

# Rehabilitation of a Maxillectomy Patient Following Rhino-Mucormycosis using Patient-specific Implant

Rutvi Shah, BDS, MDS; Anandkumar Patil, BDS, MDS; Santosh Nelogi, BDS, MDS; Maryam Zafar, BDS, FCPS

## INTRODUCTION:

Post-surgical rehabilitation of the patients with maxillary resection presents several challenges. In cases where surgical reconstruction of the defect is not possible, the prosthetic rehabilitation should start immediately post-surgery to aid the patient in deglutition, speech as well as to support and elevate the soft tissues to maintain continuity of the midfacial contour.

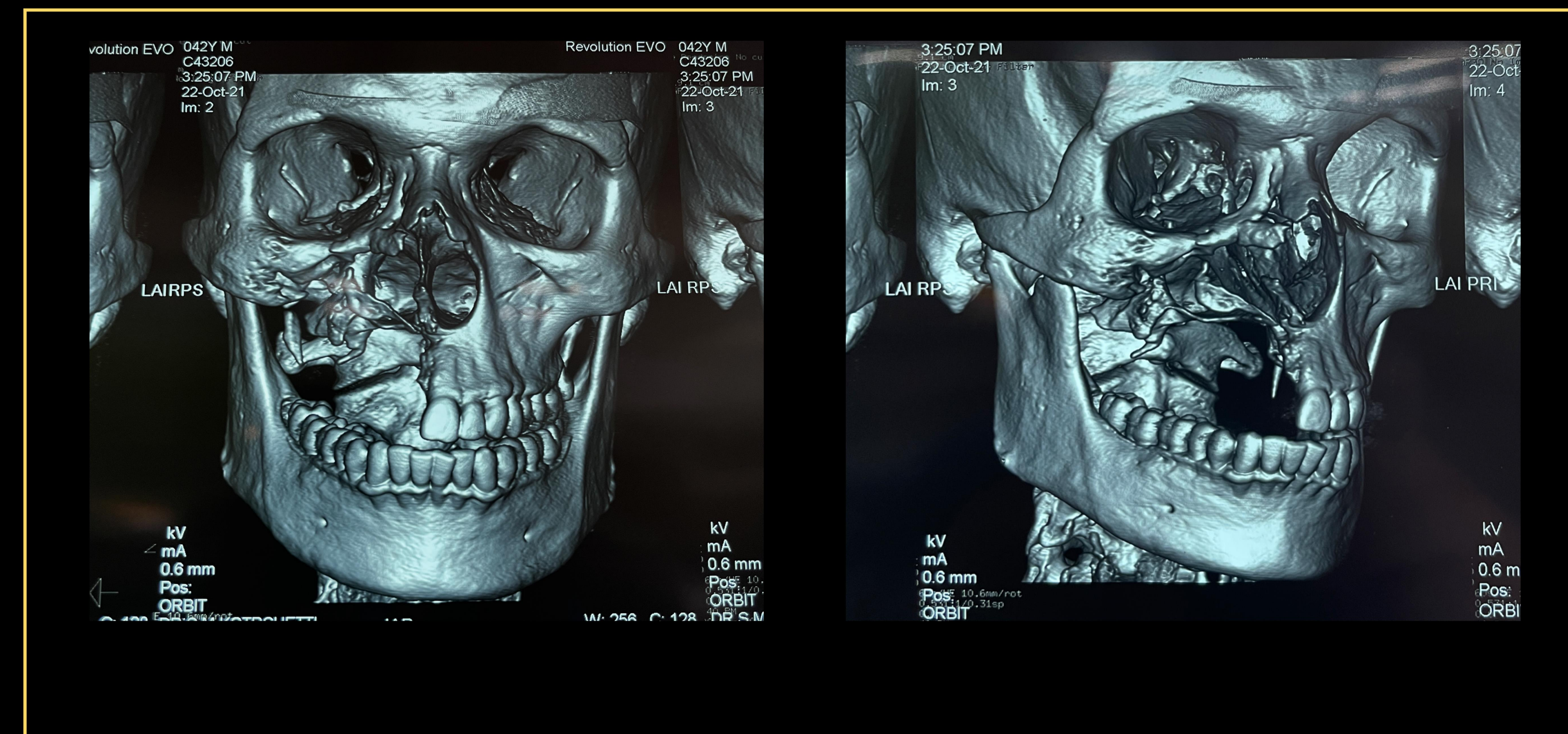
However, in cases of extensive surgical defects, the conventional rehabilitation techniques are limited. In such cases, the patient-specific implant (PSI) prosthesis can be planned; with its extent, length, and design customized according to the presenting defect situation.

