

Factors associated with prosthetic complications with individualized abutments: Real-world data

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CLINICAL RELEVANCE

- Industrially-manufactured individualized abutments offer restorative flexibility, high precision of fit and mechanical stability, and deliver excellent clinical outcomes.
- This real-world analysis confirms that industrially manufactured individualized abutments demonstrate high survival and few complications.

Background and Aim

A key advantage of individualized implant abutments over stock abutments is their great restorative flexibility to allow optimal emergence profile to promote healthy soft tissue development, superior support of more complicated rehabilitations, and improved crown retention^{1,2}. In addition, many individualized abutments are made from zirconia or titanium, offering a quality solution with clinically demonstrated long-term survival^{3,4}.



To assess prosthetic complications with individualized abutments and identify factors associated with higher complication rates.

Materials and Methods

STUDY DESIGN

Retrospective, multi-center

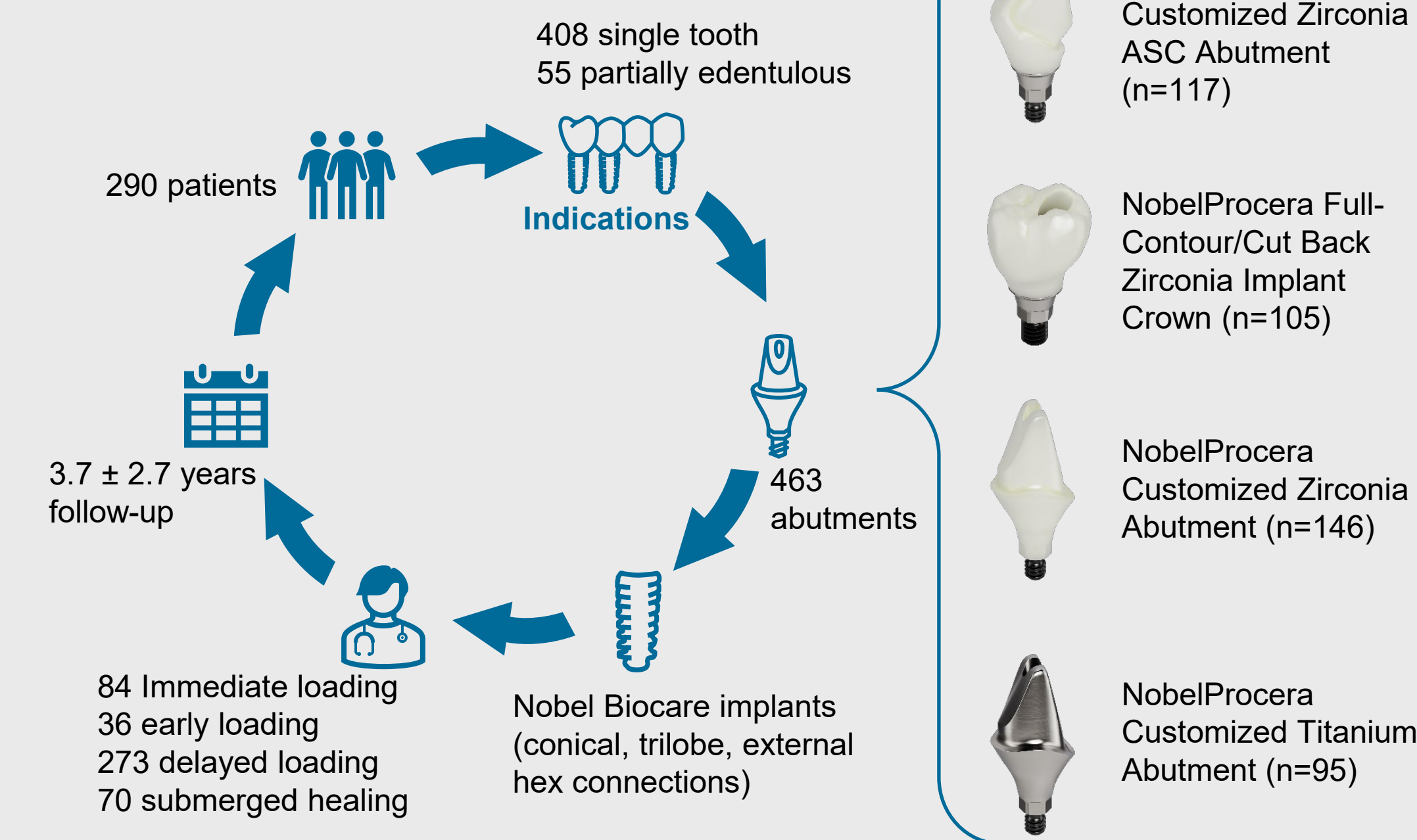


Figure 1. Study design

Results

- Cumulative prosthetic survival was 98.1%. Of the 9 failures, 4 were recorded for full-zirconia crowns, 3 for zirconia abutments and 2 for ASC abutment. In addition to those, 7 additional abutments (1.5%) had technical complications: 1.1% were minor (could be repaired in the patient's mouth) and 0.4% were major (repair required prosthetic removal). There were no complications or failures recorded for Ti abutments.
- The rate of biologic complications (at the supporting implant) was 2.8%.

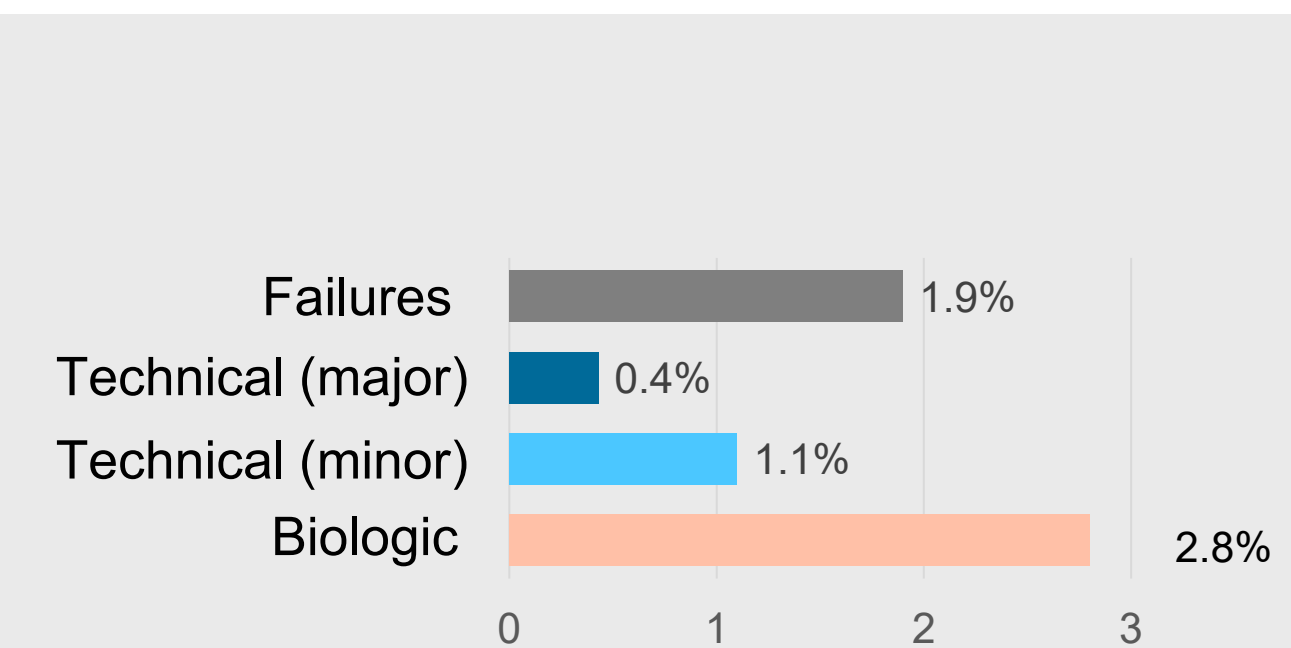


Figure 2. Biologic and technical complications recorded in the study.

