



Leveraging Technology in the Fabrication of Custom Denture Teeth

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Abstract

Fabricating a complete denture for patient with reduced arch dimensions presents challenges to tooth selection. A hybrid workflow combining conventional and digital techniques was utilized to design custom denture teeth and fabricate a complete denture prosthesis.

A 62-year-old female patient underwent conventional procedures to fabricate complete dentures, including border molding, impressions, and jaw relation records. The arches for the patient were very small, which challenged tooth selection as commercially available denture teeth were significantly larger than desired. To address these challenges, denture teeth were designed digitally. A prototype of the maxillary and mandibular anterior teeth was 3D printed and set in wax, with the arrangement verified clinically. The anterior setup was then scanned for reference, and the remaining teeth were arranged virtually. The final maxillary and mandibular dentures were milled.

Outcomes

At delivery, minimal adjustments were needed, as the aesthetics and occlusion aligned well with the verified data. The customizable printed denture teeth and wax try-in with prototype teeth allowed the patient to provide feedback and approve changes before the final prosthesis fabrication.

Application

This hybrid workflow leverages the strengths of both conventional and digital techniques, overcoming unique limitations and improving efficiency in denture fabrication. The virtual tooth setup allowed for mirroring of contralateral teeth and maintenance of the occlusal plane. The patient's anatomical dimensions were effectively addressed using a scalable tooth library. Treatment of prosthodontic patients with unique presentation becomes uncomplicated and reproducible. The patient remains involved in esthetic decisions and the final prosthesis honors the patient's individuality.

References

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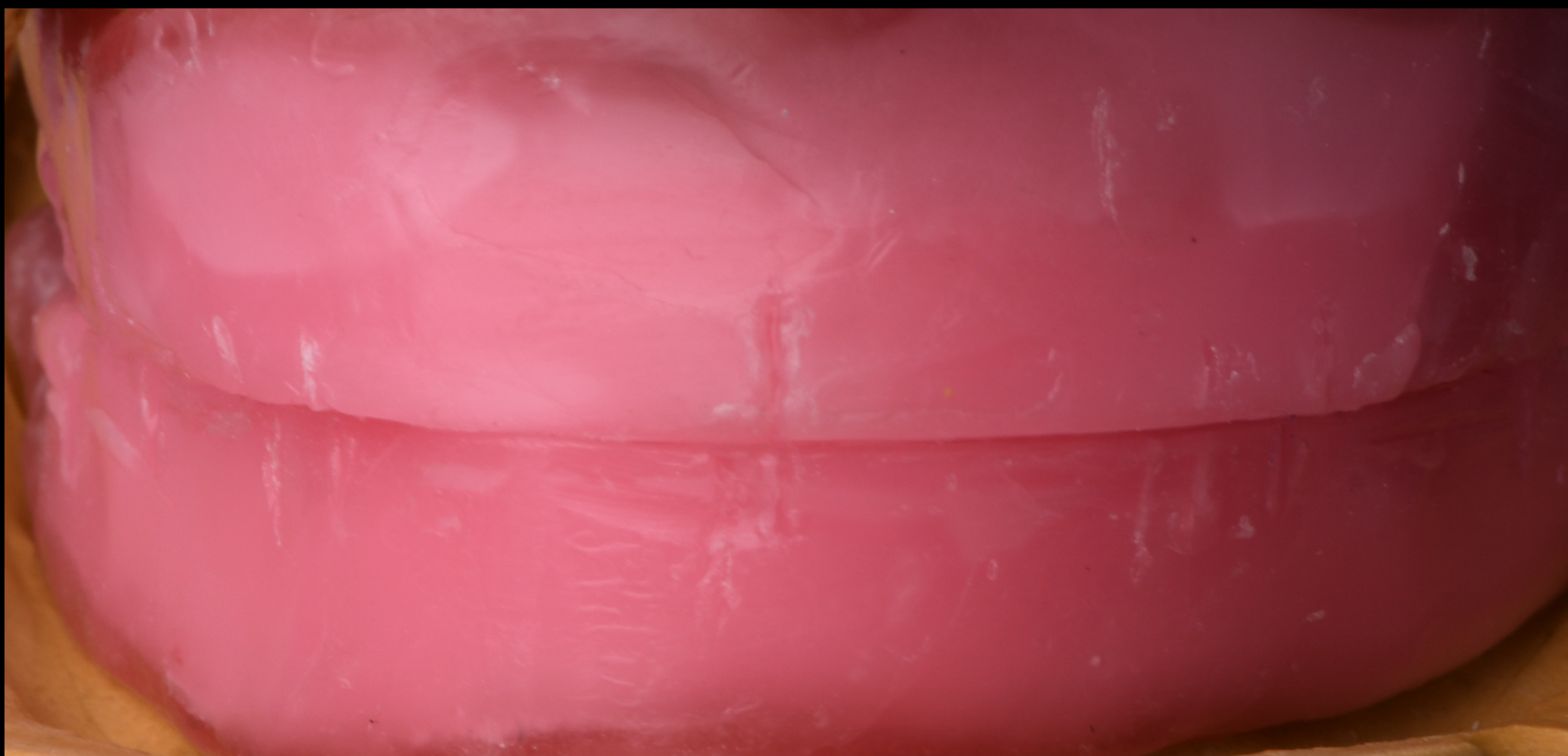
1. Initial presentation



3. Anterior digital setup



5. Full digital setup



2. Wax rims



4. Prototype try in



6. Final prosthesis