

Challenges and Solutions in Designing a Half Mandibular Denture After Partial Mandibular Resection: A Case Report

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INTRODUCTION & PURPOSE

With head and neck squamous cell carcinoma being the sixth most common cancer worldwide, it is important to know how to prosthetically manage these patients¹. Many patients undergo jaw resection and radiation as forms of treatment, often leading to hard and soft tissue changes in the oral cavity. The purpose of this case study is to present a prosthetic option for patients after jaw resection when dental implants are contraindicated.

PATIENT BACKGROUND

- A 70-year-old Caucasian male presented to the Graduate Prosthodontics clinic at The Ohio State University with the primary objective of restoring masticatory function through prosthetic rehabilitation.
- The patient's complex medical history included cerebral palsy, developmental delay, arthritis, type II diabetes, and a history of squamous cell carcinoma
- Following a right mandible resection and connective tissue grafting in 2023, the patient was not a candidate for dental implants due to previous radiation therapy.
- The prosthodontic approach involved fabricating a complete denture that did not extend beyond the midline due to connective tissue limitations.

REFERENCES

Johnson DE, Burtness B, Leemans CR, Lui VWY, Bauman JE, Grandis JR. Head and neck squamous cell carcinoma. Nat Rev Dis Primers. 2020 Nov 26;6(1):92. doi: 10.1038/s41572-020-00224-3. Erratum in: Nat Rev Dis Primers. 2023 Jan 19;9(1):4. doi: 10.1038/s41572-023-00418-5. PMID: 33243986; PMCID: PMC7944998.