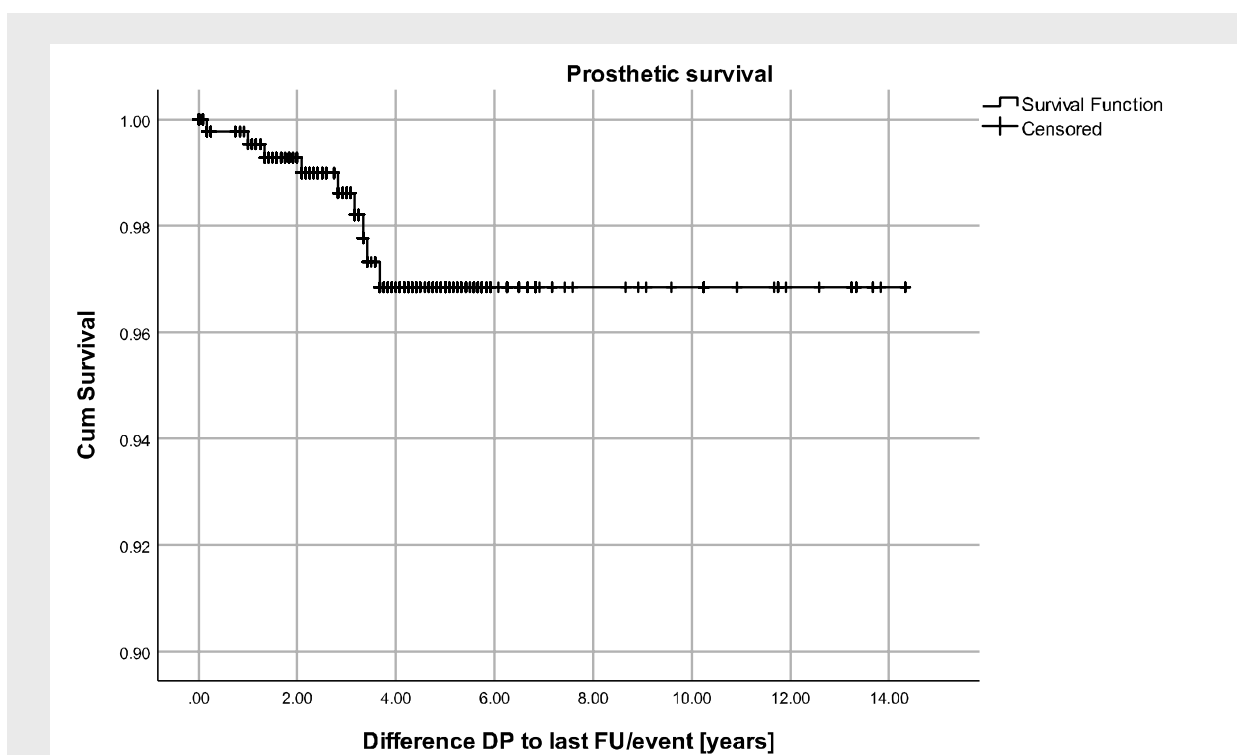


Figure 3. Kaplan-Meier prosthetic survival.

- Indication short bridge, 2-stage surgery (submerged healing), narrow and regular platforms, early loading, and FCZ abutment type were associated with lower risk of prosthetic failure (Cox PH analysis; HR>4 and p<0.05). Jaw, implant/ connection type, site type (healed vs extraction) showed no association or had an insufficient number of records.
- Most patients (96.5%) and clinicians (98.3%) were satisfied with the restoration.

Conclusion

- Industrially-manufactured individualized abutments offered excellent prosthetic survival and a low rate of complications.
- Patient and clinician satisfaction with the esthetics of restorations was high.
- Narrow or regular implant platform, early loading, short bridges, submerged healing, and FCZ abutment type were associated with lower risk of prosthetic failure.

References

1. Martínez-Rus F, Suárez MJ, Rivera B, Pradies G. Evaluation of the absolute marginal discrepancy of zirconia-based ceramic copings. J Prosthet Dent 2011;105(2):108-114.
2. Truninger TC, Stawarczyk B, Leutert CR, et al. Bending moments of zirconia and titanium abutments with internal and external implant-abutment connections after aging and chewing simulation. Clin Oral Implants Res 2012;23(1):12-18.
3. Zembic A, Bosch A, Jung RE, et al. Five-year results of a randomized controlled clinical trial comparing zirconia and titanium abutments supporting single-implant crowns in canine and posterior regions. Clin Oral Implants Res 2013;24(4):384-390.
4. Ozer F, Mante FK, Chiche G, et al. A retrospective survey on long-term survival of posterior zirconia and porcelain fused-to-metal crowns in private practice. Quintessence Int 2014;45(1):31-38.