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## METHOD:

A 42-year-old patient presented after undergoing surgical debridement for SARS-CoV-2 associated mucormycosis. The defect was classified as Aramany's class I, encompassing the right palatine shelf, parts of the hard and soft palate and extending to the right zygoma. The existing bone support was inadequate for the placement of intra-osseous or zygomatic implants, and surgical repair of the defect was not feasible. Therefore, the patient underwent rehabilitation using a titanium, patient-specific implant-supported (PSI) prosthesis designed to restore speech and facial symmetry.



FACIAL RECONSTRUCTION CT SCAN

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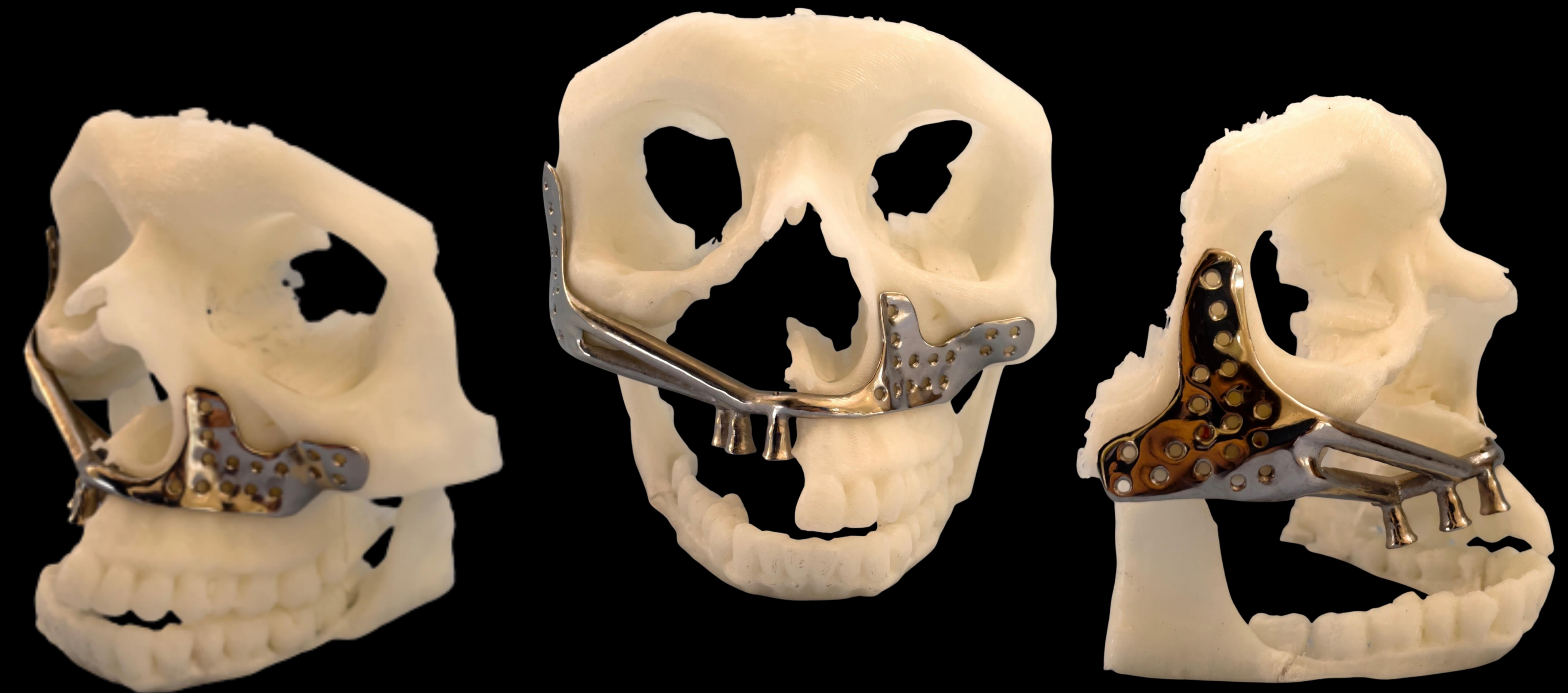
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Stereolithographic Model with Planned Patient-Specific Implant Framework



