

Introduction

Digital technology is rapidly improving; while not long ago, dental impressions needed to be performed with impression materials, trays, and stone dies, since CAD/CAM (computer-aided design/computer-aided manufacturing) technology was developed this reality has changed. Traditionally, full mouth rehabilitations relied heavily on manual impressions and stone dies. However, the development of CAD/CAM technology has transformed the process, allowing for more precise and efficient treatment outcomes. In this case, a combination of analog occlusal wax-ups and digital scanning was utilized to achieve an optimal prosthetic result.

Purpose/Aim

This case highlights the integration of digital and analog workflows in the full mouth rehabilitation of a patient, demonstrating the significant advancements in dental technology. The case underscores the importance of combining traditional methods with cutting-edge digital technology to enhance accuracy, predictability, and patient satisfaction in complex prosthodontic treatments.

The Workflow

A 74-year-old male patient, diagnosed with partial edentulism in both the maxilla and mandible. Chief complaint: "I would like to have teeth again." Traditional analog techniques was employed to accurately record the patient's centric relation. An initial wax-up was completed using the analog method (Figs. 4–6), and a wax rim (Fig. 5) was fabricated to establish the lower occlusal plane. Fiducial markers were bonded, and a wash impression was made. IOS of the maxillary arch, mandibular arch and bite with and without wax rim was acquired (3S Trios). The resulting STL files were merged with the DICOM files in specialized software (Blue Sky) for digital implant positioning, and design surgical guide. A surgical guide was 3D printed, and implants were placed. At the second stage surgery. Scan bodies were used to fabricate interim hybrid for the day of lower extractions and pick up. Maxillary arch was treated while osseointegration process occurred and first set of analog Provisionals. Analog maxillary and mandibular impressions were taken, and maxillary impression was digitized and flipped to design final milled prototypes. Mandibular cast was verified. Final prosthesis in process.