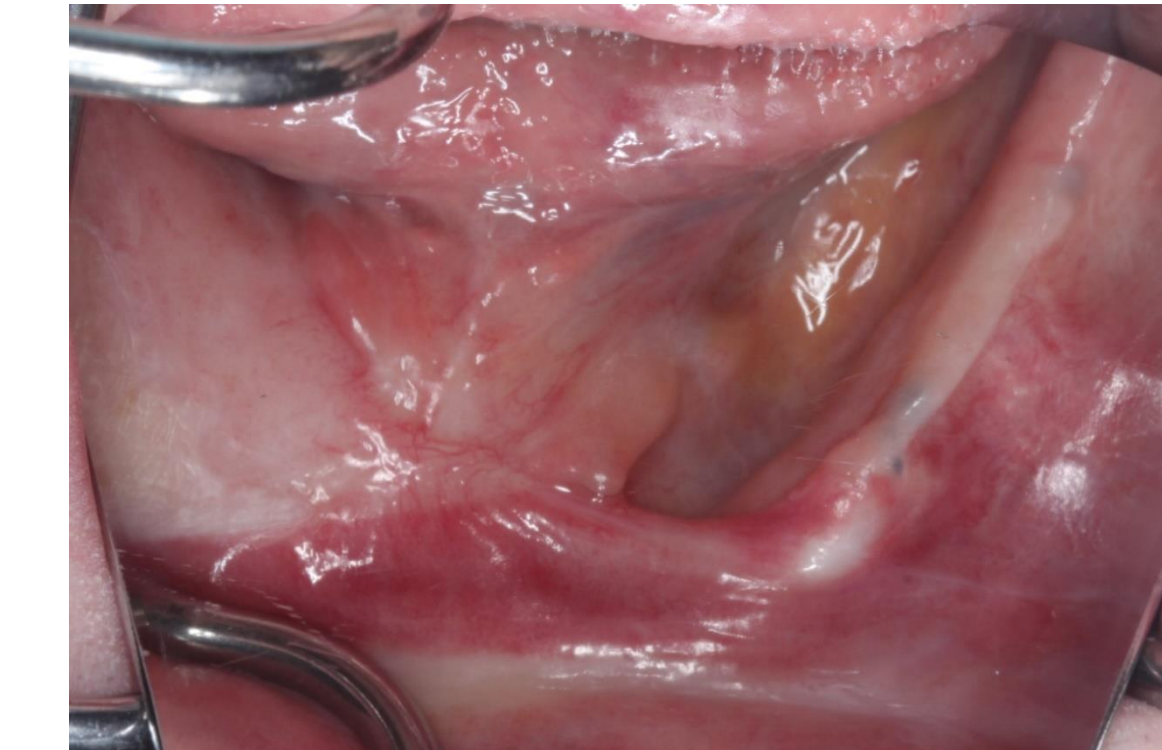
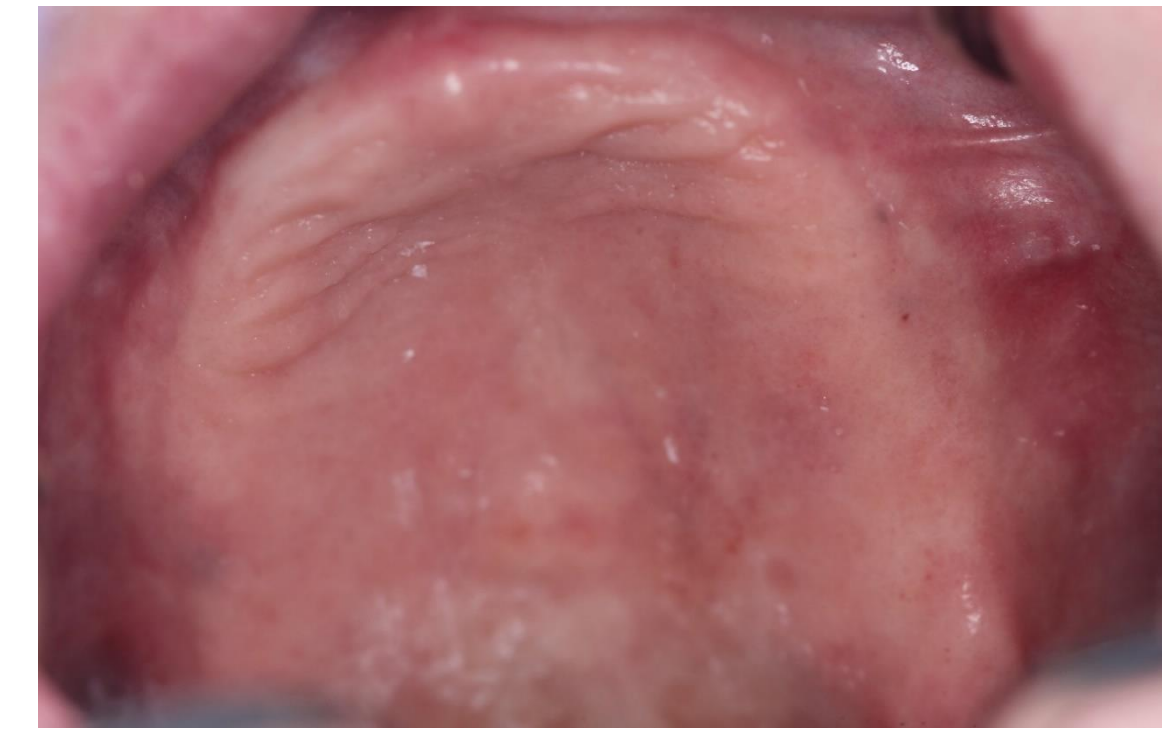


Figure 1. Patient's edentulous maxillary arch (left). Patient's front photo demonstrating significant loss in VDO and facial asymmetry (middle). Patient's edentulous mandibular arch with history of right hemimandibulectomy and connective tissue grafting. Patient's floor of mouth attached to left commissure, leading to lack of vestibule and no alveolar ridge to facilitate fabrication of mandibular prosthesis (right).



Figure 2. Initial impression using quadrant stock tray, putty, and light body PVS wash (left). Maxillary and mandibular final impressions made using custom trays, border molding with green stick compound, and light body PVS wash (right).

