

Multidisciplinary Prosthodontic Rehabilitation of a Pediatric Ectodermal Dysplasia Patient: A Growth- Oriented Minimally Invasive Approach



T. Wallace, DMD; Nupur Patel, BDS, DMD, MS, FACP; Yu-Chun Lin, DDS, DMSc

University of Pennsylvania School of Dental Medicine



Introduction

Ectodermal dysplasia (ED) is a hereditary disorder characterized by oligodontia, alveolar ridge deficiency, and altered craniofacial development. These patients often experience impaired mastication, speech difficulties, and esthetic concerns, which can have profound psychosocial consequences. Successful management requires an interdisciplinary approach: prosthodontics provides functional rehabilitation, periodontics establishes a healthy soft-tissue foundation through vestibuloplasty, free gingival grafting, and frenectomy, and orthodontics contributes to space management and esthetic alignment with Invisalign and pontics. Coordinating care across specialties is essential to restore function and appearance while supporting the patient's emotional and social development.

Case Report

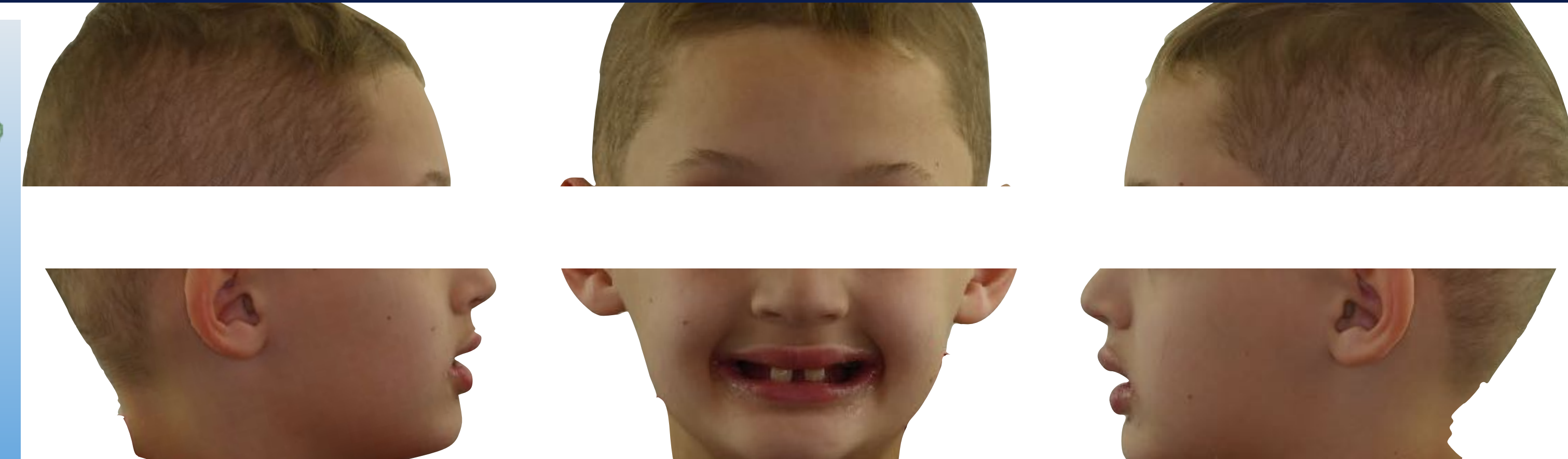
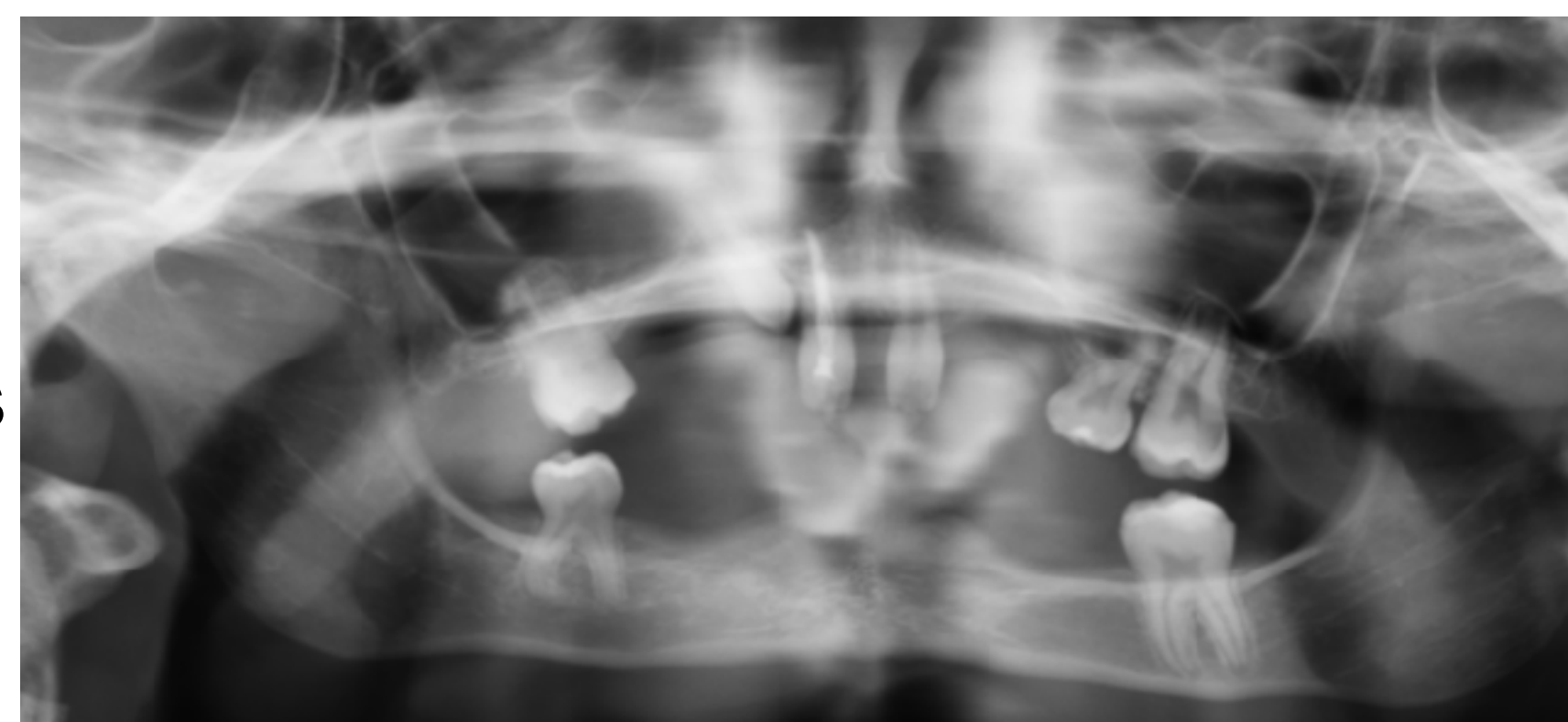
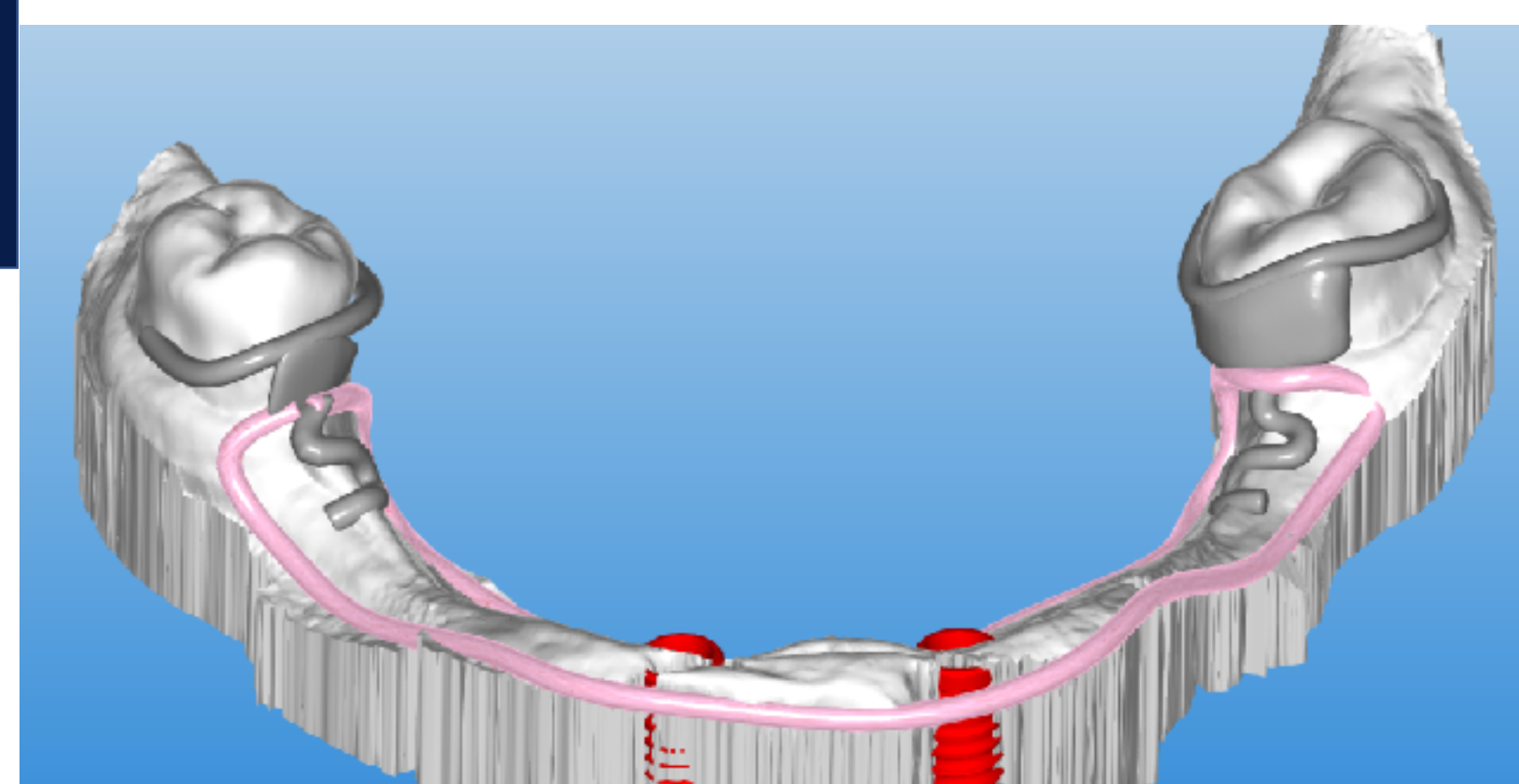
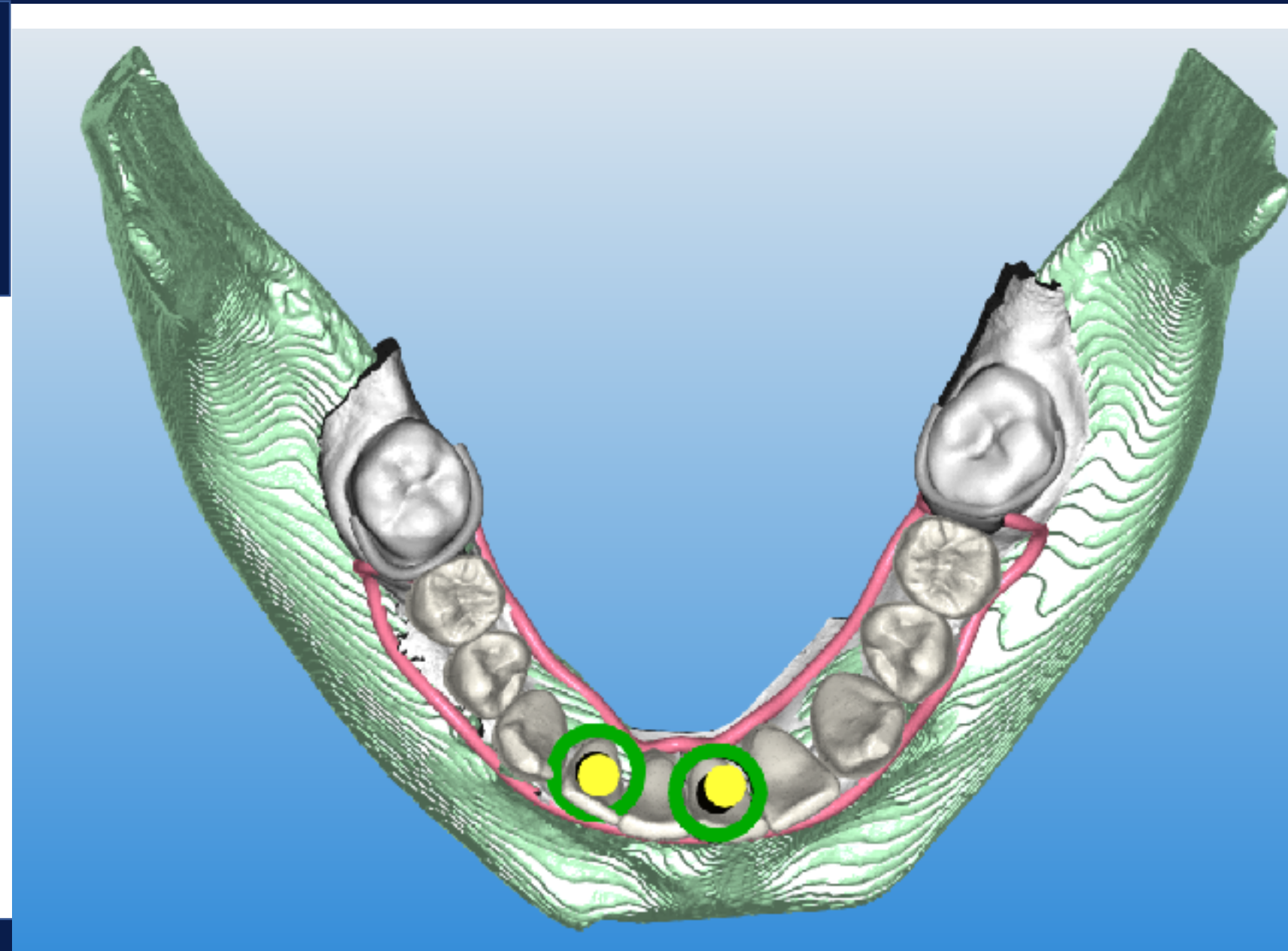
An 11-year-old male presented to the University of Pennsylvania School of Dental Medicine with a diagnosis of ectodermal dysplasia. Clinical findings included oligodontia, impacted #6, ankylosis of #8 following prior avulsion and endodontic therapy, and retained teeth #3, 8, 9, J, 14, 19, and 30. The patient's chief complaint was difficulty chewing and dissatisfaction with esthetics; prior removable prostheses had been abandoned due to poor retention and associated social stigma.

