

Beyond the Ridge: The Zygomatic Implant Workflow from Surgical Precision to Prosthetic Perfection

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Introduction

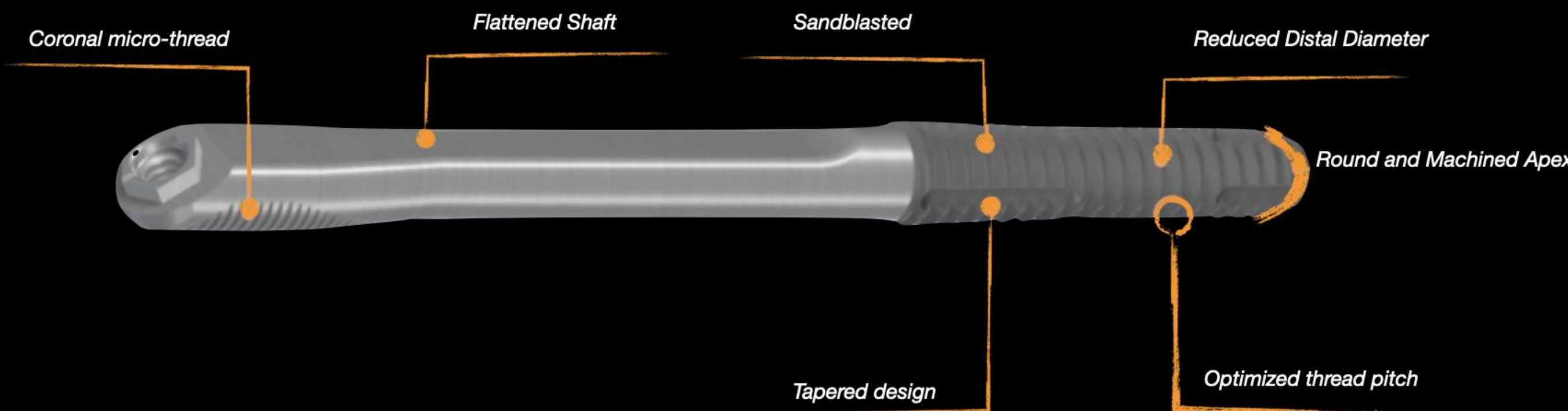
Edentulism is prevalent in the geriatric population, resulting in compromised masticatory function and subsequent systemic health implications. Following tooth loss, resorption of the maxillary alveolar ridge occurs, particularly in the posterior and sinus-adjacent regions, often restricting the feasibility of conventional implant placement. Although bone augmentation techniques such as sinus floor elevation and onlay grafting can mitigate these limitations, they are associated with prolonged treatment duration, increased morbidity, and are highly dependent on the clinician's surgical proficiency. The indications of the zygomatic implants can be illustrated in the chart below.

