



GRAFTLESS FULL-ARCH REHABILITATION IN A SEVERELY ATROPHIC EDENTULOUS PATIENT USING MAXILLARY ZYGOMATIC AND MANDIBULAR SUBPERIOSTEAL IMPLANTS: A DIGITALLY GUIDED, CUSTOMIZED APPROACH

Ronny Chavez Linares DMD, Christina Gory DMD, Hani Braidi DMD, Steven Morgano DMD, Chao-Ho Chien, DDS, DScD
Post Graduate Prosthodontics, Department of Restorative Dentistry, Rutgers School of Dental Medicine, Newark, New Jersey, USA



INTRODUCTION

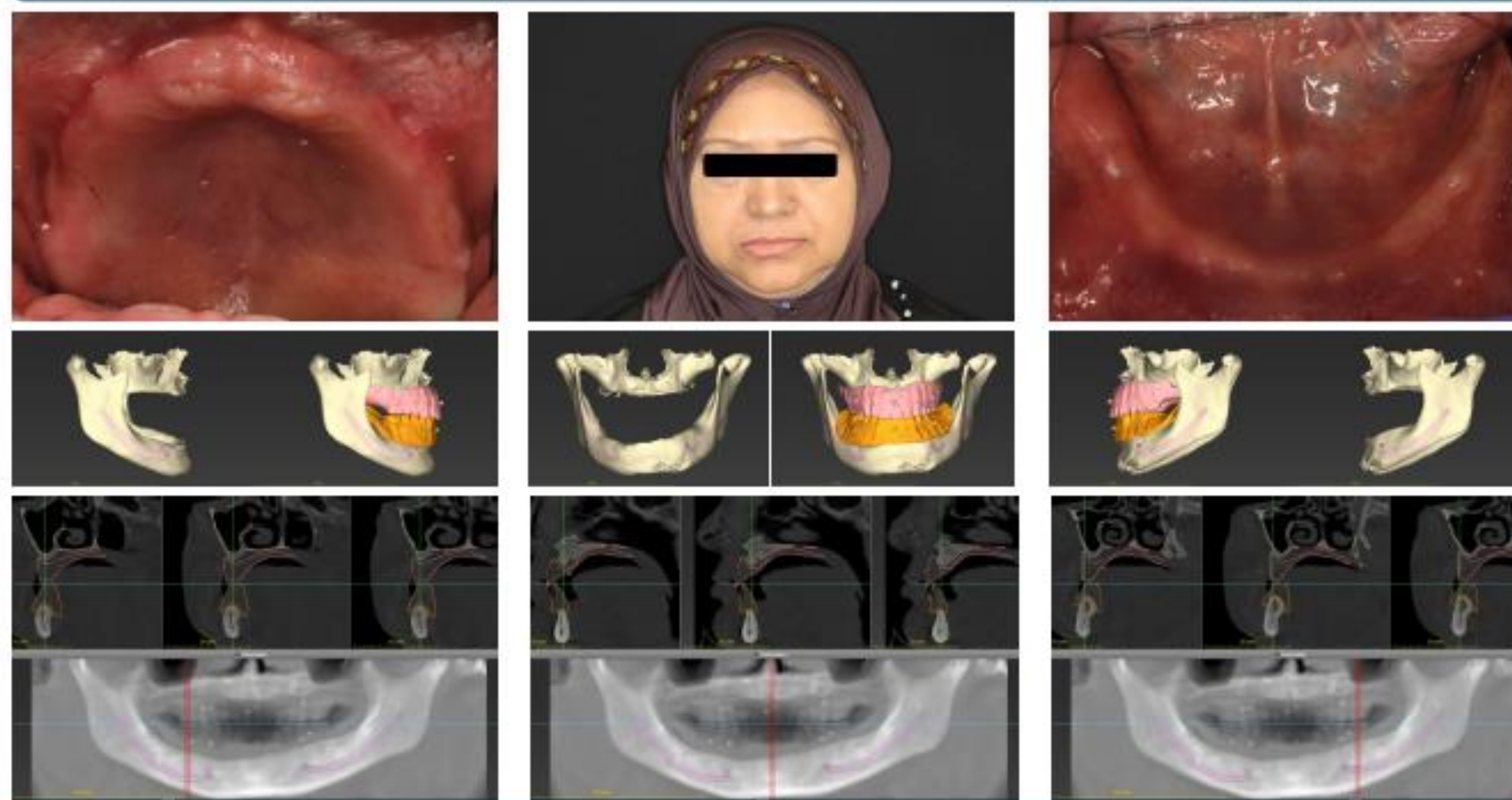
Rehabilitating patients with severely atrophic jaws is challenging, as traditional bone grafting is time-consuming and can lead to unpredictable results. This poster explores a streamlined solution that avoids extensive grafting. By combining a customized Individual Patient Solution (IPS) implant system with endosteal and zygomatic implants, we provide a stable, efficient, and predictable pathway for full-arch restoration in patients previously unsuitable for conventional implant therapy.

