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Clinical Management of Congenital Unilateral Agenesis of Maxillary Lateral Incisors: A Case Series Utilizing Dental Implant Rehabilitation

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Abstract

The maxillary lateral incisor is the second most commonly congenitally missing tooth. Various treatment modalities have been proposed for its replacement, including canine substitution, tooth-supported fixed restorations, and single-tooth implants. Among these, dental implants offer a predictable and conservative solution once dental and skeletal growth are complete. This clinical report presents management strategies for two patients with unilateral congenital absence of maxillary lateral incisors, successfully rehabilitated using single-tooth dental implants, resulting in improved aesthetics and patient satisfaction.

Keywords: Congenitally missing lateral incisor; Dental implant restoration; Implants

Introduction

Tooth loss in the anterior maxilla frequently results from traumatic injury or congenital absence. Among congenitally missing teeth, the maxillary lateral incisor is the most commonly affected anterior tooth. Several restorative strategies exist for its replacement, including removable partial dentures, conventional or resin-bonded Fixed Dental Prostheses (FDPs), orthodontic space closure through canine substitution, and single-tooth implant placement. Although subgingival margins may enhance esthetics, they often predispose the tissues to gingival inflammation. When occlusal and esthetic parameters allow, orthodontic space closure via mesial repositioning of the canine serves as a straightforward and effective approach. Alternatively, single-tooth implants have emerged as the most predictable and biologically conservative treatment once skeletal growth has ceased typically around 21 years in males and 15 years in females.

Implant placement in the anterior maxilla presents specific challenges due to restricted bone volume and spatial constraints between adjacent roots. To address these limitations, angled abutments are often employed to

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optimal prosthetic alignment and esthetics. Additionally, maintaining peri-implant soft tissue integrity and regenerating the interdental papilla are critical for long-term success. This report describes the interdisciplinary management of two patients presenting with unilateral congenital absence of maxillary lateral incisors, treated with single-tooth dental implants.

Case 1

A 21-year-old male presented with dissatisfaction regarding the esthetics of his smile. Clinical and radiographic examinations confirmed the congenital absence of the maxillary right lateral incisor (tooth #12). The patient was already undergoing orthodontic treatment, but space for tooth #12 had not been created, prompting him to seek a second opinion.

After an orthodontic evaluation, an interdisciplinary treatment plan was developed to create adequate space for implant placement. Proper rebonding was performed, and orthodontic treatment continued accordingly (Figure 1, 2).

Upon completion of orthodontic therapy, a 3 mm wide and 12 mm long one-piece dental implant (Provo, Mode medical, Turkey) was placed at the site of tooth #12. The maxillary left lateral incisor (tooth #22) exhibited a peg-shaped morphology; therefore, a zirconia crown was fabricated to restore symmetry and enhance esthetics. The final outcome demonstrated balanced proportions and satisfactory integration of the implant-supported crown within the natural dentition (Figure 3, 4, 5).

Figure 1: Panoramic radiography immediately after finishing with the orthodontic treatment and opening adequate space for the implant placement.

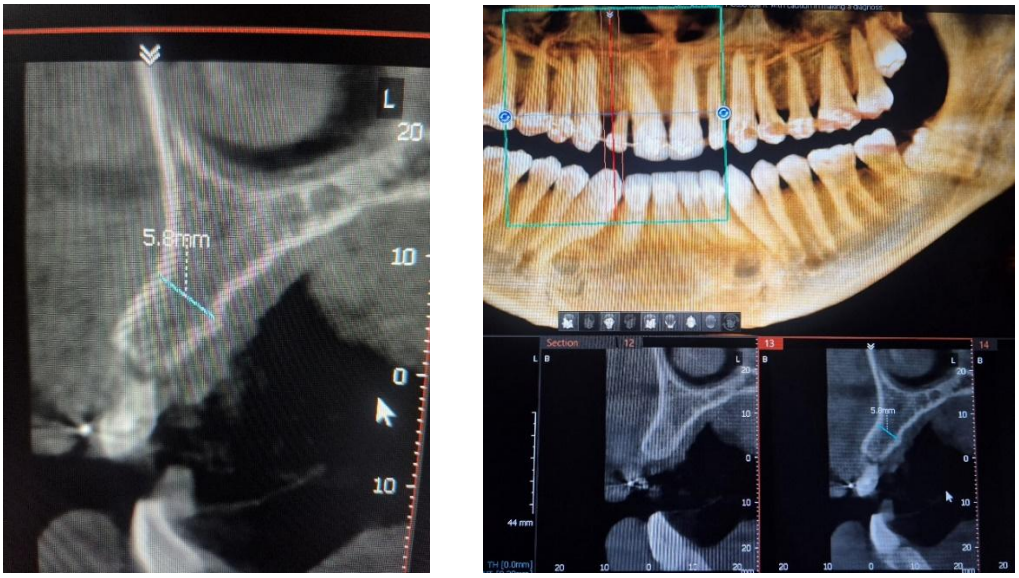

Figure 2: Pre-implant placement CBCT scan.