Zygoma – guided anatomic approach (ZAGA) Classification



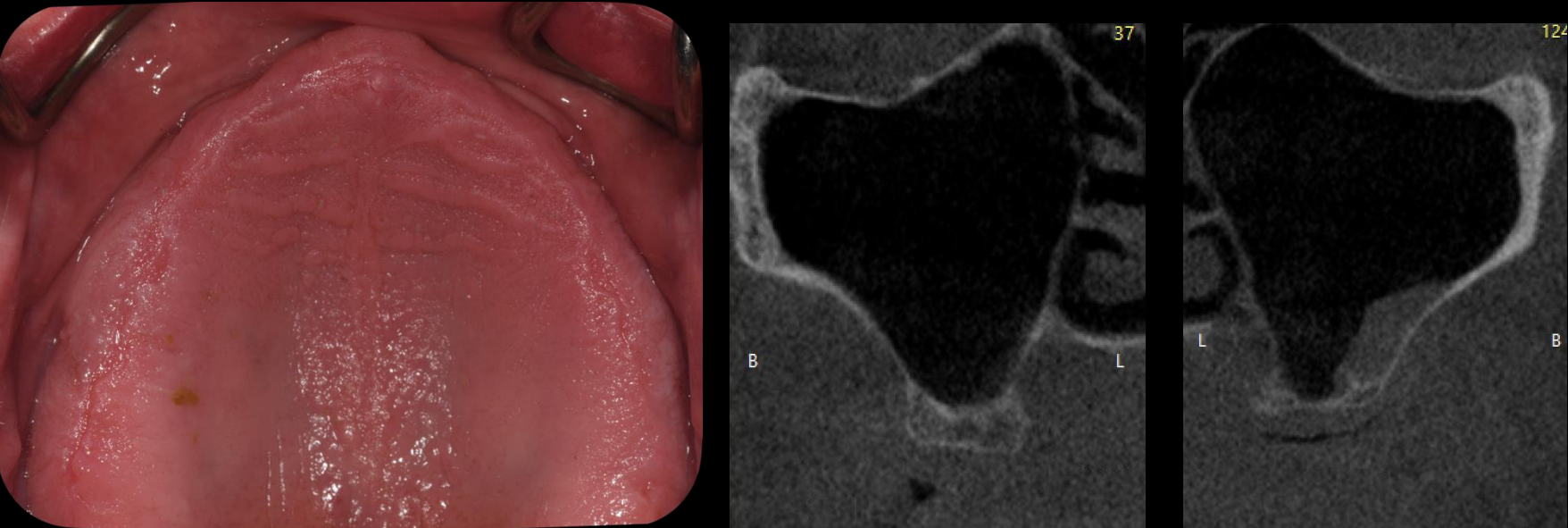
Abstract

Zygomatic implants provide immediate and stable support for dental prostheses. This significantly reduces treatment time and eliminates the prolonged healing periods associated with bone grafting. This case study involves a 53-year-old patient with maxillary and mandibular metal-ceramic implant-supported prostheses. His medical history included arthritis and high blood pressure. Two zygomatic implants and two endosteal implants were placed in the maxilla due to the atrophic residual ridge, and four endosteal implants were placed in the mandible. A digital wax up of the teeth was done using CAD software and merged with cone beam computed tomography images for implant surgery planning for precise implant placement. Preoperative radiographic examination showed advanced vertical and horizontal bone loss of the alveolar ridge in the posterior segment of the maxilla. The patient refused grafting procedures prior to implant placement. After 5 months of osseointegration, multi-unit abutments were inserted, a conventional impression was taken and prototypes were inserted. Digital files of the master cast, including the prototypes were sent to the lab for milling and finishing. The definitive prostheses were delivered. Digital surgical implant planning allowed optimal positioning of the implant for ideal emergence of the fixture over the alveolar crest. Zygomatic implants can be an alternative option to improve quality of life for patients, making full-arch rehabilitation possible even in the most atrophic cases.



