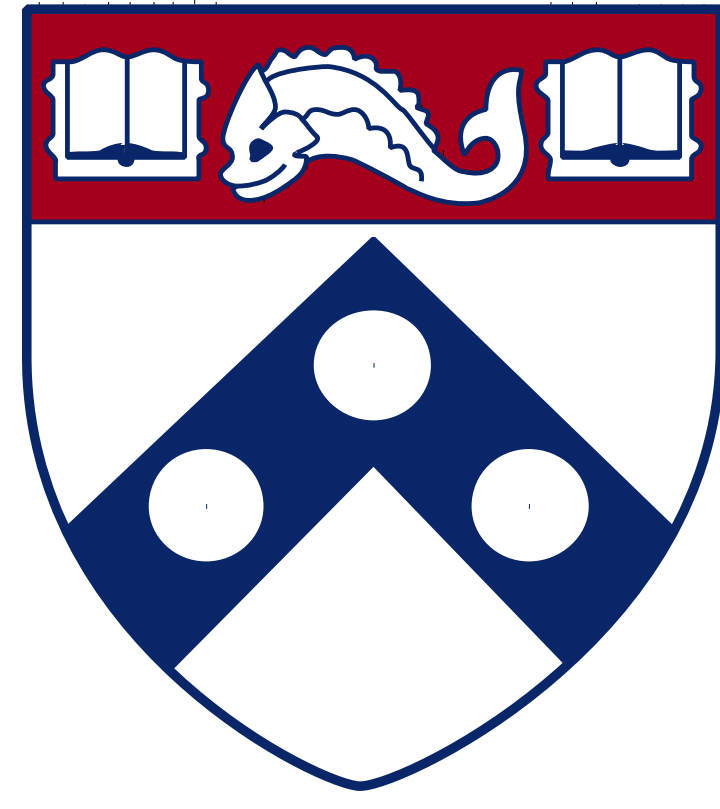
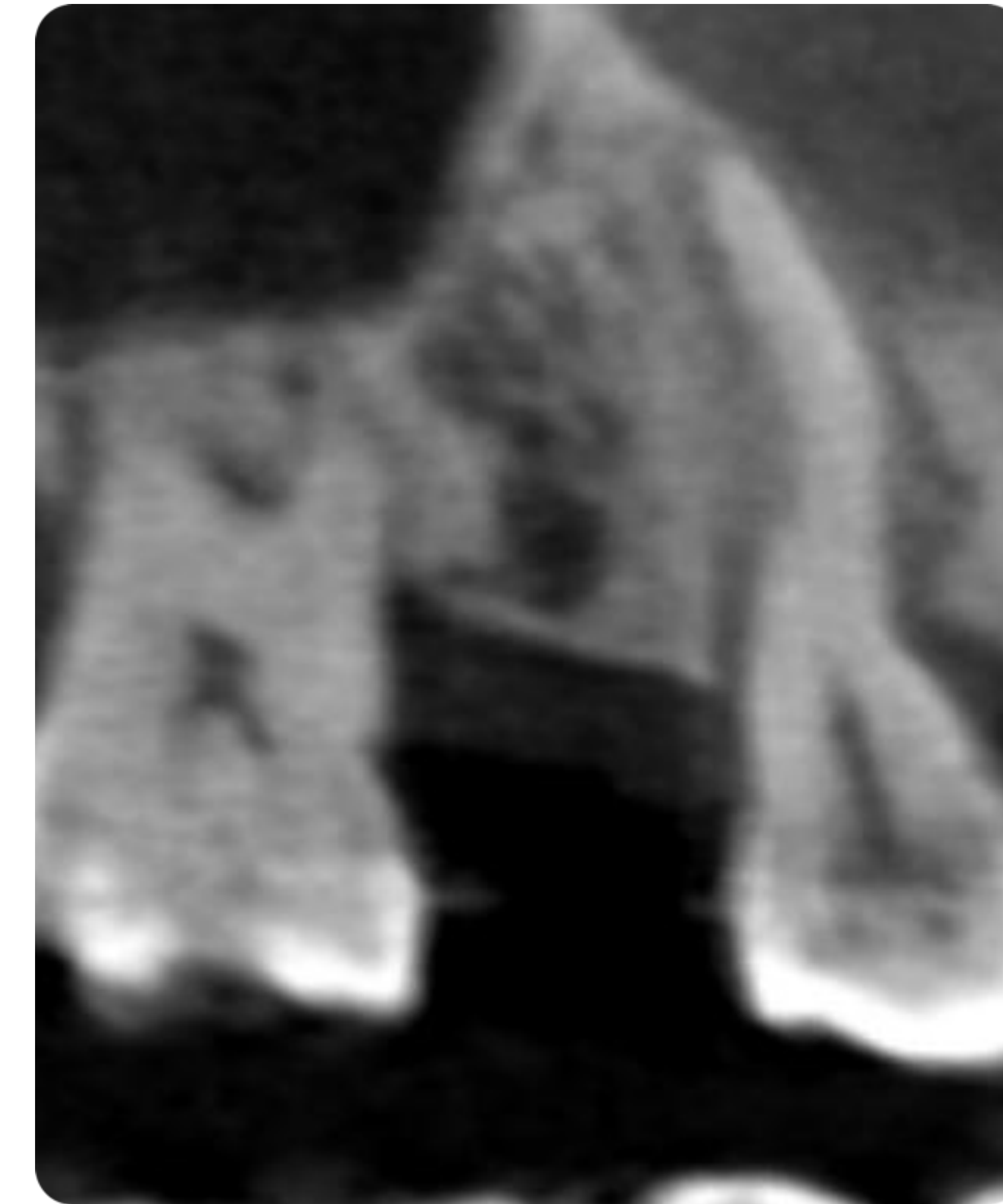