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Clinical Case with an ASC Abutment

A 34-year-old non-smoker female patient missing the central incisor in maxilla received a NobelActive NP 15mm implant with a Nobel Procera ASC abutment delivered as the final restoration at 5.6 months after the surgery.*

Figure 4. Diagnostic set up and implant planning for illustrative purposes only#.

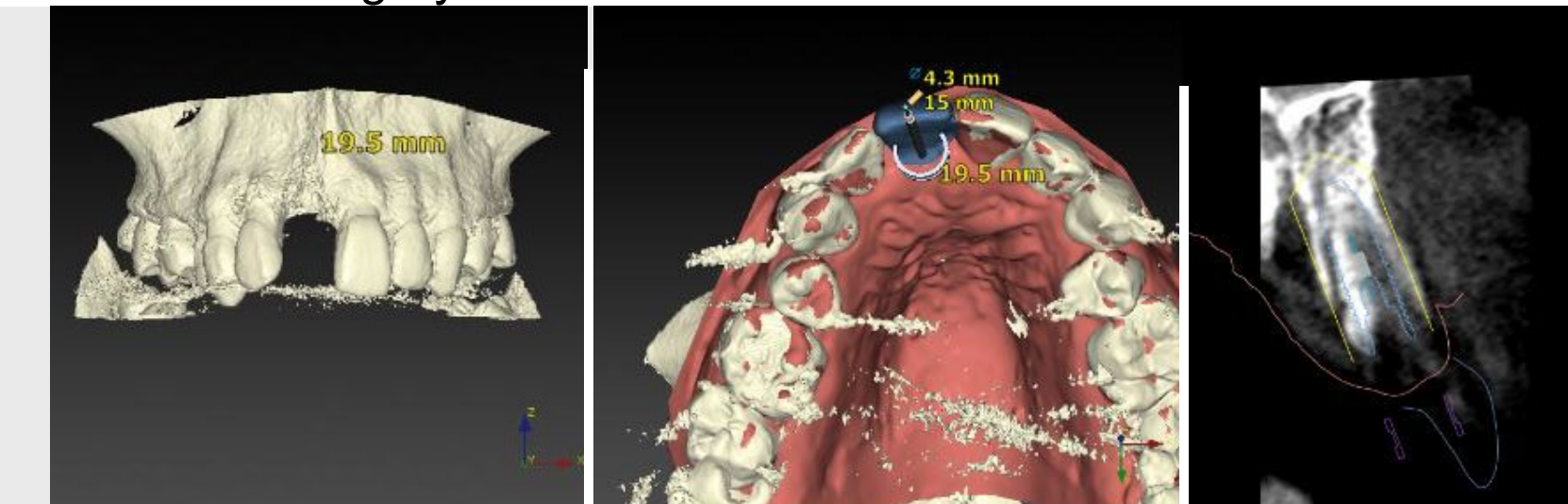


Figure 5. Radiograph (left) and clinical view (middle) at an implant placement. Screw-retained provisional restoration (right).

