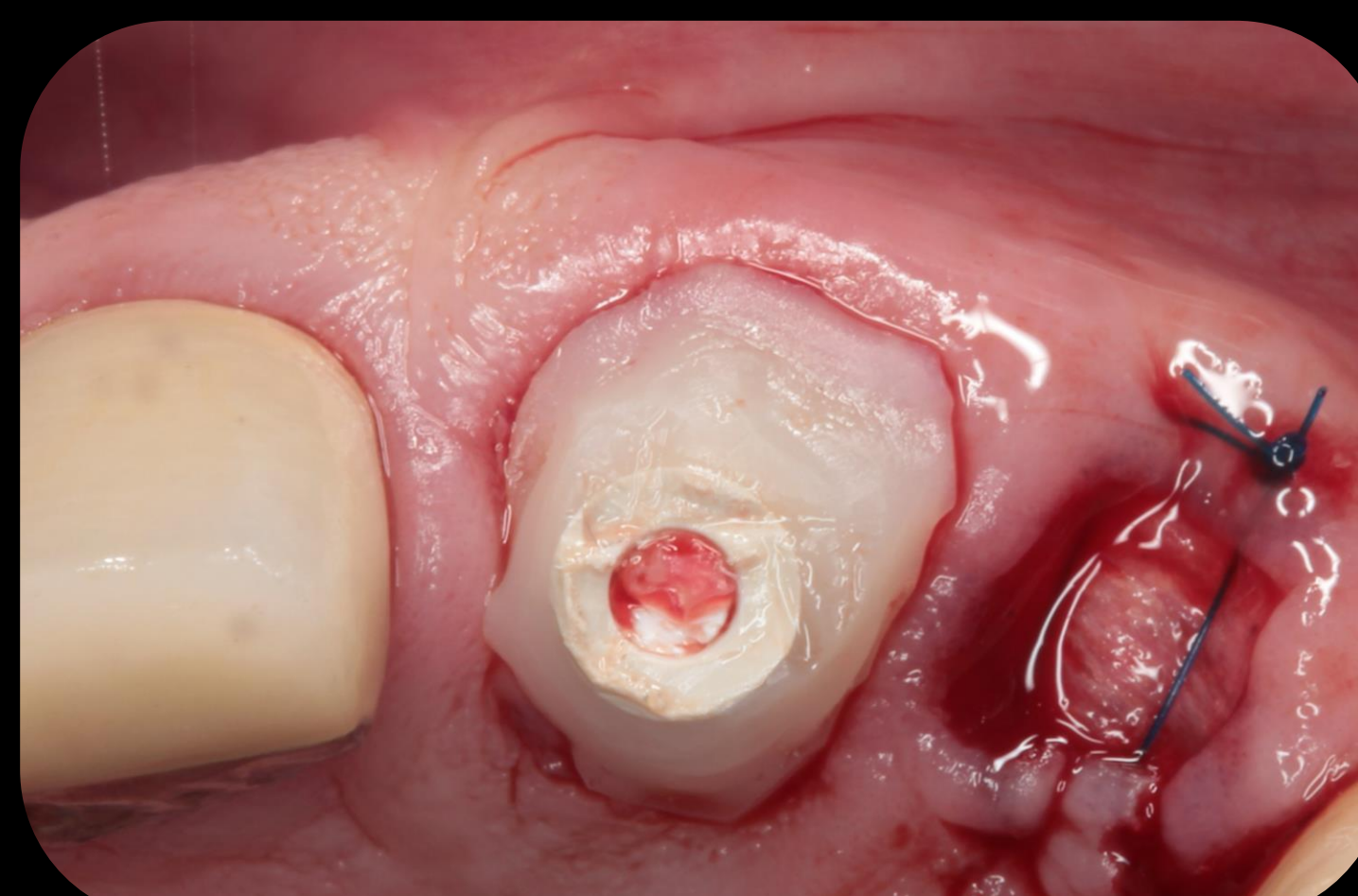
Implant drill M-D



Guide pin to verify the osteotomy position



Custom HA in place facial view



Custom HA in place incisal view



Post-op 1 week facial view



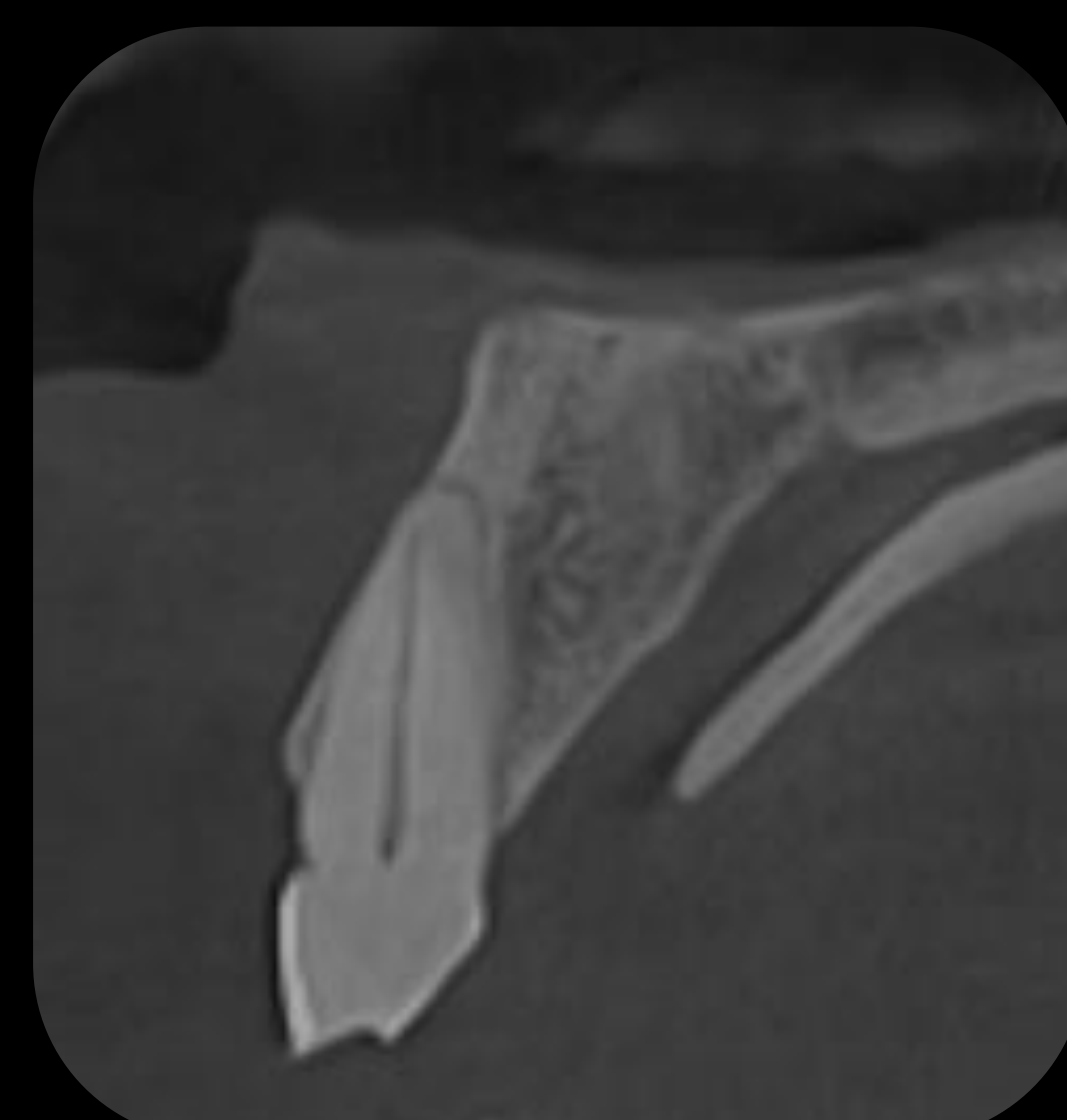
Post-op 1 week incisal view



Post-op 4 months facial view



Post-op 4 months incisal view



CBCT prior to tooth fracture



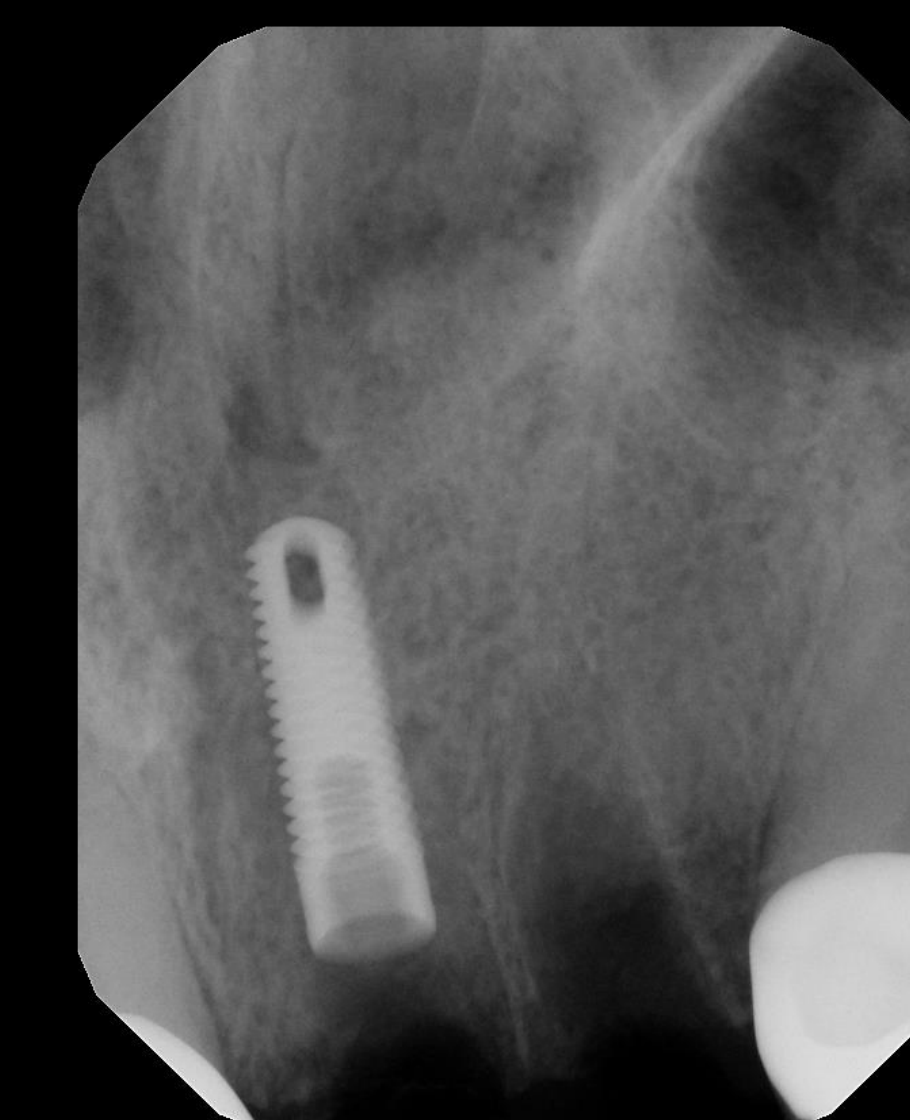
Pre-op



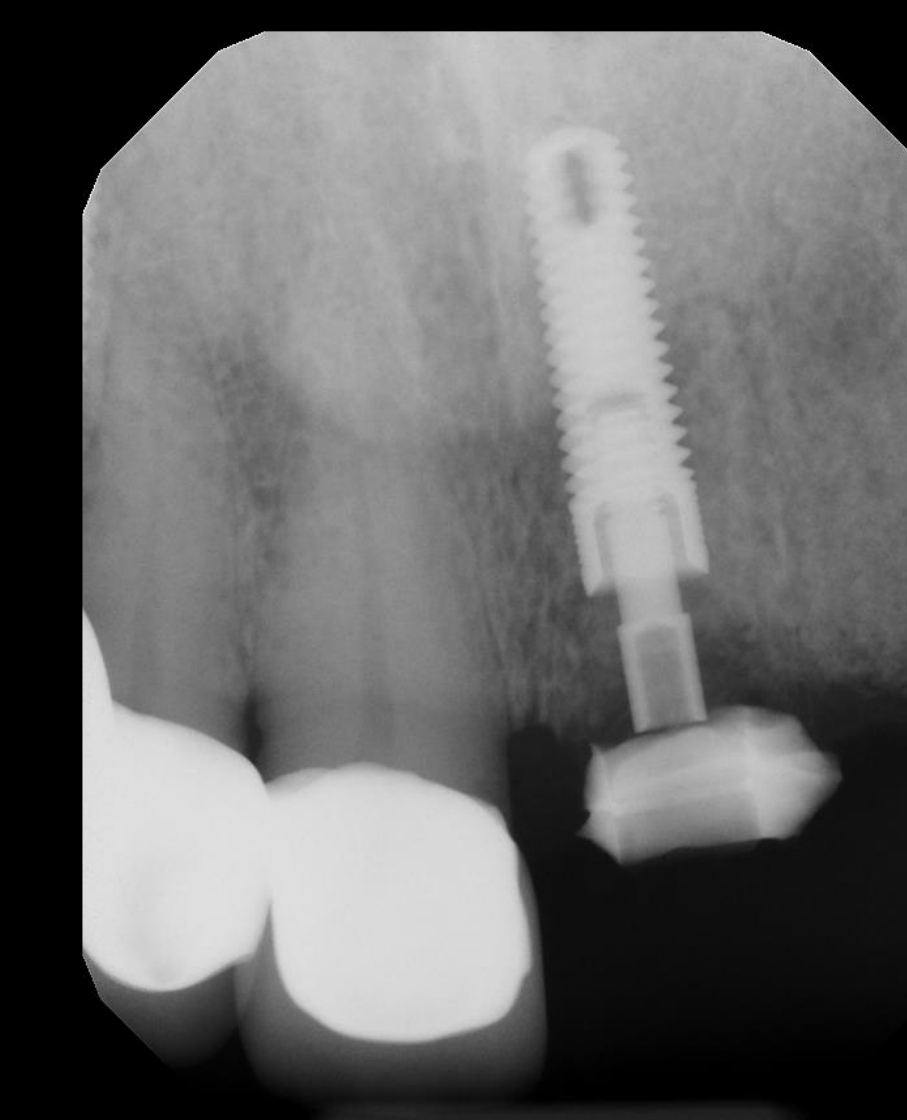
Intra-op shield preparation



Angulation/position verification



After implant placement



Post-op custom HA placement