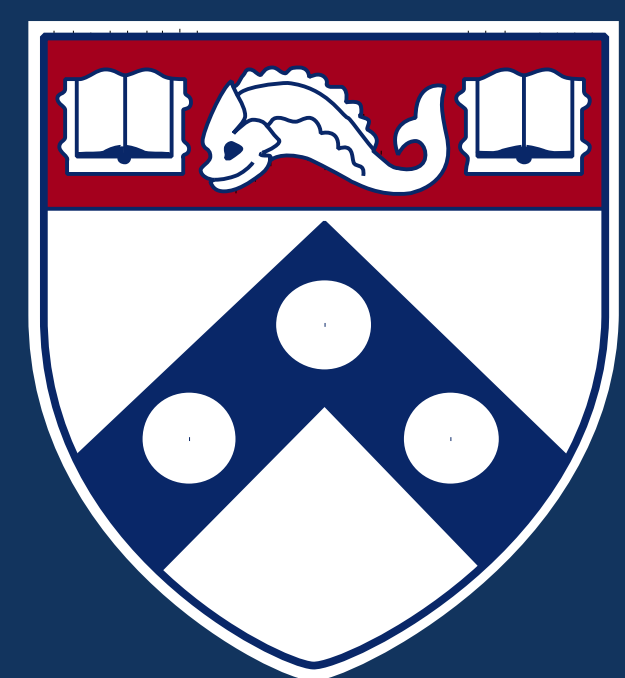