Interdisciplinary Approach

- Periodontics: Vestibuloplasty and free gingival graft to increase vestibular depth and keratinized tissue, frenectomy to eliminate high frenum pull.
- Orthodontics: Invisalign for esthetic alignment and space management, use of pontics to address anterior esthetics.
- Endodontics: Management of #8 following avulsion, reinsertion, ankylosis, and subsequent endodontic therapy.
- Prosthodontics: Increase occlusal vertical dimension (OVD) with posterior onlays; fabrication of a maxillary non-metal removable partial denture (RPD); placement of mandibular implants at #24 and #26 to support an implant-retained RPD.

Oral Manifestation of ED:

- Oligodontia and altered craniofacial development
- Alveolar ridge deficiency with reduced vestibular depth
- Thin keratinized tissue and high frenum attachments
- Xerostomia
- Tooth Ankylosis



#8 and #9 composite veneers Mandibular onlay preps

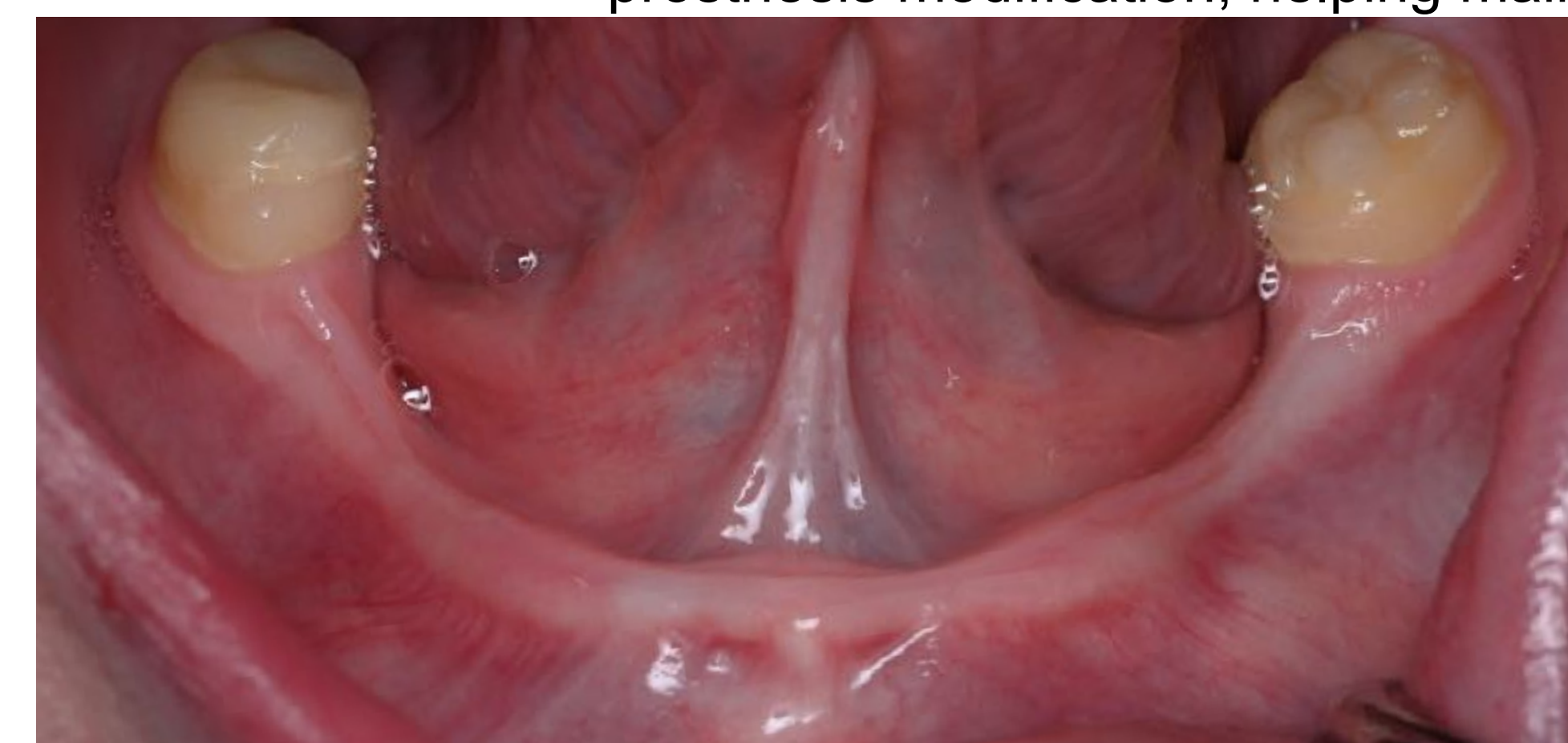
Results/ Future Direction

To date, the patient has undergone vestibuloplasty and a free gingival graft, which successfully increased vestibular depth and keratinized tissue. Teeth #8 and #9 were reshaped and restored with composite veneers to improve esthetics and were idealized in contour to facilitate planned orthodontic alignment, and posterior teeth were prepared for onlays to re-establish occlusal vertical dimension.

Implant placement at sites #24 and #26 is planned to provide anchorage for a mandibular implant-retained removable partial denture. Future treatment will include delivery of the mandibular implant-retained RPD following osseointegration, as well as fabrication of a maxillary non-metal RPD to restore esthetics and function. The patient will be followed regularly for prosthesis adjustment, growth monitoring, and peri-implant maintenance. Long-term considerations include potential infraocclusion of implants, the need for prosthesis modification as craniofacial growth continues, and interdisciplinary reassessment to ensure stable function and esthetics over time

Discussions

This case demonstrates the challenges of treating pediatric ED patients, where functional, esthetic, and psychosocial concerns must be addressed early while accounting for ongoing craniofacial growth. A growth-oriented, minimally invasive, and interdisciplinary approach allows for staged rehabilitation and psychosocial improvement. While early implant placement carries a risk of infraocclusion, the mandibular parasymphiseal region is relatively stable during growth and can provide predictable support when combined with careful monitoring and prosthesis modification, helping maintain function and quality of life during development.



Before FGG and vestibuloplasty

4 weeks post FGG and vestibuloplasty