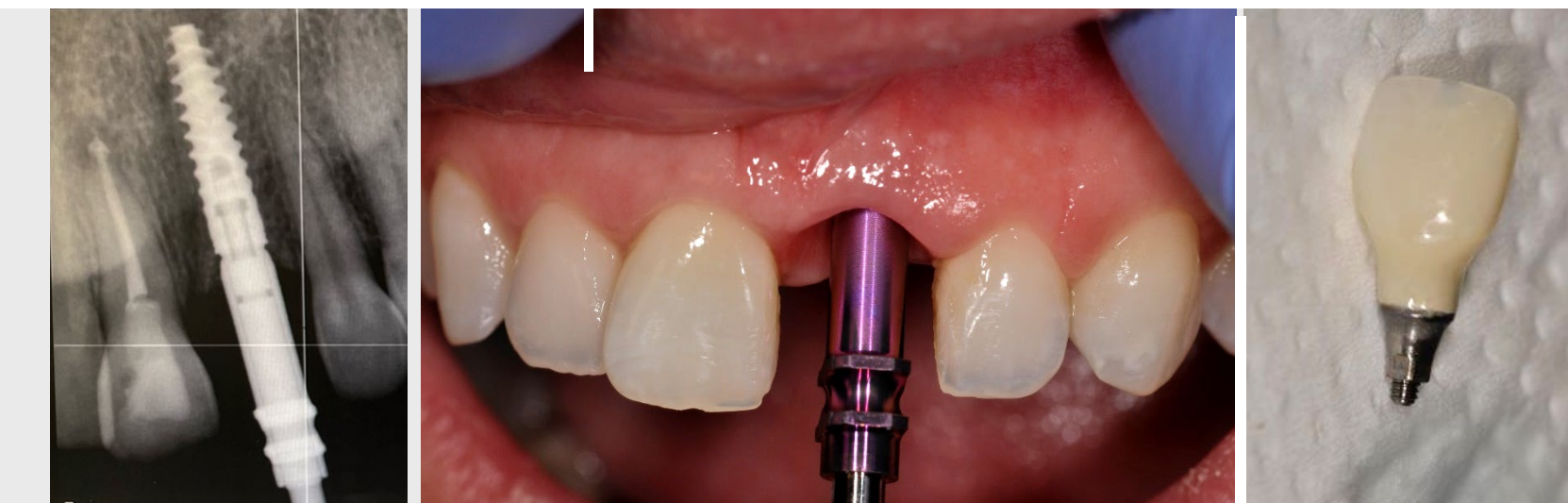


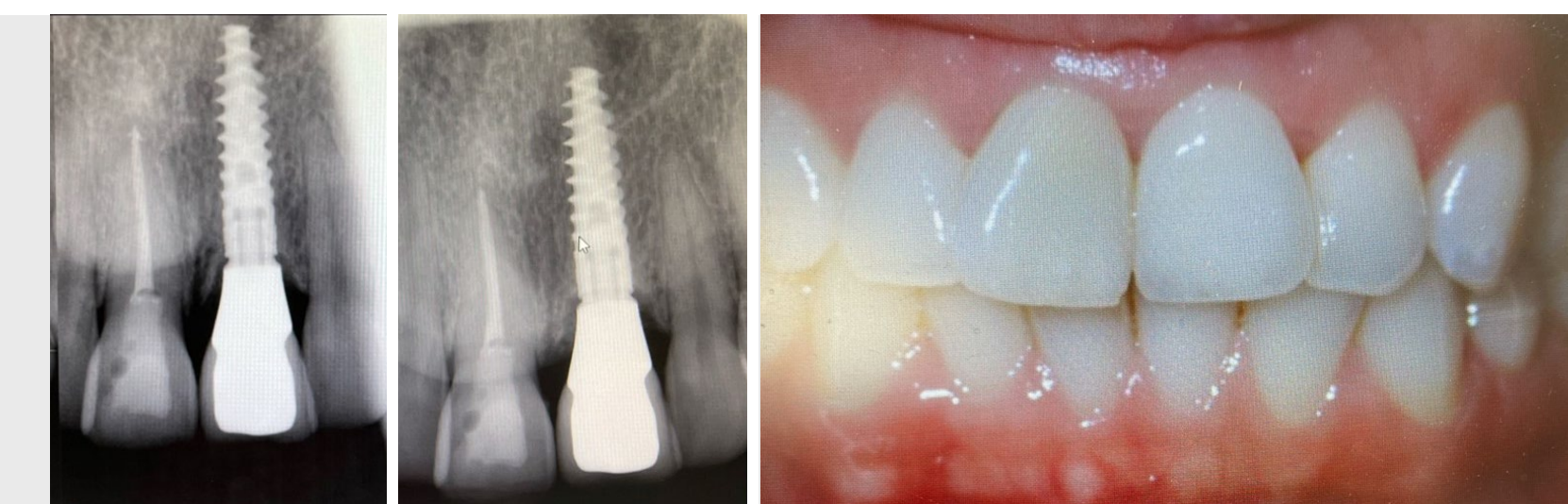
Figure 6. Immediate temporary crown (left) and intraoral view 2 weeks post-op (right)



Figure 7. 3 months post-op: healing abutment (left) and the resulting sculpted tissue (right)



Figure 8. Radiographs at 2 years (left). Radiograph (middle) and clinical view (right) at 7 years



*Not part of the study, #not part of the case.