CASE REPORT

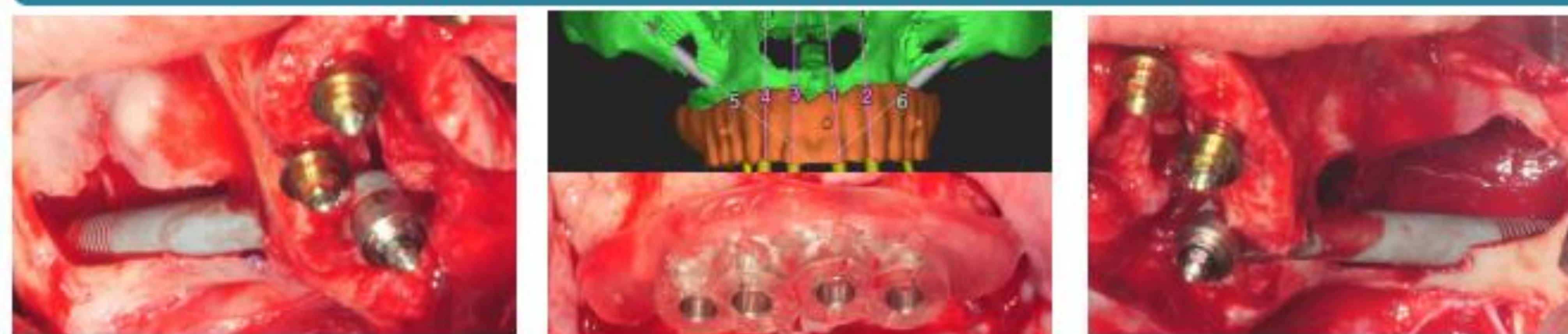
A 58-year-old female patient presented with a history of complete edentulism for the past two years following the extraction of her remaining teeth. Since then, she has experienced severe difficulty adapting to both maxillary and mandibular complete dentures. Her chief complaints include poor retention and instability of both prostheses, as well as an inability to tolerate the maxillary denture due to a strong gag reflex. Clinical examination revealed significant atrophy of the maxillary and mandibular ridges, with minimal keratinized tissue and shallow vestibules. In particular, the mandibular atrophy was generalized, with severe bone loss throughout the arch, contributing to poor denture support and stability. Radiographic evaluation, including CBCT, confirmed extensive resorption of the alveolar bone in both arches. The posterior maxilla showed inadequate bone volume for endosteal implants, while the anterior region demonstrated sufficient bone density and height.

Given the existing anatomical limitations, a comprehensive implant-supported fixed rehabilitation was proposed. The treatment plan included an IPS (Individual Patient Solution) implant system for the mandible to accommodate the advanced bone resorption and provide a stable, screw-retained full-arch restoration. For the maxilla, four anterior endosteal implants were planned to be placed in the available bone in the premaxillary region, complemented by two zygomatic implants in the posterior region to support a full-arch fixed prosthesis.