Design of Zygomatic Implant

Pre-Operative Photo



Pre-treatment Photographs

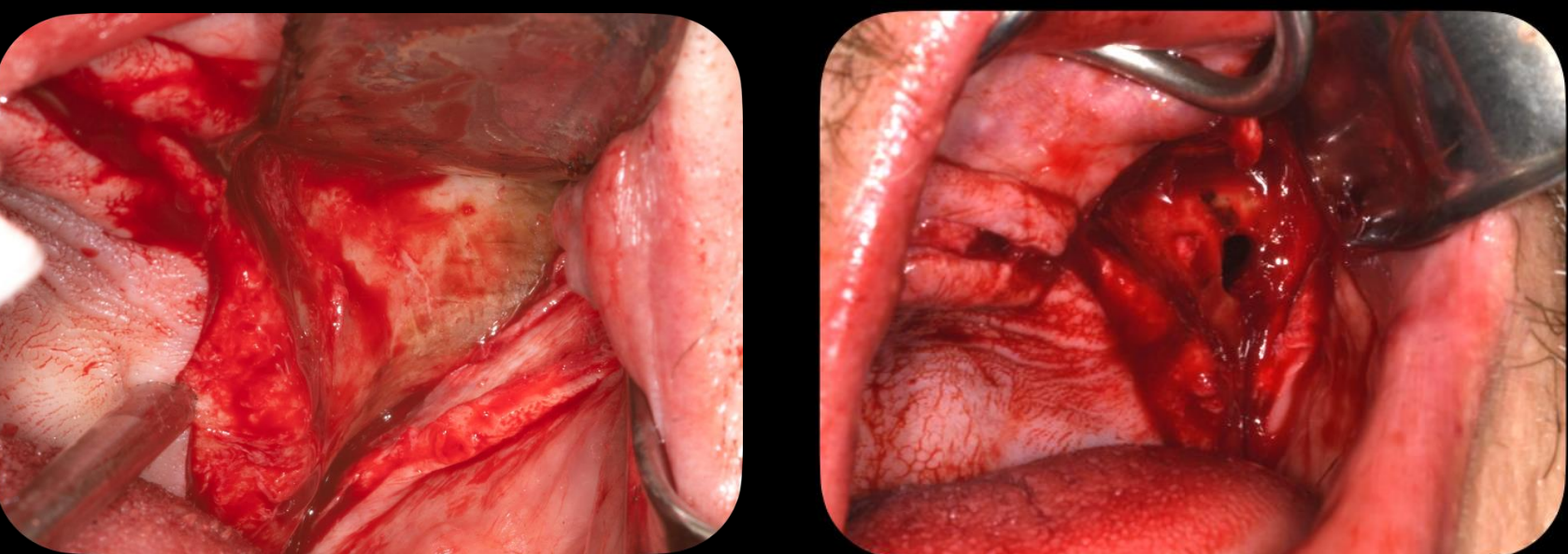
Right Sinus Cavity

Left sinus cavity



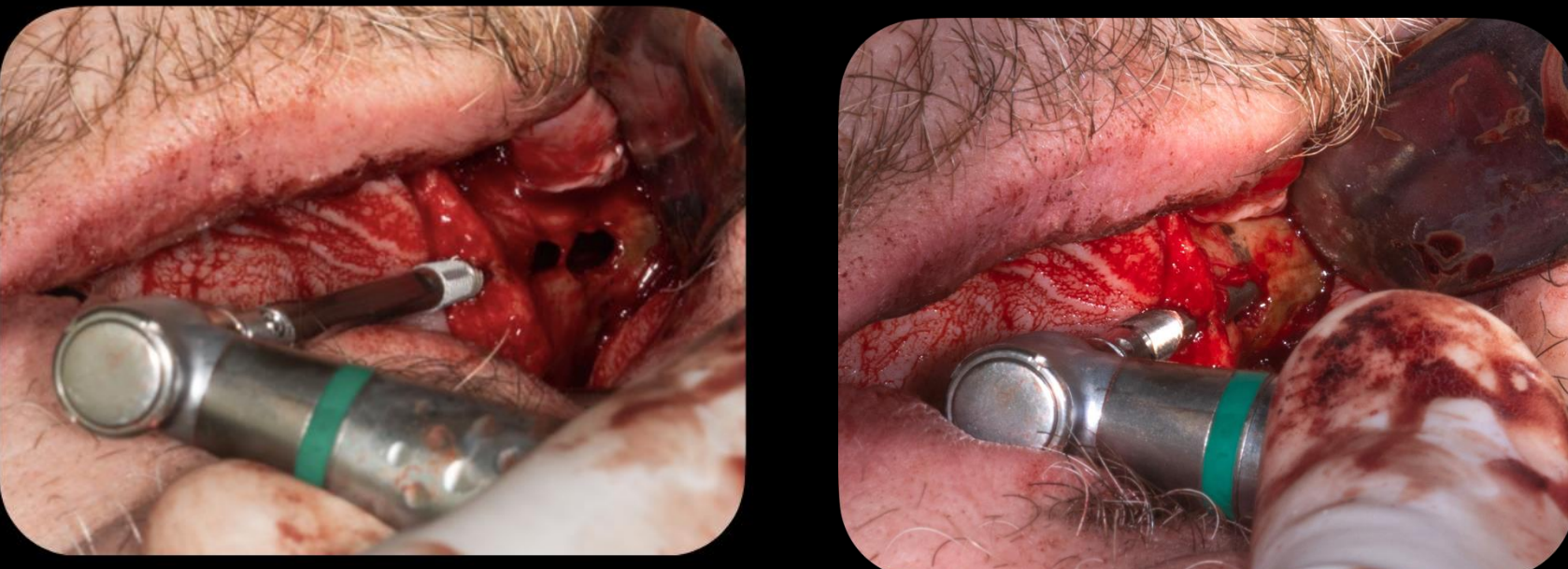
Pre-treatment Radiographs

Implant Surgery



Flap Elevation

Osteotomy Preparation



Zygomatic Implant Insertion



Multi-unit Abutments Insertion (Zygomatic Implants)

