

Clinical Management of Hex and Non-hex Connection in an Implants-supported Bridge

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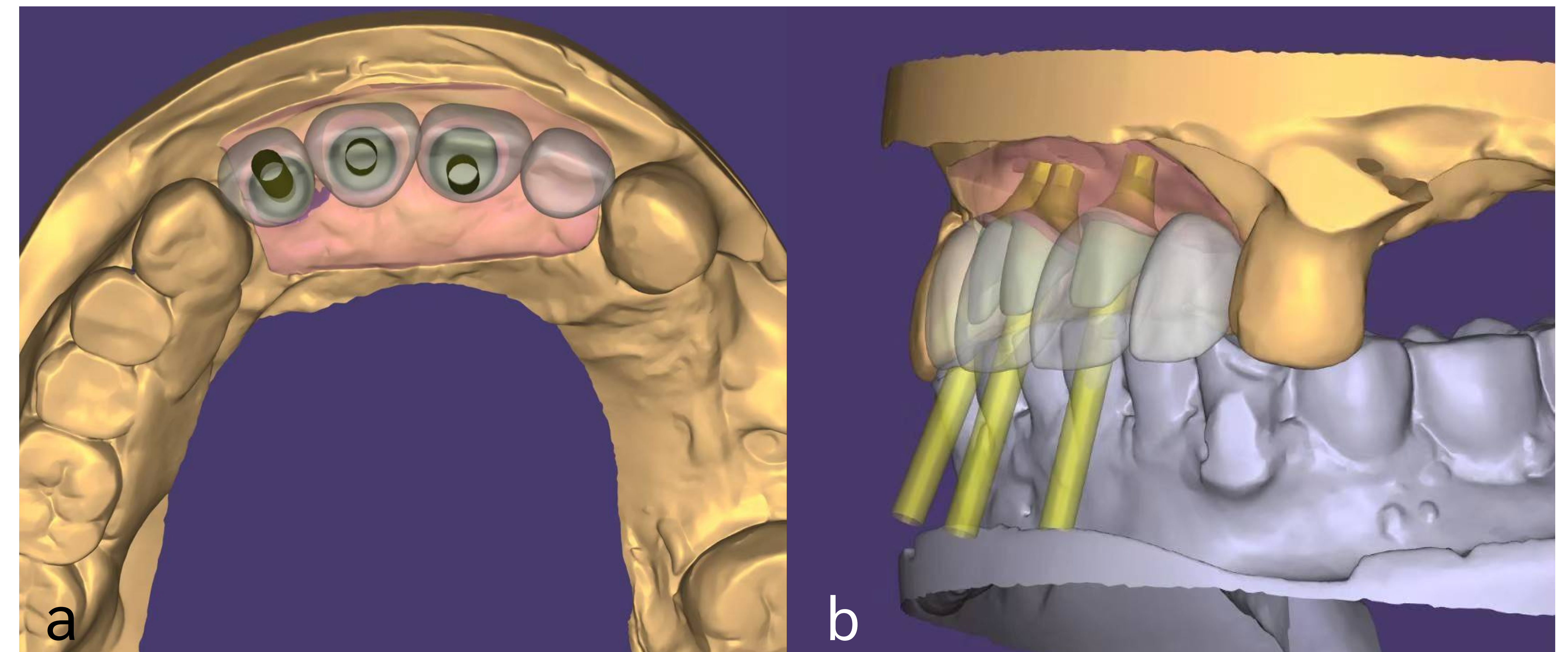
INTRODUCTION

This study presents a unique restorative challenge in which two implants of different connection types, one internal hex and one conical non-hex, are inserted at different intervals to support a single bridge.

CASE DESCRIPTION

A 74-year-old patient presented with two implants in the maxillary anterior region; #11 (Ø3.5 mm × 13 mm) and #12 (Ø3.5 mm × 11.5 mm). The edentulous area at #21–#22, from the extraction of previously treated teeth with vertical root fractures, was planned for implant-supported bridge (11–21–22). A new implant was placed at #21 (Ø3.5 mm × 13 mm) using a free-hand approach, with the long axis estimated in reference to the existing implant at #11 to optimize prosthetic parallelism.