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Summary

Subject	Age	Gender	Implant site	Follow-up period
Case 1	70	M	#7	12 months
Case 2	40	F	#9	2 months
Case 3	77	M	#9	4 months

Results

- For all three cases, the non-restorable tooth was sectioned and the shield was prepared using Gluckman’s protocol. Osteotomy was prepared and the implant was placed according to the manufacture’s recommendation.
- Case 1: A healing abutment was placed following implant placement. After 4 months of uneventful healing and osseointegration, the implant was restored with a temporary crown before delivering the final restoration. At the 1-year follow-up, the gingival margin and buccal contour remained stable.
- Case 2: Following implant placement, it was immediately provisionalized. The height of the crown was adjusted to be completely out of occlusion. At the 2-month follow-up, the gingival margin and buccal contour remained stable.
- Case 3: A customized healing abutment was fabricated following implant placement. #10 was extracted with ridge preservation based on the restorative treatment plan. At the 4-month follow-up, the gingival margin and buccal contour of #9 remained stable.
- (Fig. 2) Before and after the socket-shield technique

Conclusion

- Esthetic outcome is extremely important when dealing with single anterior tooth implant replacement. With careful and specific case selection, the socket-shield technique can result in high esthetic outcome and maintain the ridge dimension.
- In this case series, three cases were successfully treated using the socket-shield technique. More studies with long term results will be needed to further validate and add to the body of scientific evidence supporting this treatment concept.