Fig 1. Pre Op



Fig 2. Analoge wax up

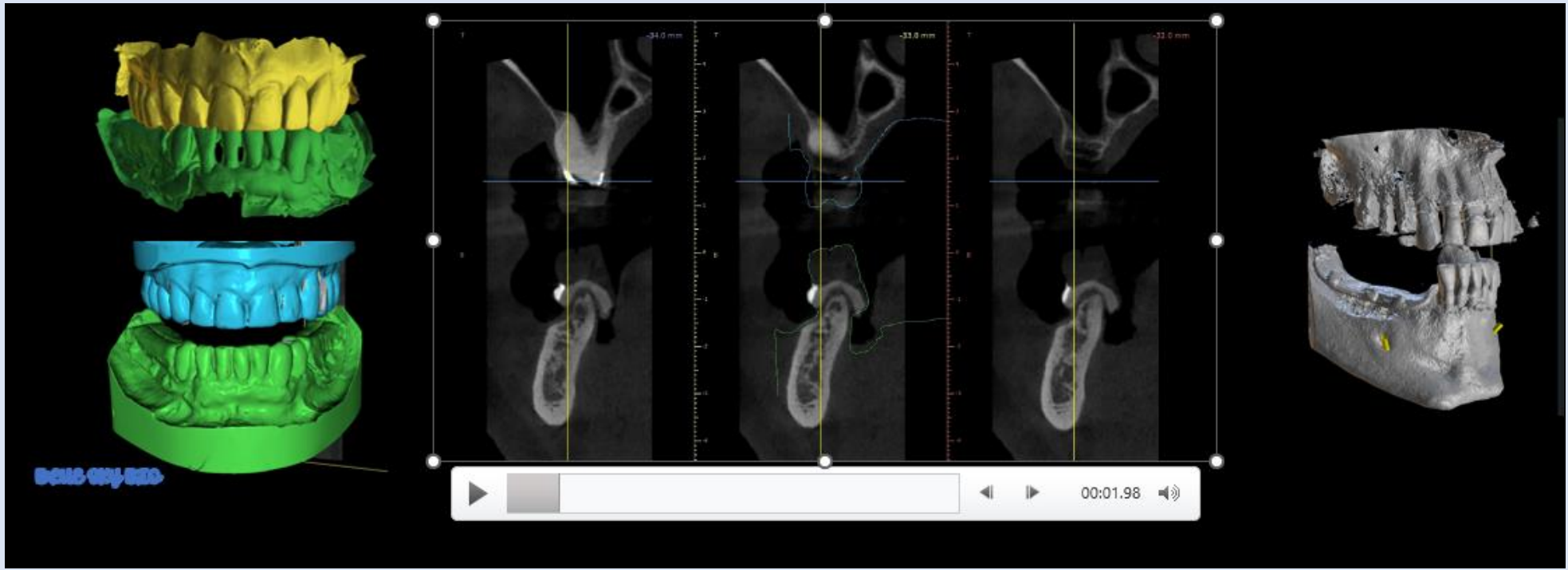


Fig 3. Digital Implant planning

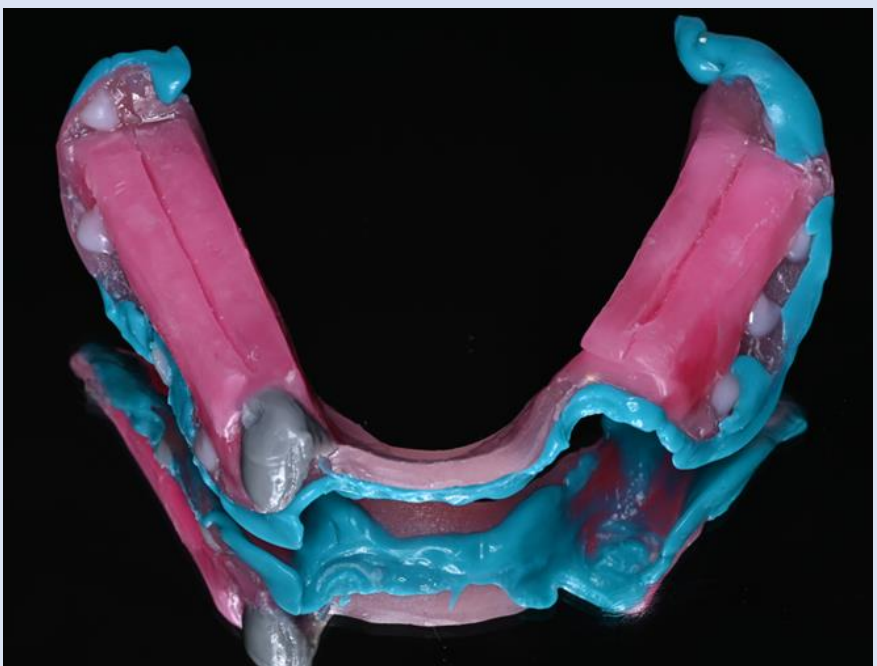


Fig 4, Wax Rim with fiducial markers



Fig 5. Second stage Surgery

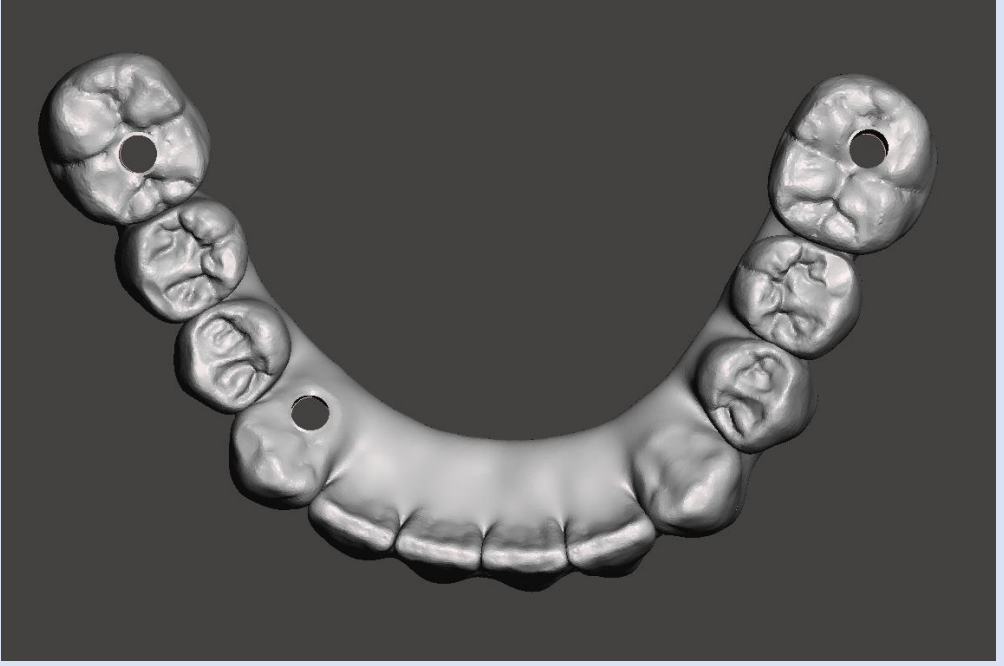


Fig 6, Design of interim Hybrid



Fig 7. Interim Hybrid



Fig 8. Mandibular Arch Implant site with Mua's



Fig 9. Maxillary Teeth Preparation and Implants

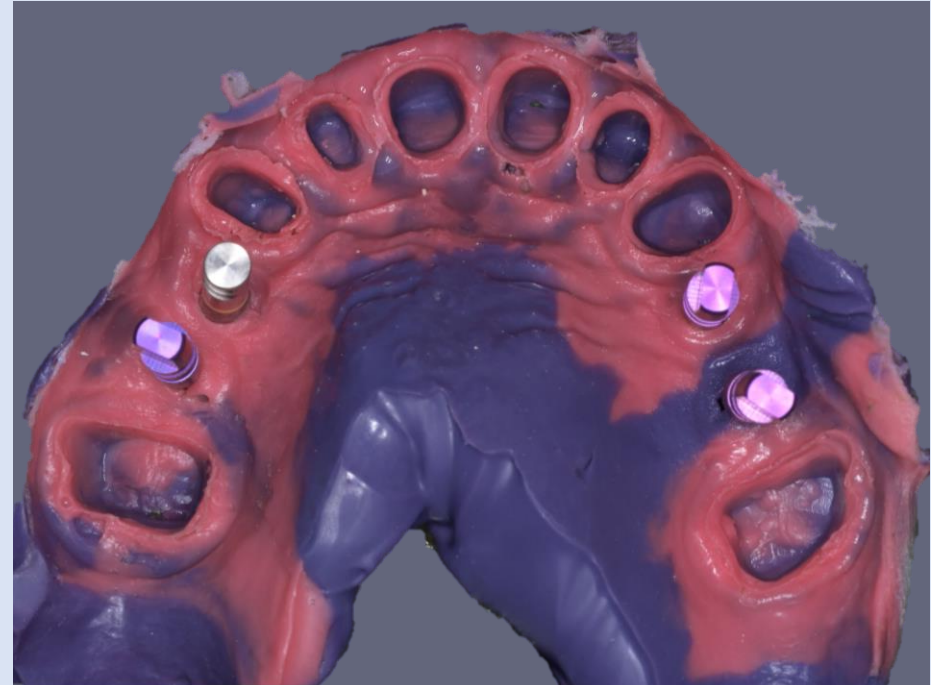


Fig 10. Maxillary Final Impression

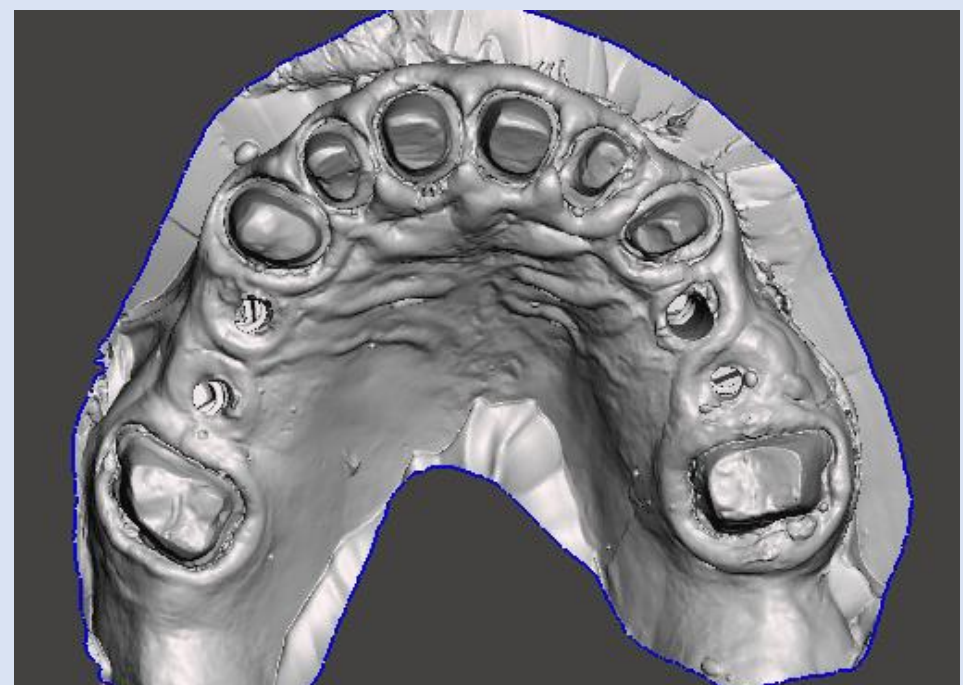


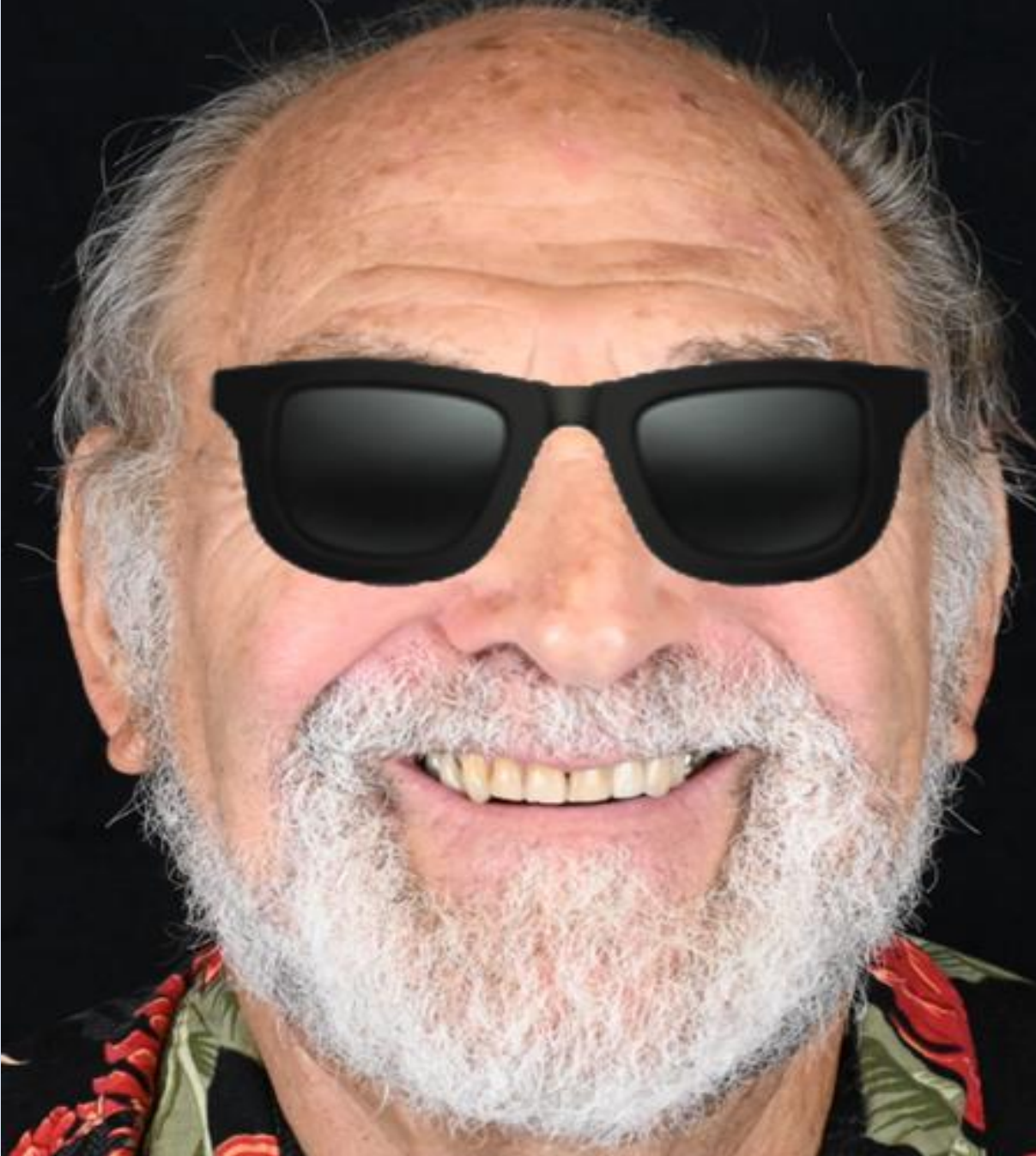
Fig 11. Scan of Final Impression