Different connection geometries were intentionally selected to compensate for the discrepancy in implant axis orientation, which resulted from the implants being placed at different time points and without guided alignment. An implant-supported screwmentable bridge was selected. The definitive zirconia restoration was extraorally cemented onto the custom CAD-CAM abutments, after which the prosthesis was delivered using abutment screw retention through the angulation of hex-indexed abutment.



a-b: Implant angulation in CAD design

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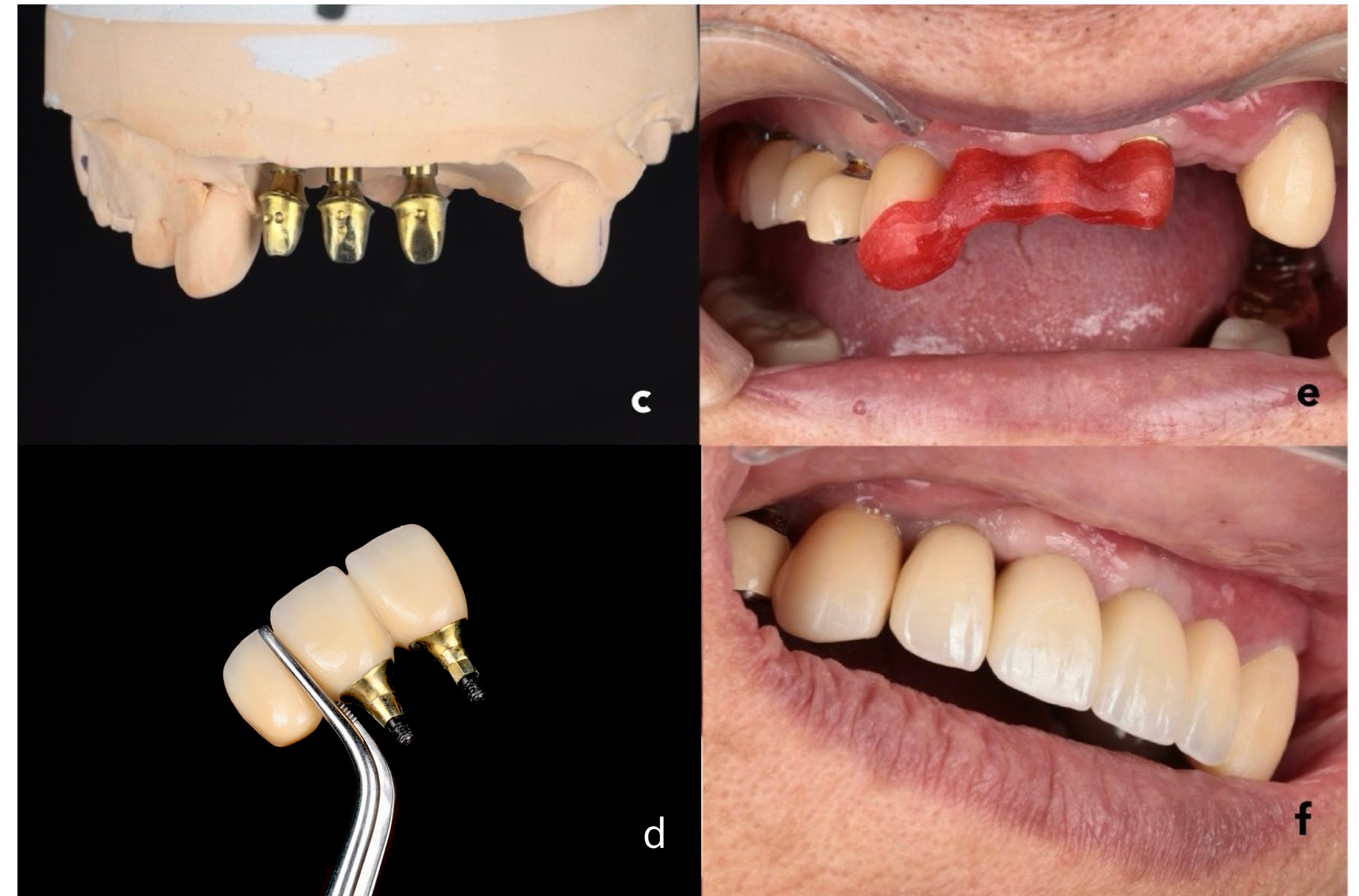
DISCUSSION

The combination of hex and non-hex systems within the prosthesis introduces challenges in alignment, torque transfer, and micro-movement. However, the combining the cosmetic and sealing advantages of cement retention with the biomechanical stability of screw retention, screwmentable design lessens the problem. A passive, stress-free assembly is further guaranteed by CAD-CAM accuracy and digital verification.

This case highlights that when careful planning, precise indexing, and cross-platform prosthetic design concepts are used, interconnection system rehabilitation is feasible. It emphasizes how important digital precision workflows compatibility awareness are in contemporary prosthodontics.

CONCLUSION

The combination of Hex and Non-hex bridge, when supported by the screwmentable principles and digital customization, can achieve excellent functional and aesthetic outcomes. This approach expands clinical flexibility in treating staged implant placements without sacrificing long-term outcomes.



c: Customized milling abutments on working cast, d: Hex connection of abutment #11 and non-hex connection of abutment #21, e: Positioning jig placed on customized milling abutments, f: Final Implants-Supported Bridge (11-21-22)