



Interdisciplinary Management of Orthodontic-Prosthodontic Patients: A Case Series

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INTRODUCTION

Interdisciplinary prosthodontic management of orthodontic patients can present a challenge without optimally sequenced coordinated care.¹ Common indications for collaboration include crowding, spacing, drifting, tilting, rotation, proclination, reverse articulation, supraeruption, lack of interarch restorative space, congenitally missing teeth, retained primary teeth, peg laterals, and congenital defects of enamel and dentin.² Among many, some advantages of pre-prosthetic orthodontic treatment include conservation of tooth structure by minimizing tooth reduction, optimized size and shape of restorations through appropriate positioning, decreased need for endodontic therapy, and vertical space gain.^{1,3} Inadequate planning can result in re-initiation of orthodontics and delayed treatment. Comprehensive pre-orthodontic and prosthodontic assessment entails careful assessment of the: (1) current and desired incisal edge position,¹ (2) current and desired occlusal plane,² (3) existing and future occlusal vertical dimension (OVD),⁴⁻⁸ (4) maxillomandibular relationship (MMR),⁴ (5) appropriate distribution of restorative spaces,^{3,9} and (6) planning of future teeth positions that allows for optimal esthetics and establishment of mutually protected occlusion.^{9,10} Successful planning is the key to predictable outcomes.⁹

OBJECTIVES

Given the paucity of guidance regarding the interdisciplinary management of orthodontic-prosthodontic patients,¹ this case series seeks to provide a framework for coordinated treatment sequencing.

SEQUENTIAL TREATMENT PLANNING FRAMEWORK

- Step 0: Initial Presentation to Assess Existing Teeth Alignment
- Step 1: Establish Desired Ideal Restorative Spaces and Anteroposterior Esthetic Plane⁹
 - Incisal Edge Position → Occlusal Plane → OVD → MMR^{1,2,4-8}
 - Determine Tooth Distribution and Proportions Using Panadent Esthetic Tooth Proportion Gauge¹¹
- Step 2: Initiation of Orthodontic Treatment and Periodic Prosthodontic Re-evaluation
- Step 3: Orthodontic Treatment Outcome Assessment
- Step 4: Diagnostic Wax-up and Restorative Treatment Planning
- Step 5: Initiation of Prosthodontic Treatment

CASE 1



Figure 1. Initial presentation at age 15



Figure 2. Mid-orthodontic evaluation of restorative space at age 16



Figure 3. Post-orthodontic restorative space at age 16



Figure 4. Diagnostic wax-up at existing OVD



Figure 5. Final restorations at age 17

Initial Presentation

15 year old female presents with **congenitally missing teeth** to replace her missing teeth and restore her smile (Fig. 1)

Key Treatment Challenges

- **Excessive anterior horizontal restorative space**
- Rotation, proclination, and axial inclination of maxillary anterior teeth

Sequential Treatment Planning Adolescent Treatment phase

- Horizontal restorative spaces were assessed using the Panadent Tooth Proportion Gauge to guide orthodontic revision^{9,11} (Fig. 2)
 - Widen space for maxillary centrals
 - Narrow space for maxillary laterals
- Final orthodontic treatment (Fig. 3)
- A diagnostic wax-up was fabricated (Fig. 4)
- Patient was restored with (Fig. 5):
 - Fiber-reinforced resin-bonded fixed dental prosthesis to replace missing lateral incisors⁹
 - Proximal resin restorations to close diastema between central incisors
- Definitive treatment will be offered after completion of skeletal growth

REFERENCES



CASE 2

Initial Presentation

18 year old male presents with **excessively worn dentition** to restore his smile (Fig. 6)

Key Treatment Challenges

- **Insufficient vertical restorative space**
- Severe attrition of maxillary anterior teeth
- Insufficient clinical crown height
- Uneven gingival zeniths

Sequential Treatment Planning Definitive Treatment Phase

- Restorative spaces were established and OVD increased orthodontically^{2,6,12} (Fig. 7)
- A diagnostic wax-up was fabricated (Fig. 8)
- Esthetic and functional crown lengthening was performed to increase clinical crown height² (Fig. 9)
- Patient was restored with (Fig. 10):
 - Full coverage crowns for maxillary anterior teeth
 - Partial coverage overlays for mandibular posterior teeth²

CONCLUSIONS

This case series describes sequential orthodontic-prosthodontic treatment planning for adolescent and definitive treatment phases. Proper sequential interdisciplinary planning ultimately enables fewer treatment complications with more predictable outcomes.



Figure 6. Initial presentation at age 18



Figure 7. Post-orthodontic restorative space at age 22



Figure 8. Diagnostic wax-up at 2mm increase in OVD



Figure 9. Surgical guide for crown lengthening after radiographic confirmation



Figure 10. Final restorations at age 23