Figure 3: Occlusal and lateral view after placing the implant and zirconia crown.

Figure 4: Radiography showing the implant position after placement and frontal view of the final outcome with the zirconia crowns.

Figure 5: Showing panoramix radiography of the implant after one year of placement.

Case 2

A male patient in his 30s presented with aesthetic concerns and a noticeable midline deviation. He had previously undergone orthodontic treatment, during which the space for the left lateral incisor (tooth #22) had been closed by approximating the adjacent central incisor and canine (teeth #21 and #23). The aesthetic result was unsatisfactory, and the patient also exhibited mandibular deviation along with an abnormal opening and closing pattern. Radiographic and clinical examinations revealed agenesis of tooth #12 and transposition of teeth #13 and #14 (Figure 6).

A comprehensive clinical and radiographic assessment was performed (Figure 6, 7, 8). Orthodontic retreatment was planned to reopen the space for tooth #22, followed by alignment and mild expansion of the maxillary arch. Due to the transposition of teeth #13 and #14, noticeable irregularity was observed in the upper right quadrant. It was decided to reshape tooth #14 and correct its morphology to resemble that of tooth #13.

Following orthodontic correction, a significant improvement was noted in the alleviation of mandibular deviation and normalization of jaw movement. Subsequently, a 3.3 mm × 11.5 mm implant (Mode Rapid Implant, Mode Medical, Turkey) with a Ti-Base abutment was placed at the site of tooth #22. A provisional Polymethyl Methacrylate (PMMA) crown was then fabricated to guide peri-implant soft tissue healing and maintain aesthetics throughout the osseointegration process (Figure 9, 10).

Figure 6: Pretreatment panoramix radiography.