Figure 1

Figure 3

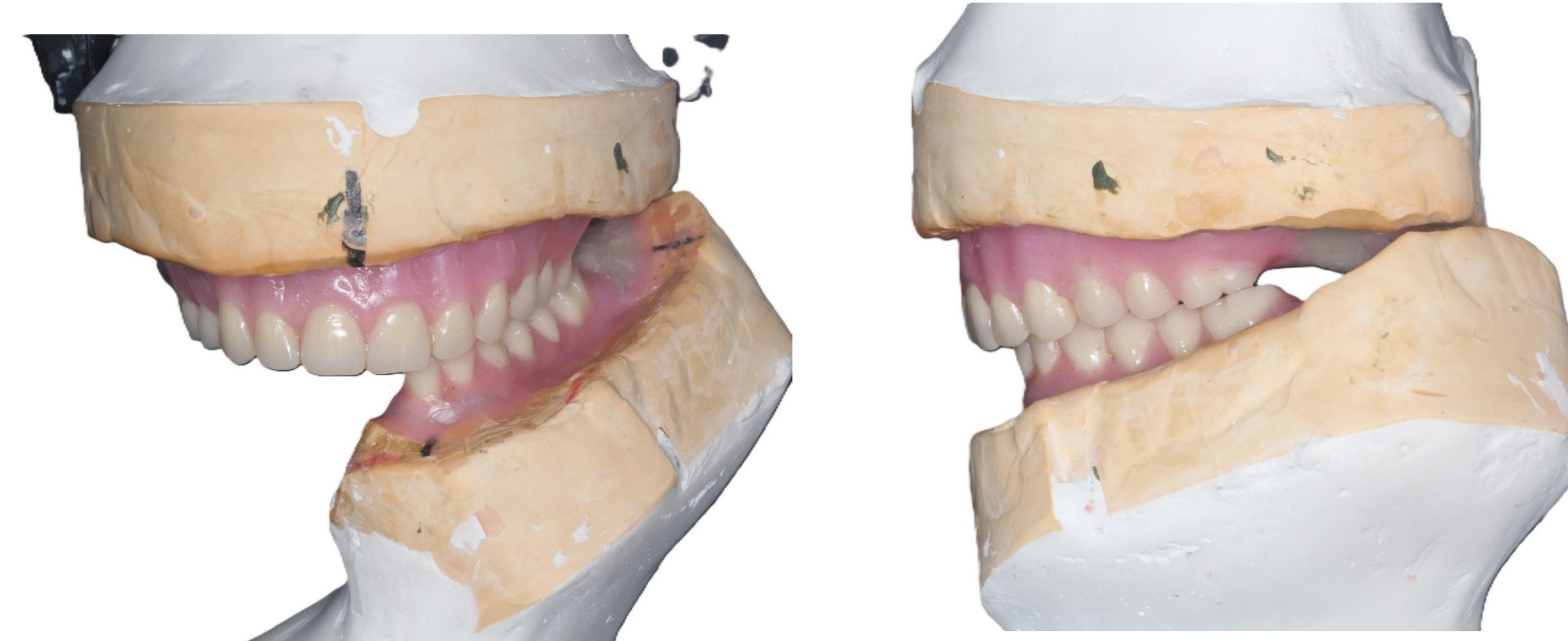


Figure 3. Final tooth set-up after esthetic try-in before processing. Monoplane teeth set in monoplane occlusion.