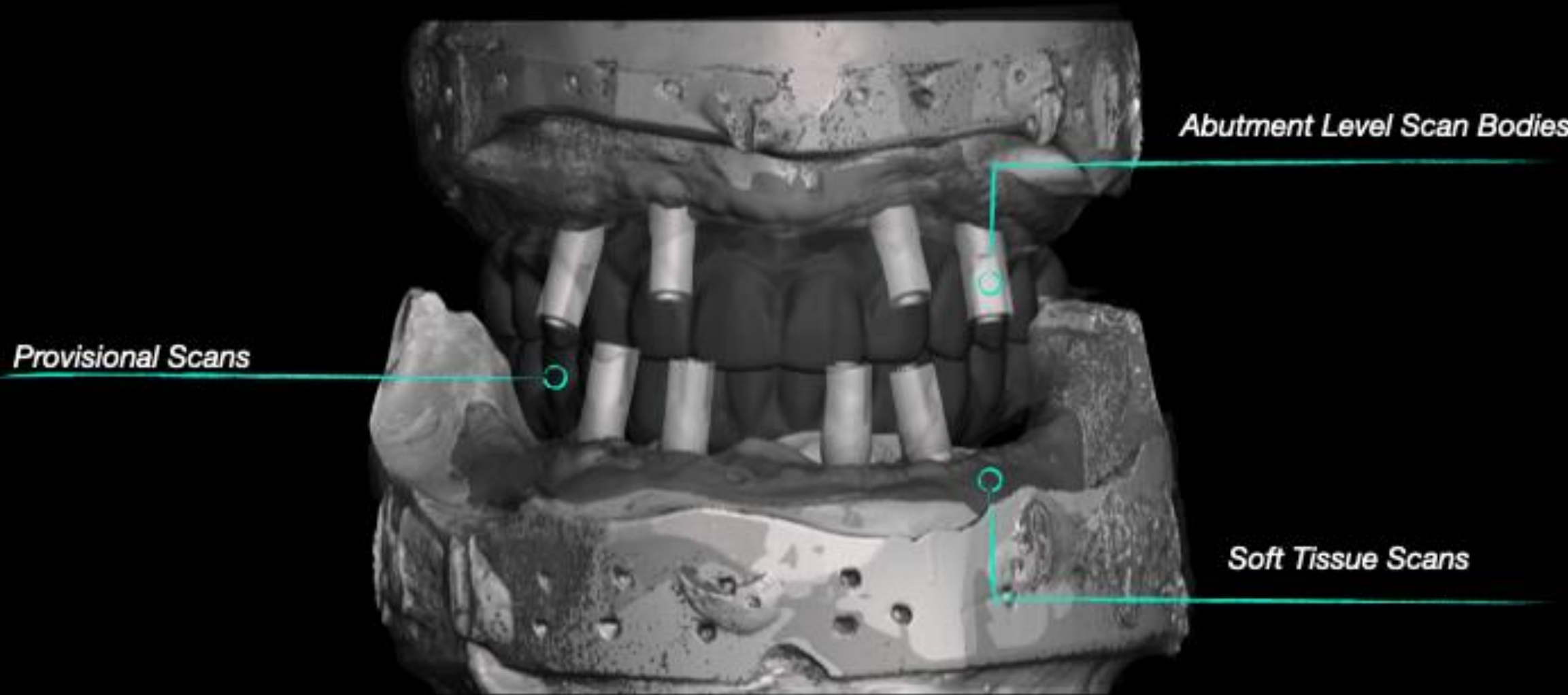
Post-treatment Radiograph

Provisionalization

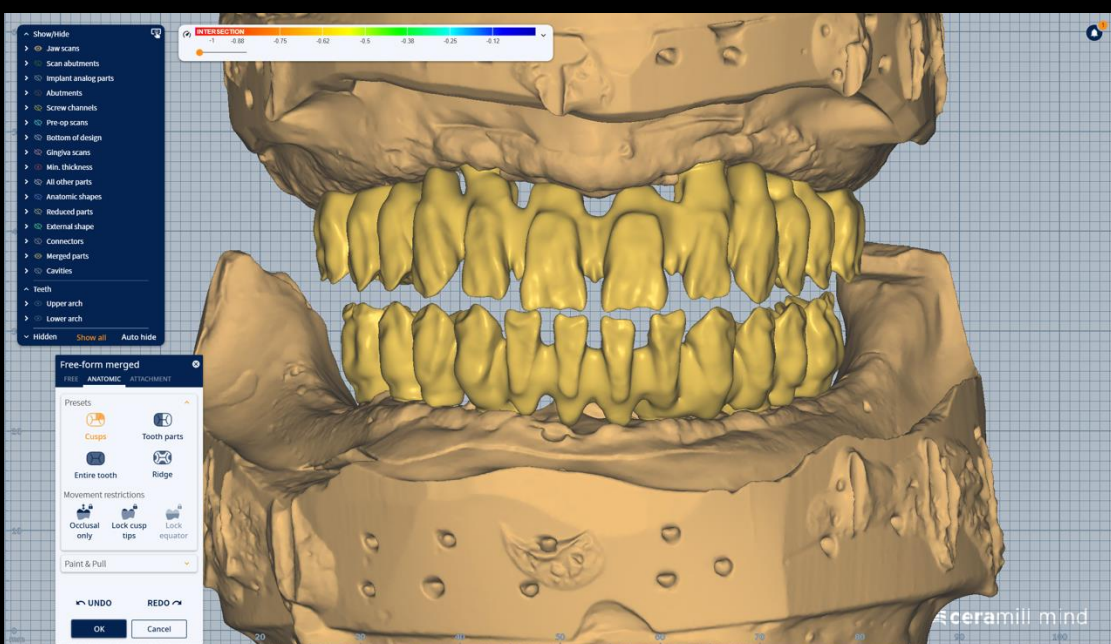


Prototype Insertion

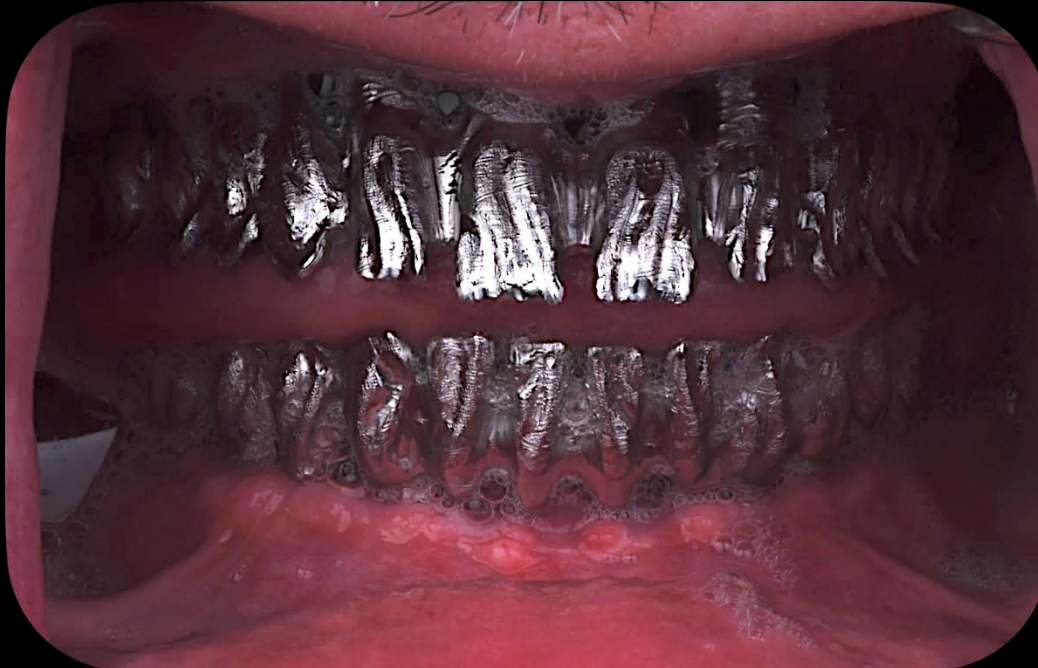
Definitive Prosthesis Fabrication



Alignment of Scan Files



Computer-Aided Design



Metal Framework Try-In



Porcelain Layering



Implant-supported Fixed Prostheses Insertion (Metal-Ceramic)

Conclusion

Zygomatic implants provide an alternate solution for the rehabilitation of severely atrophic maxillae. They reduce treatment time and improve patient quality of life. They offer predictable outcomes even in complex cases.

Reference

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