



Interdisciplinary Approach to Optimize Esthetics and Function in Management of Anomalies of Lateral Incisors

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Introduction

Disturbances during tooth development may result in hypodontia or peg-shaped maxillary lateral incisors, most commonly affecting the maxillary lateral incisors and second premolars. In Saudi patients, the prevalence of hypodontia and peg-shaped lateral incisors has been reported to be approximately 4%.

With increasing esthetic demands, these anomalies often lead to anterior spacing and compromised smile appearance. Management requires careful treatment planning and a multidisciplinary approach.

This clinical report presents an interdisciplinary management of two cases with developmental anomalies of permanent maxillary lateral incisors.

Case 1: Congenitally Missing Maxillary Lateral Incisors

A 16-year-old female patient, medically fit, presented to the prosthodontic department with the chief complaint, “*am not happy with the spaces between my teeth.*” Clinical examination revealed generalized spacing in the maxillary arch associated with bilateral congenitally missing lateral incisors.



Fig. 1. Pretreatment intra-oral photograph. Generalized spacing with congenitally missing lateral incisors

- An interdisciplinary treatment approach involving orthodontic, restorative, and implant therapy was considered the treatment of choice to address both functional and esthetic concerns.



Fig. 2. Intra-oral photograph, CBCT analysis and Panoramic radiograph. After comprehensive orthodontic treatment.



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- Comprehensive clinical and radiographic evaluation revealed insufficient mesiodistal space for standard-diameter implants (≈ 6.0 mm on the right and 5.5 mm on the left).



Fig. 3. Measurement of spaces elicit 6mm on the Right side and 5.5mm on the Left side of the cast, Diagnostic wax-Pattern

- Therefore, narrow-diameter implants (2.9 mm) were selected. CBCT data were processed using 3D Diagnostix software for prosthetically driven virtual planning and fabrication of a tooth-supported surgical guide. Two implants (Straumann Bone Level Tapered Roxolid® SLActive® (SC) 2.9 × 12 mm) were placed at sites #12 and #22 using a flapless technique in under 20 minutes.



Fig. 4. Teeth supported surgical template used on implant placement with flapless technique.

- Provisional crowns were relined to screw-retained temporary abutments and immediately loaded under non-functional occlusion.



Fig. 5. Immediately loaded temporary crowns

- Final crowns were delivered after two months, achieving improved esthetics and patient satisfaction.



Fig. 6. Final view of the smile after delivery of definitive crowns



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Case 2: Peg Shaped Lateral Incisors

A 24-year-old female presented to the prosthodontics clinic with a chief complaint of small maxillary anterior teeth. She had completed four years of orthodontic treatment, with appliance removal one year prior. Intra- and extra-oral examinations revealed a disharmonious smile due to abnormal tooth shape and size of the maxillary anterior teeth, including bilateral peg-shaped lateral incisors previously restored with composite to close anterior spaces following orthodontic alignment.

- Based on clinical examination and diagnostic records, laminate veneers were selected to restore esthetics. Width-to-length ratios of the clinical crowns were measured on stone casts, with an ideal ratio of approximately 81% as described by Sterrett et al.



Fig. 1. Pretreatment intra-oral photograph. Peg- shaped lateral incisors with composite restorations.