Figure 4

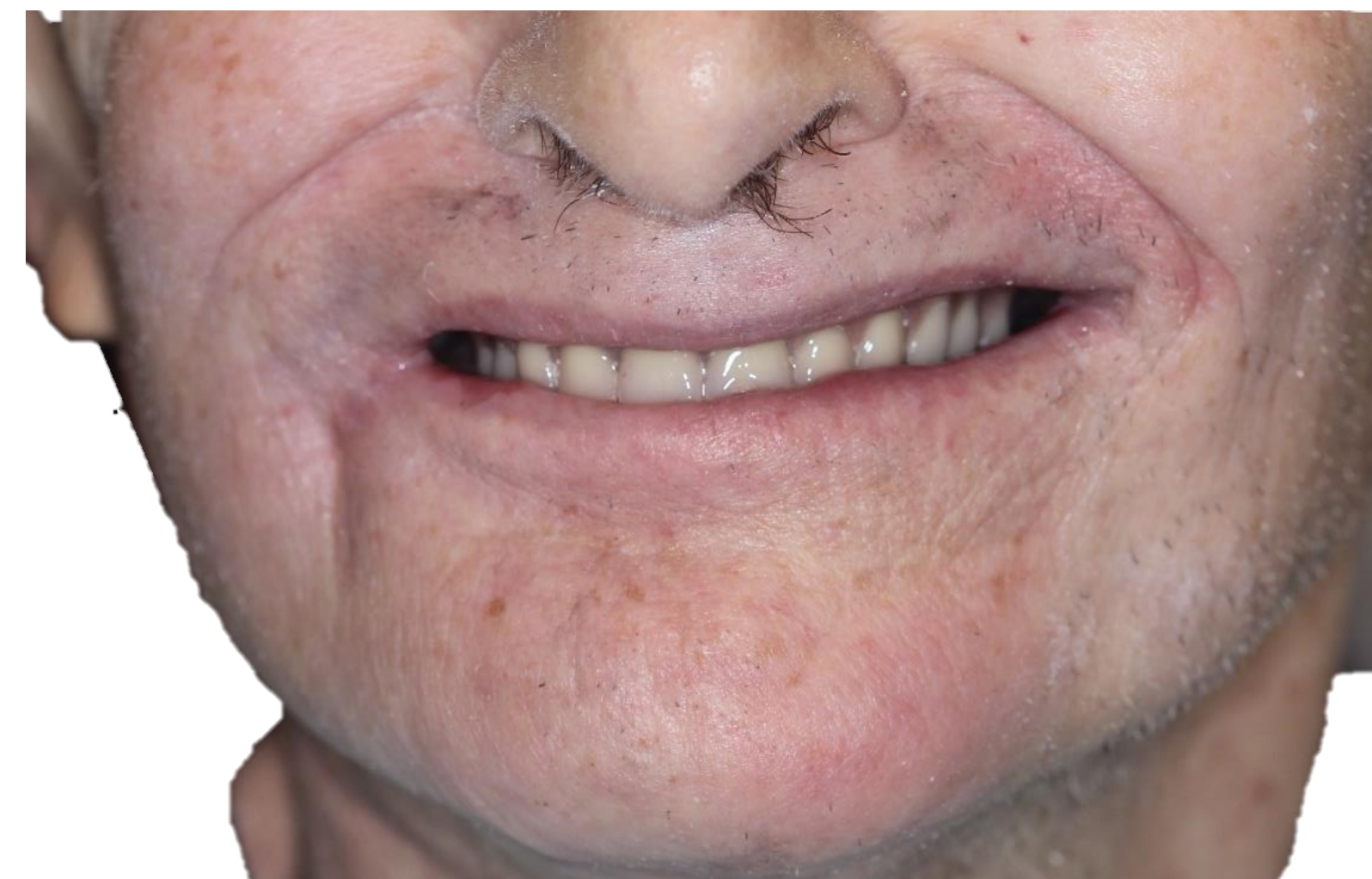


Figure 4. Frontal smiling photo of the patient wearing both maxillary and mandibular prostheses on delivery day (left). Intraoral photo of patient wearing both maxillary and mandibular prostheses on delivery day (right).

TREATMENT

- Initial impressions were made with stock trays and putty washed with light body PVS.
- Custom trays were fabricated off diagnostic casts
- Final impressions were made with green stick compound and light body PVS.
- Master casts were fabricated
- Jaw records were recorded with record bases and wax-rims at the ideal vertical dimension. Master casts were mounted, and tooth mold and shade were selected.
- Denture teeth were set in monoplane occlusion and an esthetic try-in was completed. Occlusion and festooning were finalized.
- Dentures were conventionally processed with acrylic resin and delivered
- Patient was seen for follow-up at 24-hour, 48-hour, 1 week, 1 month, and 3 month intervals.

OUTCOME

- Patient responded positively to treatment outcomes, requiring minimal adjustments at follow-up appointments
- Patient reported the ability to eat several food groups he had avoided for years and an improvement in his nutrition intake
- Patient and patient's caregiver reported significant improvement in quality of life with new prosthesis .

CONCLUSION

With proper patient expectations and management, successful treatment outcomes can be achieved using conventional removable denture techniques in patients with a history of jaw resection