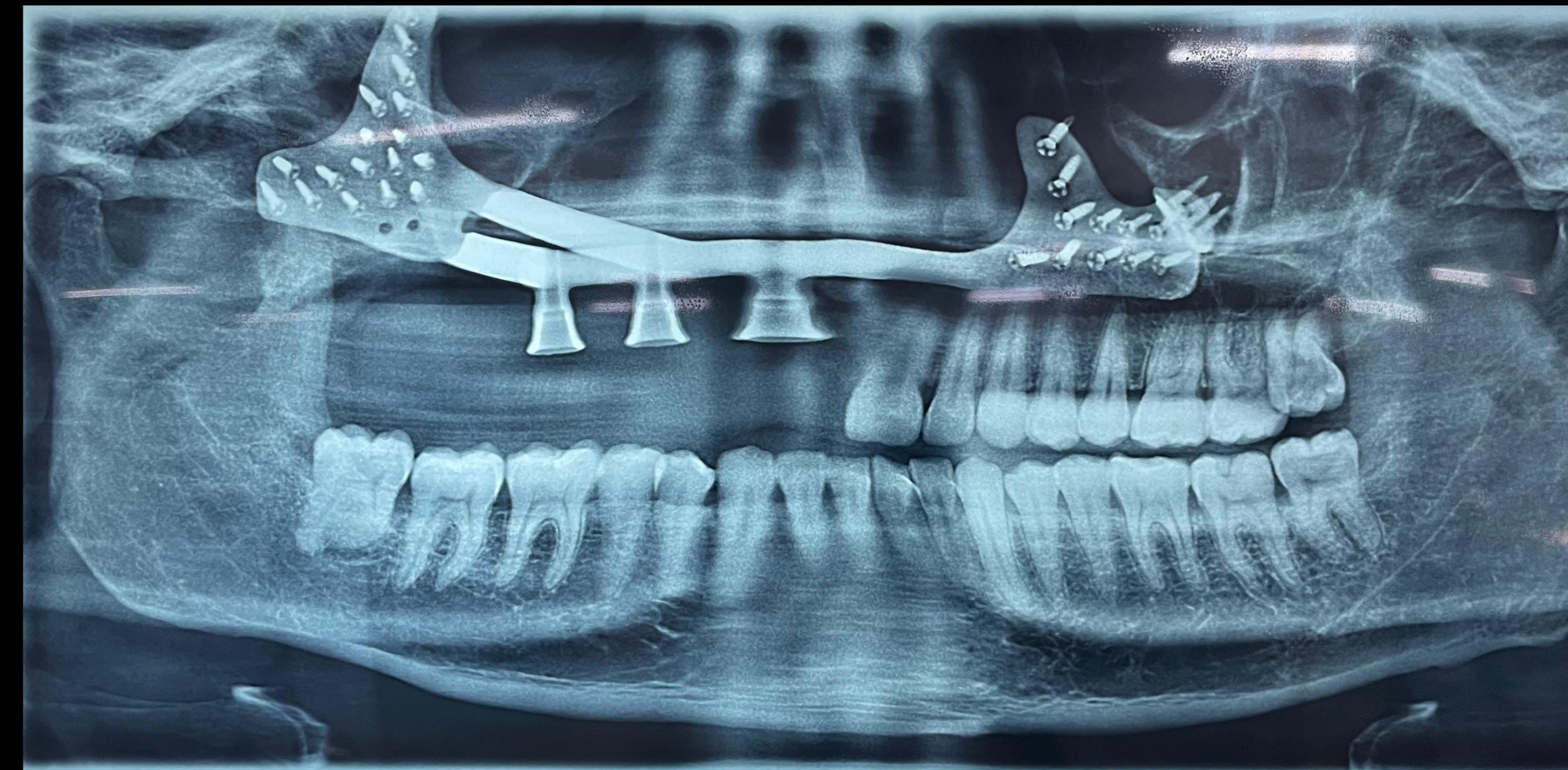
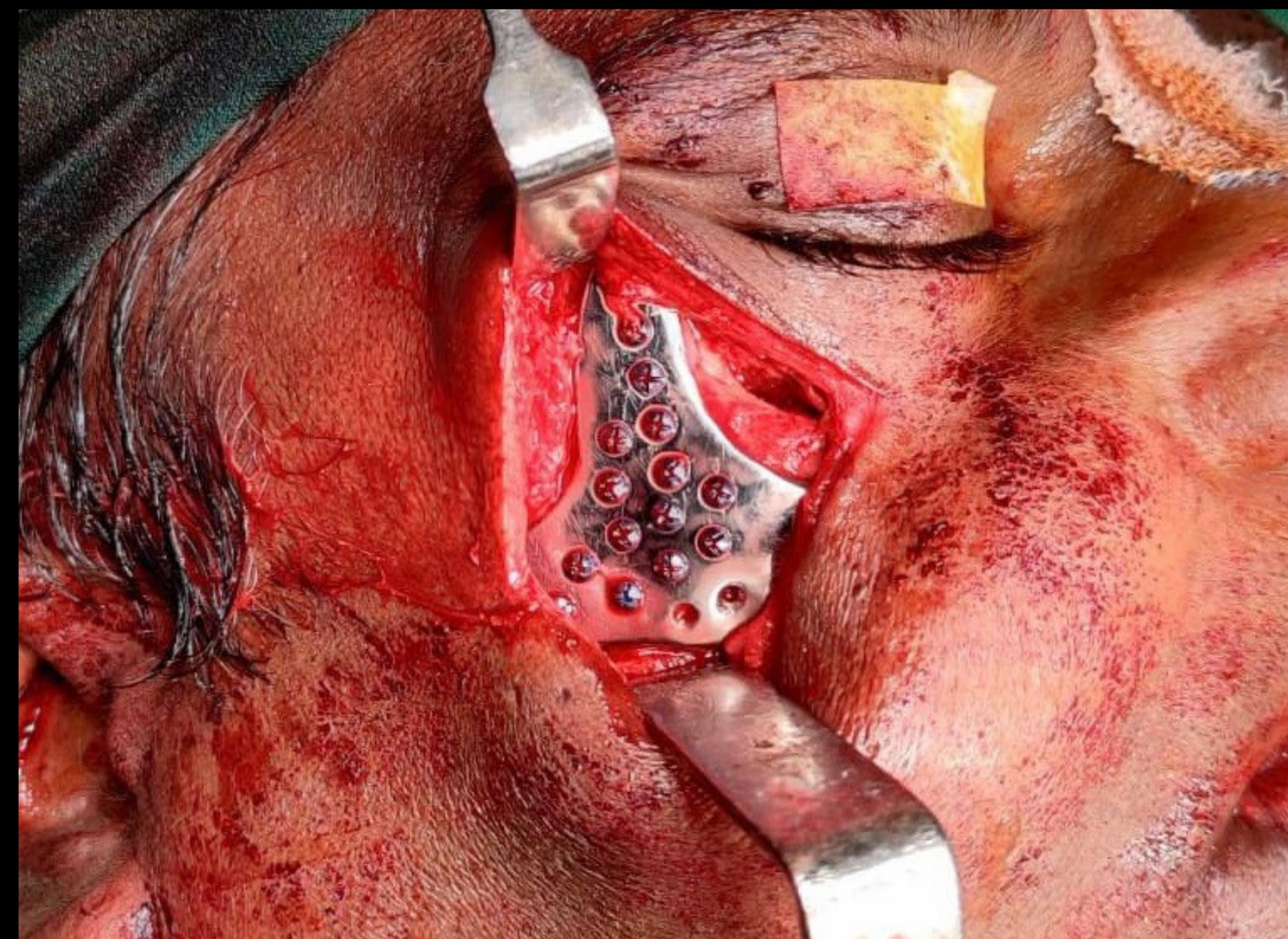