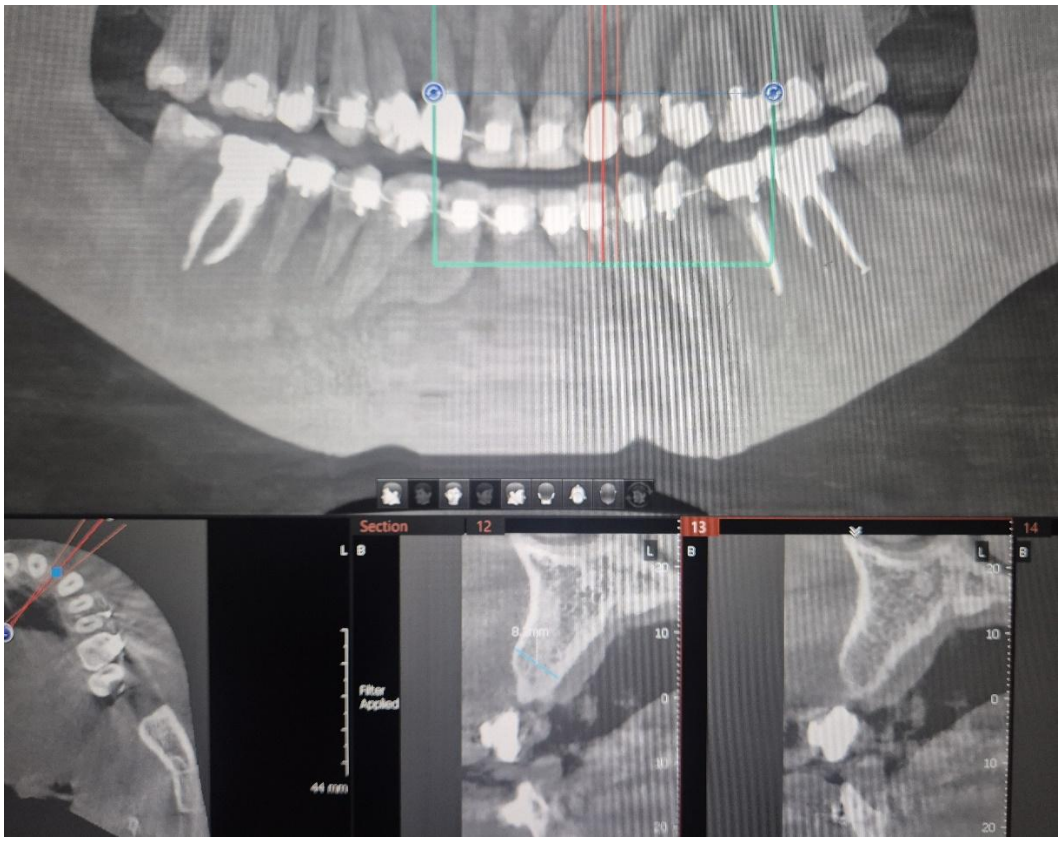

Figure 7: Pre-implant placement CBCT evaluation.

Figure 8: Pretreatment frontal and lateral photographs of the inraoral situation.

Figure 9: Photographs taken immediately after placement of the implant, frontal, lateral and occlusal view. Frontal and lateral view of the provisional PMMA crown and smile photography with PMMa crown.

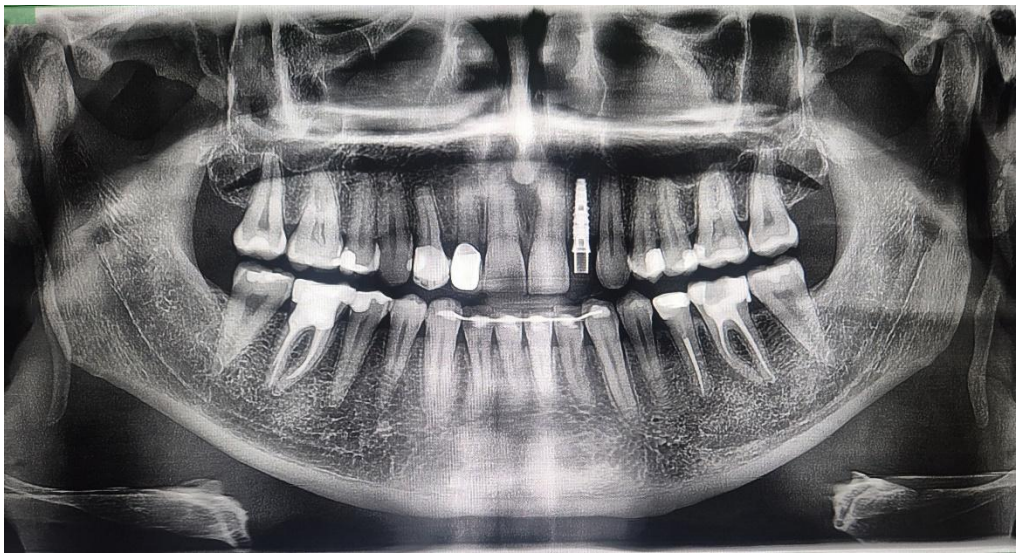

Figure 10: Panoramix radiography 4 months after implant placement.

Discussion

The replacement of a missing maxillary lateral incisor remains one of the most challenging scenarios in restorative and implant dentistry due to the high esthetic demands of the anterior maxillary region. Although implant therapy is well established as a predictable and conservative solution, achieving optimal esthetic integration requires a delicate balance between biological, prosthetic, and esthetic parameters. The anterior maxillary zone often referred to as the “esthetic zone” poses unique challenges, including limited bone volume, thin buccal cortical plates, and delicate soft tissue architecture. Even minor discrepancies in implant position or emergence profile can lead to gingival recession, black triangles, or asymmetrical papilla formation, compromising the final result.

The adequacy of alveolar bone height and width remains a prerequisite for successful implant placement. As per contemporary guidelines, a minimum of 10 mm vertical height and 6 mm buccolingual width are required in the lateral incisor region. However, congenital absence often results in underdeveloped alveolar ridges. When bone volume is insufficient, several augmentation strategies including Guided Bone Regeneration (GBR), ridge-split techniques, or block grafting can be considered.

In the first case reported, the patient declined augmentation procedures due to cost and invasiveness. Instead, a narrow-diameter implant (3.0 mm - 3.3 mm) was chosen to adapt to the available bone volume. Literature supports the use of narrow implants in esthetic regions as a predictable alternative, provided primary stability is achieved and occlusal loading is carefully controlled. Narrow implants also minimize the risk of root proximity and preserve the interdental papillae, both essential for a natural appearance.