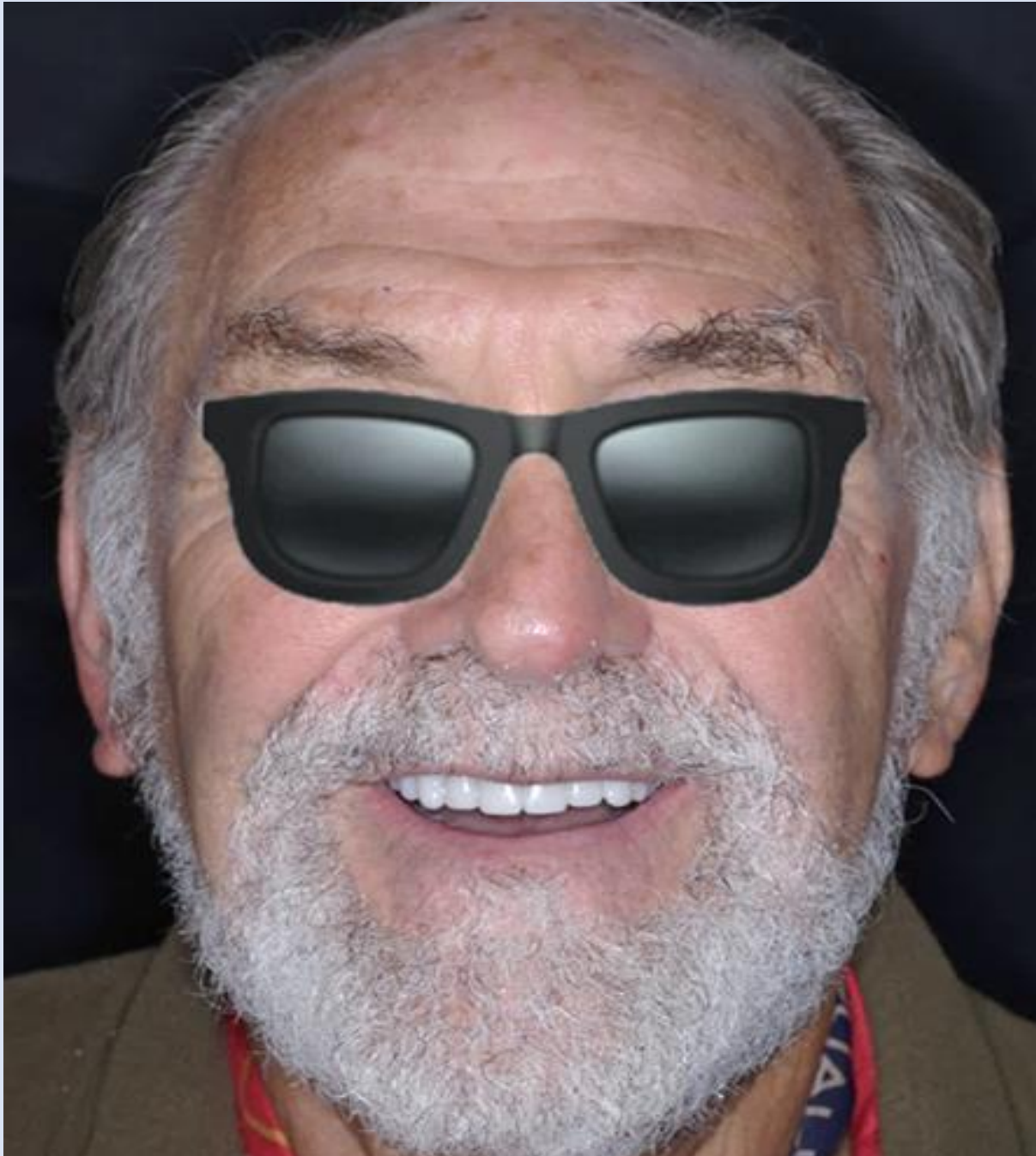
Fig 12. Die Trim for Prototypes and final prosthesis



Fig 13. Occlusion



Before



After

Discussion

The clinical application of digital workflows in dentistry has increased in recent years due to the headway made in technologies such as intraoral scanners and software, which have improved communication and data transfer between the clinician and the dental technician (1). Additionally, digital impression techniques overcome some drawbacks of conventional impressions such as: discomfort, nausea, unsatisfactory taste, time consumption, remakes in case of air bubbles inclusion, and forceful removal of highly retentive impressions with a risk for potential damage (2). Digital impression is becoming widespread in clinical dental practice, and it is considered equally accurate as conventional impressions for individual restorations or 3–4 element bridges on natural teeth and on implants (3-4) or even implant full-arch restorations (5). Conversely the main disadvantages of using digital impressions are: the difficulty in detecting deep margin lines in prepared teeth and in case of bleeding, the learning curve, and the purchasing and managing costs (3-6). The trueness of digital and alginate full-arch impressions was similar, and both impression techniques showed high precision (7). However, current evidence suggests that patients are more likely to prefer the digital workflow than the conventional techniques. (8)

Conclusion

This case exemplifies the growing integration of digital technology in full mouth rehabilitations, highlighting the advantages of combining both digital and analog workflows. Although some challenges, such as detecting deep margin lines and managing costs, persist with digital systems, and reduced time. This hybrid approach improves precision, predictability, and overall patient satisfaction, signaling a promising future for prosthodontic treatments.