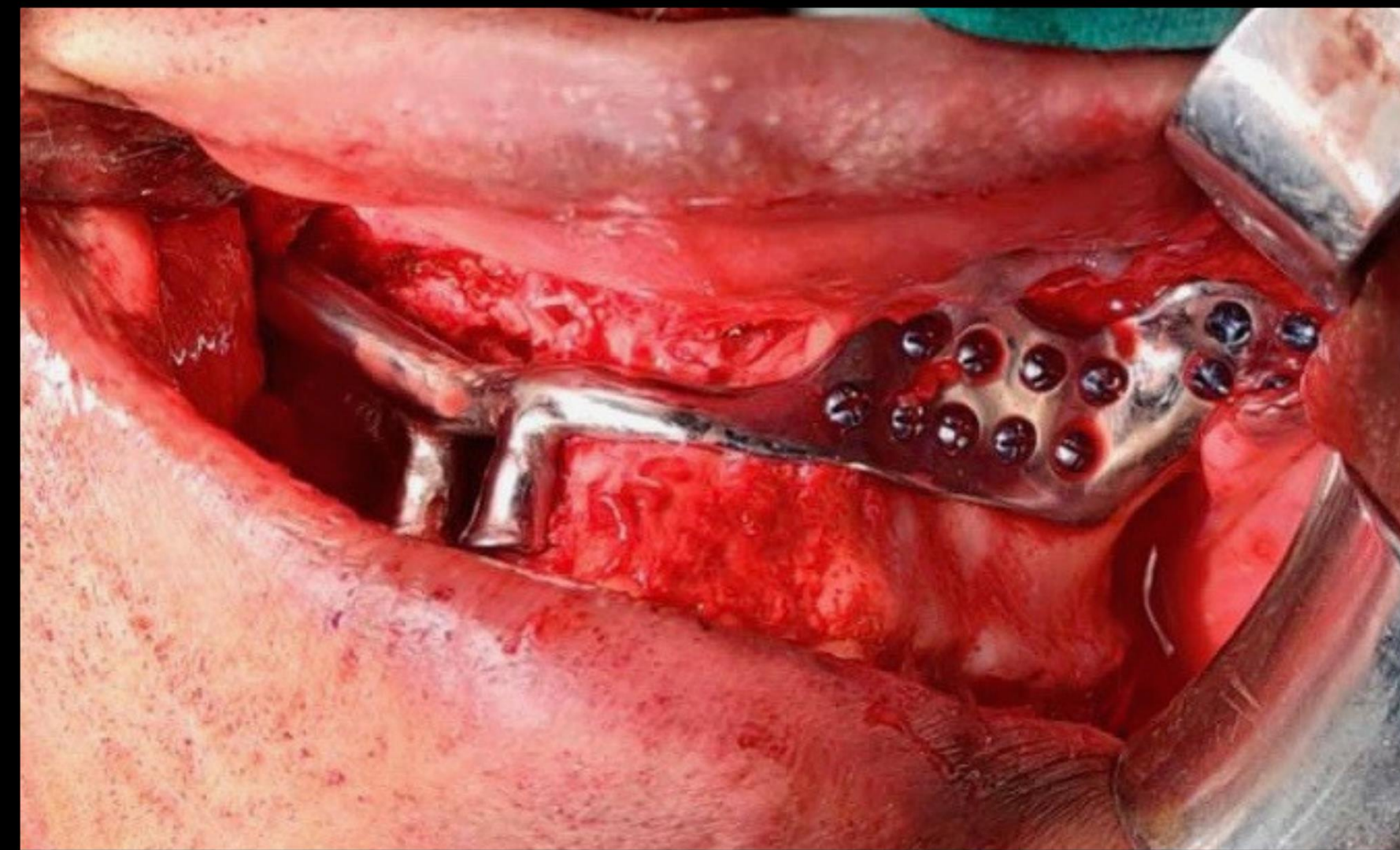
Evaluation of the Restorative Space & Trial Teeth Arrangement