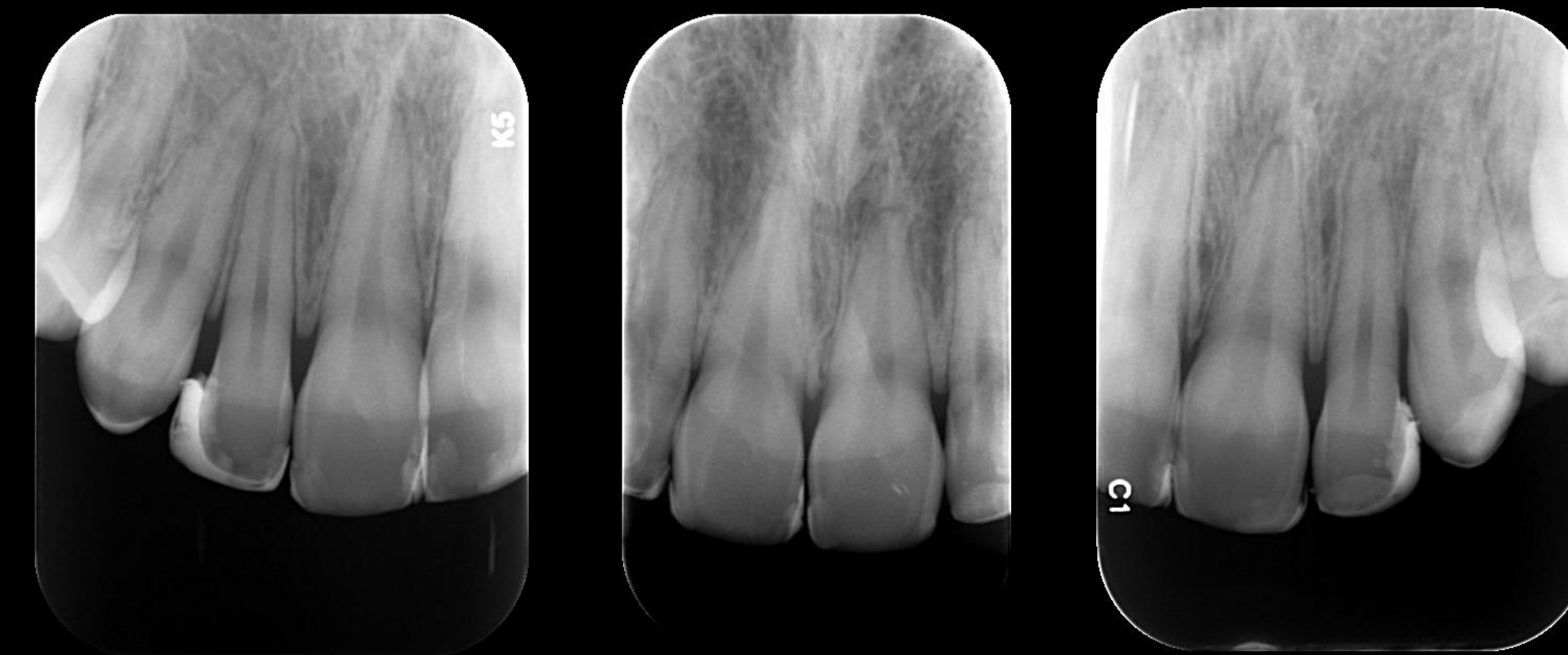


Fig. 2. Periapical Radiographs demonstrated composite restorations to close interproximal spaces



Fig. 3. Diagnostic wax-Pattern



Fig. 4. Silicon index of the waxed diagnostic cast.



Fig. 5. The correct tooth proportions were transferred to the patient's mouth from the mock-up.





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- A diagnostic wax-up was performed without tooth reduction, emphasizing crown proportions and transition line angles. A mock-up using bis-acryl resin (Success CD, shade A2) was fabricated to evaluate esthetics and phonetics and to obtain patient approval. Tooth preparation followed the Aesthetic Pre-Evaluative Temporaries (APT) technique described by Gürel.



Fig. 6. Porcelain laminate veneer preparation.



Fig. 7. Provisional veneers with cold cure bis-acryl resin (Success CD).

- Final impressions were taken, and Celtra Press ZLS veneers were fabricated and cemented, resulting in high patient satisfaction.



Fig. 8. Fabricated veneers (celtra press ZLS) on the working model.



Fig. 9. Porcelain veneers after cementation.

Conclusion

Selecting the appropriate treatment modalities for anterior teeth spacing caused by hypodontia and microdontia requires careful consideration of the treatment options and a multidisciplinary approach to provide long-term success and satisfactory esthetic outcome.

References



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