Conservative Management Of Deficient Alveolar Ridges Using Anatomically Designed Implants: A Case Series



Jason Poon, DDS¹; Bradley Lander, MChD/BChD, BSc^{1,2}; Joseph Fiorellini, DMD, DMSc¹, Rodrigo Neiva, DDS, MS¹



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Background

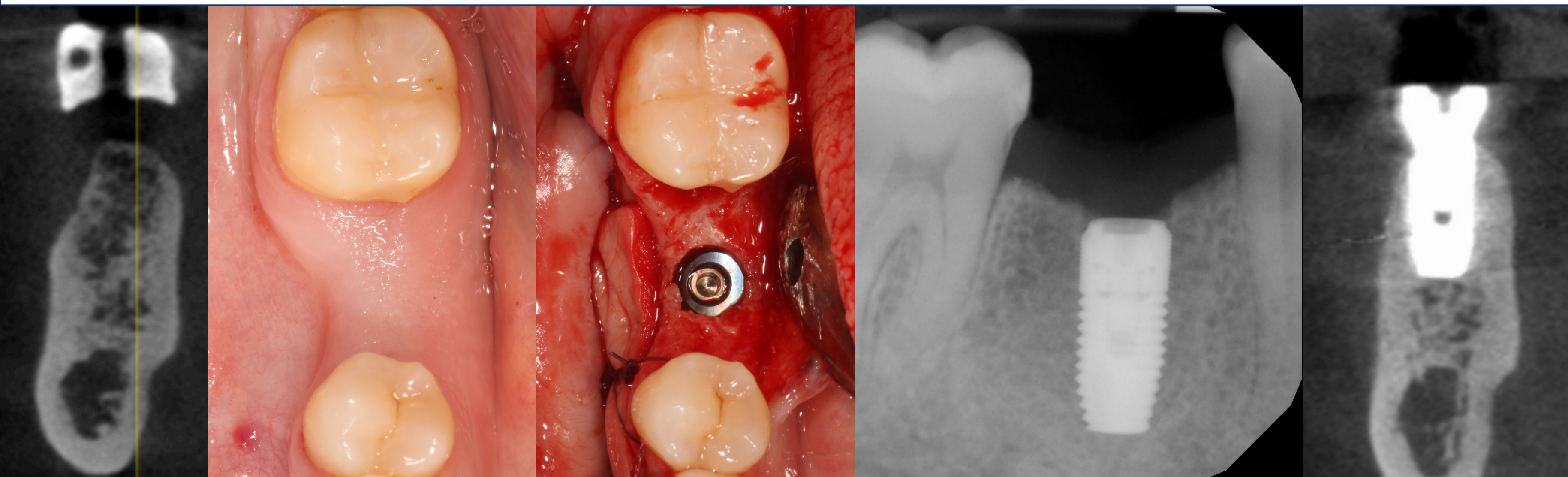
Sloped alveolar ridges as a result of tooth loss are common clinical problems. Bony atrophy, buccal resorption, and major alveolar changes take place during the first 12 months following tooth extraction as evidenced by alveolar ridge reductions of up to 50%¹. The resultant bony architecture from a healed post extraction site becomes a challenge for predictable tooth replacement for a flat platformed implant unless bone augmentation is completed to create a more uniform ridge. Guided bone regeneration would then require additional surgical procedures, prolonged treatment time and additional costs². Use of a sloped implant as a treatment option is available whereby the fixture's buccal, apical slope follows the natural contours of the existing bone up to lingual-buccal bone height discrepancies of 2.0–5.0 mm³. An anatomically designed implant (ADI) that follows sloped alveolar ridges presents a conservative approach for tooth replacement options and addresses the geometry of deficient ridges.

Methods

This case series reports on 3 patients of the Graduate Department of Periodontics at the University of Pennsylvania Dental Medicine Clinic who were interested in tooth replacement with a titanium dental implant. All three patients with non-contributory medical histories were diagnosed with mucogingival deformities and conditions on an edentulous ridge: hard-tissue deficiencies prior to implant placement associated with natural resorption processes from tooth loss⁴.

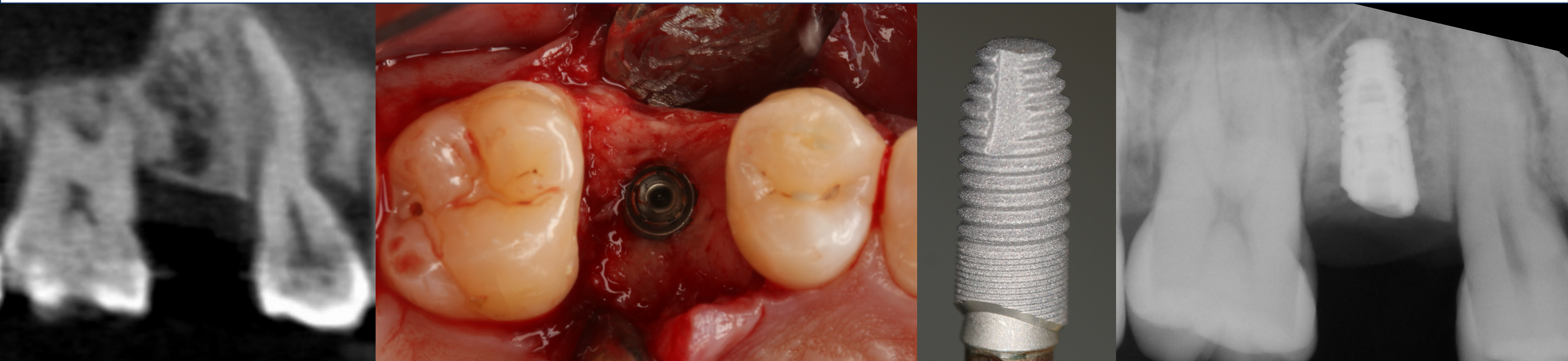
Clinical Case #1

A 34-year old female seeking replacement for her missing #29. CBCT analysis revealed a deficient buccal wall. A 4.8mm x 9mm ADI for sloped ridges was placed with the slope placed towards deficient buccal ridge.