Final Titanium Patient-Specific Implant Framework

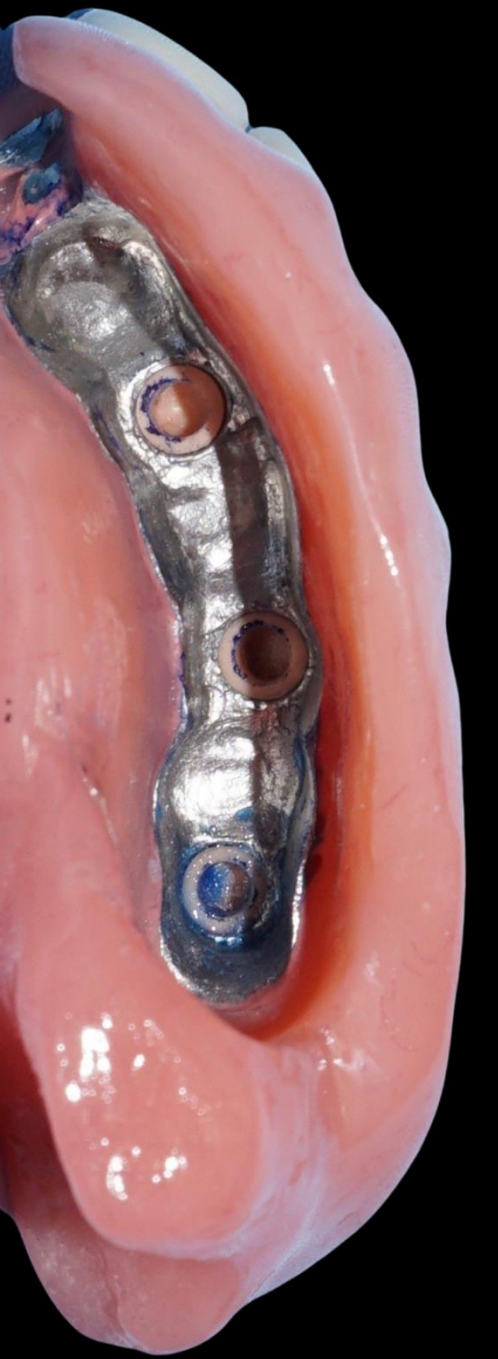
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One Week Post-Operative

Temporary Prosthesis In-Situ (1 Week Post)



Surgical Placement of the PSI Framework (Jan 2022)

Fabrication of Definitive Patient-Specific Implant Supported Overdenture with Metal Housing and Obturator Extension (After 3 Weeks/ Feb 2022)

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## RESULTS:

The post-operative outcomes were positive, and the recovery was uneventful.

Two weeks post-surgery, the sutures were removed and oral examination revealed no indications of inflammation or dehiscent bone surrounding the PSI framework. The final implant-supported overdenture prosthesis was fabricated and delivered to the patient after three weeks.

One-year follow-up indicated that the soft tissues, prosthesis, and framework were in a good condition. The patient indicated a notable improvement in their social life and restoration of their confidence as a major milestone.



Pre-Operative Photograph



Post-Operative Photograph

## CONCLUSION:

The results suggest that a PSI-retained prosthesis is a viable alternative for restoring speech and oral function in patients with largely compromised maxillary bone anatomy, alongside impaired aesthetics and functionality, where conventional reconstruction methods are not viable.

The easily removable patient specific implant-supported obturator prosthesis is a major benefit, allowing for tissue examination and enabling patients to independently maintain both the prosthesis and the peri-implant tissue.

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