Soft tissue management around anterior implants is equally decisive for esthetic success. The thickness and biotype of the gingiva determine the stability of the mucosal margin and the visibility of underlying restorative materials. Thin tissue biotypes are more prone to recession and show-through of metallic abutments. For this reason, the use of zirconia or titanium abutments with optimized angulation is recommended. In the present cases, metallic abutments were selected due to superior mechanical properties, and meticulous subgingival contouring prevented any visible metal reflection, even though in the first case, the outcome was not satisfactory.

The use of provisional restorations is an essential phase in soft tissue conditioning. Properly contoured temporaries help shape the emergence profile, support papilla formation, and guide mucosal adaptation. Another critical factor influencing esthetic outcome is the timing of implant placement. In adolescents and young adults, premature implant placement before the completion of facial growth can result in infraocclusion due to continued alveolar development of adjacent natural teeth. Therefore, it is recommended that implant placement be deferred until facial growth ceases around 15 years in females and 21 years in males. The age and skeletal maturity of both patients in the current report were appropriate for definitive implant placement, ensuring long-term stability.

The interdisciplinary approach combining orthodontic, surgical, and prosthetic expertise was vital to achieving optimal outcomes. Orthodontic space creation ensured sufficient mesiodistal clearance and root parallelism, reducing the risk of implant impingement on adjacent tooth roots. Coordination between the orthodontist and implantologist was particularly critical in Case 2, where reopening of the lateral incisor space also corrected midline deviation and normalized mandibular function.

Beyond biological and mechanical success, patient satisfaction plays a decisive role in defining treatment success. Esthetic perception is inherently subjective; hence, clear communication and expectation management are indispensable throughout treatment planning. Long-term follow-up is equally important to monitor marginal bone levels, mucosal stability, and the integrity of restorative components.

Conclusion

The management of unilateral congenital absence of a maxillary lateral incisor presents both aesthetic and functional challenges. Successful outcomes depend on meticulous diagnostic planning, precise implant placement, and close interdisciplinary coordination.

In both cases, implant-supported restorations provided stable and aesthetically pleasing results. The first case achieved satisfactory harmony, while the second yielded a nearly ideal aesthetic match. These outcomes underscore the importance of integrating surgical, orthodontic, and prosthetic principles to ensure predictable and long-term success. Furthermore, patient expectations should be carefully managed through clear communication regarding the biological and aesthetic limitations of each treatment phase.

References

1. Arandi NZ, Mustafa S. Maxillary lateral incisor agenesis; a retrospective cross-sectional study. Saudi Dent J. 2018;30(2):155-60.
2. Kokich VO, Kinzer GA. Managing congenitally missing lateral incisors. Part I: Canine substitution. J Esthet Restor Dent. 2005;17(1):5-10.
3. Kinzer GA, Kokich VO. Managing congenitally missing lateral incisors. Part II: tooth-supported restorations. J Esthet Restor Dent. 2005;17(2):76-84.
4. Shah RA, Mitra DK, Rodrigues SV, Pathare PN, Podar RS, Vijayakar HN. Implants in adolescents. J Indian Soc Periodontol. 2013;17(4):546-8.
5. Alves LD. Angled dental implants: implications for clinical practice and biomechanical considerations. International Seven Journal of Multidisciplinary. 2024;3(1):12.

6. Jurado CA, Garcia-Torres F, Rojas-Rueda S, Karimi K, Antal MA. Evaluating the success of immediate implants in the Esthetic zone: A narrative review with case illustration. Dent J (Basel). 2025;13(8):365.
7. Alanazi S. Aesthetic problems related to dental implants in the aesthetic zone: A systematic review. Saudi Dent J. 2024;36(9):1179-83.
8. Testori T, Weinstein T, Scutellà F, Wang HL, Zucchelli G. Implant placement in the esthetic area: criteria for positioning single and multiple implants. Periodontol 2000. 2018;77(1):176-96.
9. Anitua E, Tarazona A, Alkhraisat MH. Retrospective study of functional and esthetic outcomes using narrow-diameter implants for single upper central incisor replacements. Dent J (Basel). 2025;13(4):144.
10. Jose EP, Paul P, Reche A. Soft tissue management around the dental implant: A comprehensive review. Cureus. 2023;15(10):e48042.
11. Santosa RE. Provisional restoration options in implant dentistry. Aust Dent J. 2007;52(3):234-42.
12. Peitsinis PR, Blouchou A, Chatzopoulos GS, Vouros ID. Optimizing implant placement timing and loading protocols for successful functional and esthetic outcomes: A narrative literature review. J Clin Med. 2025;14(5):1442.