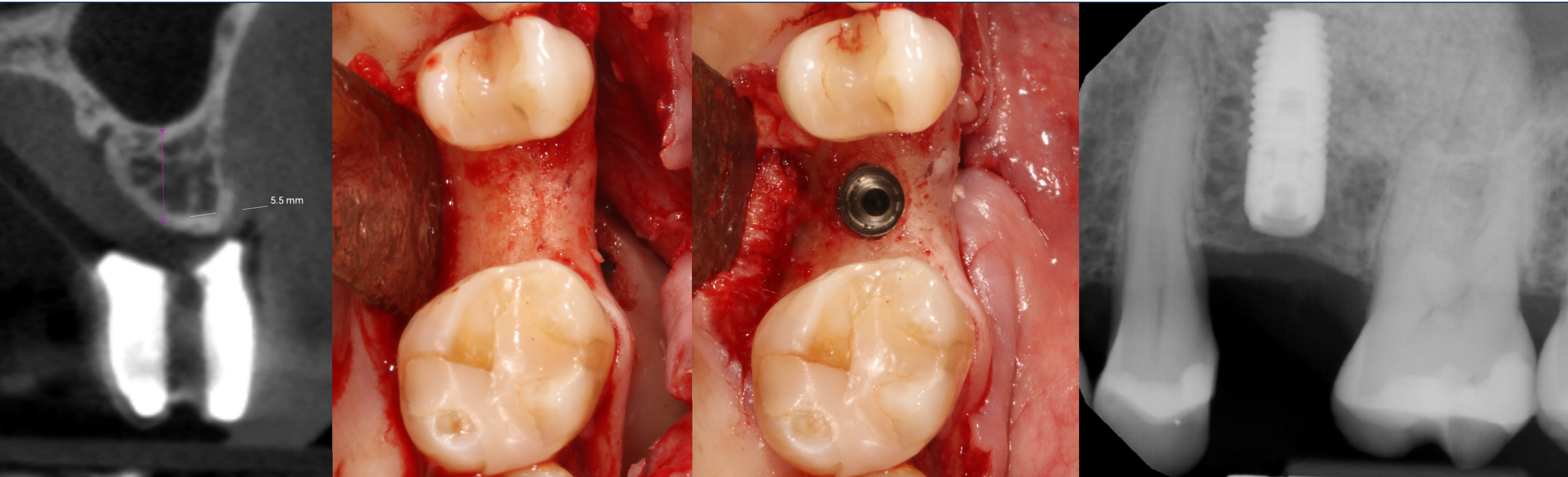
Clinical Case #2

A 28-year old male seeking replacement for his missing #4. CBCT analysis reveals an alveolar ridge with mesial-distal slope. A 4.2mm x 9mm ADI was placed with the slope placed towards the distal ridge deficiency.



Clinical Case #3

A 64-year old female seeking replacement for her missing #12. CBCT analysis reveals a deficient palatal wall. A lateral window sinus augmentation was completed with simultaneous placement of a 4.2mm x 11mm ADI with the slope facing towards the palate.



Results

ADI presents a solution for managing deficient alveolar ridges without the need to submerge implants or complete ridge augmentation as may be indicated when placing a flat platformed implant into a deficient site. Esthetics were optimized and the treatment time was significantly reduced as compared to traditional approaches.

Conclusion

Placing anatomically designed implants for sloped ridges is a predictable treatment modality that may negate the need for ridge augmentation and offers a minimally invasive approach to manage ridge deficiencies.

References

- Schropp, L., Wenzel, A., Kostopoulos, L., & Karring, T. (2003). Bone Healing and Soft Tissue Contour Changes Following Single-Tooth Extraction: A Clinical and Radiographic 12-Month Prospective Study. *International Journal of Periodontics & Restorative Dentistry*, 23(4), 313–323.
- Fiorellini, Joseph P., and Marc L. Nevins. "Localized Ridge Augmentation/Preservation: A Systematic Review." *Annals of Periodontology*, vol. 8, no. 1, 2003, pp. 321–327. <https://doi.org/10.1902/annals.2003.8.1.321>
- Noelken, R, Dona, C, M, Fiorellini, J, Gellrich, N-C, Parker, W, Wada, K, Berglundh, T. Soft and hard tissue alterations around implants placed in an alveolar ridge with a sloped configuration. *Clin. Oral Implants Res.* 25, 2014, 3–9
- Hämmerle CHF, Tarnow D. The ecology of hard- and soft-tissue deficiencies at dental implants: A narrative review. *J Periodontol.* 2018 Jun;89 Suppl 1:S291-S303. doi: 10.1002/JPER.16-0810. PMID: 29926950.