References

- seungsarahshin@gmail.com

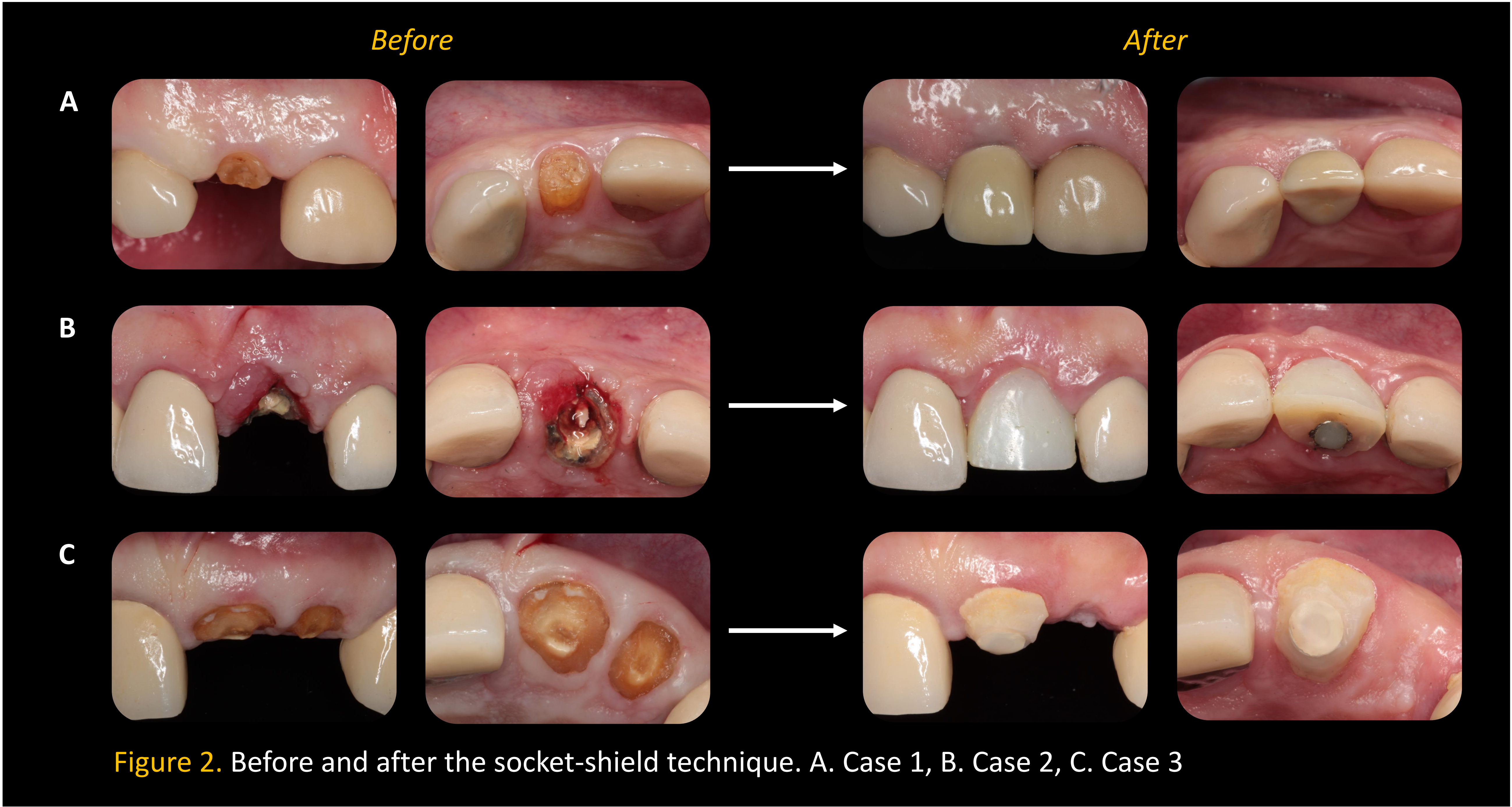


Figure 2. Before and after the socket-shield technique. A. Case 1, B. Case 2, C. Case 3