INTRAORAL AND RADIOGRAPHIC EVALUATION



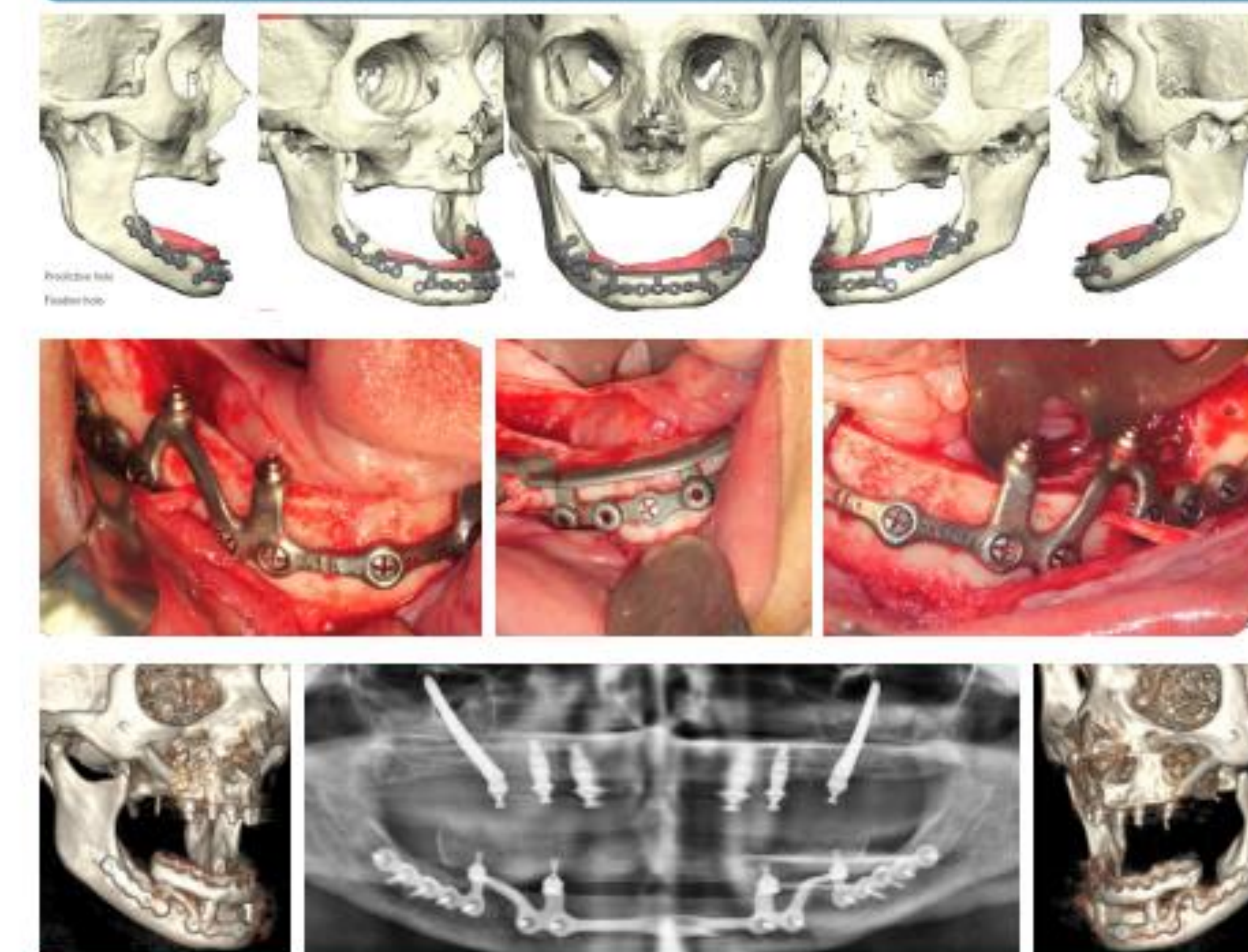
MAXILLARY PLANNING AND SURGERY



REFERENCES

1. Testori T, Weinstein T, Taschieri S, Wallace SS. Risk factors in lateral window sinus elevation surgery. *Periodontol*. 2000. 2019; 81: 91123. <https://doi.org/10.1111/prd.12266>
2. Vatteroni E, Covani U, Menchini Fabris GB. The New Generation of Subperiosteal Implants for Patient-Specific Treatment of Atrophic Dental Arches: Literature Review and Two Case Reports. *Int J Periodontics Restorative Dent*. 2023 Nov 3;43(6):735-741. doi: 10.11607/prd.6229. PMID: 37347616.
3. Kim P, Gellrich N-C, Jehn P, Spalthoff S and Rahlf B (2021) A New Strategy for Patient-Specific Implant-Borne Dental Rehabilitation in Patients With Extended Maxillary Defects. *Front. Oncol.* 11:718872. doi: 10.3389/fonc.2021.718872
4. Gellrich, NC., Rahlf, B., Zimmerer, R. et al. A new concept for implant-borne dental rehabilitation; how to overcome the biological weak-spot of conventional dental implants?. *Head Face Med* 13, 17 (2017). <https://doi.org/10.1186/s13047-017-0250-4>

MANDIBULAR PLANNING & SURGERY



CONCLUSION

The management of patients with severe alveolar atrophy and denture intolerance requires a tailored, multidisciplinary approach that balances anatomical limitations, patient expectations, and functional demands. In this case, the integration of conventional anterior implants, zygomatic implants, and a digitally designed patient-specific subperiosteal implant provided a graftless, single-stage solution to complex maxillofacial atrophy. Advances in digital planning and 3D printing technology have redefined the role of subperiosteal implants, offering new opportunities for rehabilitation in patients once considered poor candidates for implant therapy. Careful patient selection, thorough planning, and precise execution remain critical to achieving long-term clinical success.