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CASE REPORT

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Interdisciplinary Management of One or Two Missing Maxillary Incisors: A Clinical Case Series

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Abstract

Congenital absence of one or both maxillary lateral incisors is a common dental anomaly that significantly impacts a patient's facial aesthetics, oral function, and occlusal development. Given the anterior location of these teeth, their absence necessitates careful, individualized treatment planning. The choice between orthodontic space closure and prosthetic replacement depends on a range of dental, skeletal, and aesthetic factors. Therefore, an interdisciplinary approach—typically involving orthodontists, prosthodontists, and occasionally oral surgeons—is essential to achieve optimal functional and aesthetic results.

This article presents clinical outcomes from a case series involving patients with one or two missing maxillary lateral incisors. Each case was managed through customized treatment plans based on the patient's age, occlusal relationship, space conditions, and aesthetic considerations. Treatment modalities included either orthodontic space closure or space opening, followed by prosthetic rehabilitation using supported crowns or resin-bonded prostheses. Diagnostic records, treatment duration, aesthetic results, and patient satisfaction were evaluated.

The management of missing maxillary lateral incisors requires a personalized approach that considers the clinical, aesthetic, and psychosocial aspects of each case. No universal solution exists; thus, decisions between space closure and prosthetic replacement should be made collaboratively through interdisciplinary planning. The presented cases highlight that individualized orthodontic-prosthetic strategies can yield excellent functional and aesthetic outcomes.(**International Journal of Biomedicine. 2025;15(4):759-762.**)

Keywords: maxillary incisor • space management • orthodontic space • interdisciplinary treatment

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Introduction

Maxillary lateral incisor agenesis is one of the most prevalent forms of congenital tooth absence in the anterior maxilla, accounting for approximately 20% of all dental anomalies.[1] Overall, dental agenesis affects around 4.2% of the population and represents a significant developmental condition in the permanent dentition.[2]

The absence of maxillary lateral incisors presents both aesthetic and functional challenges, particularly due to their prominent position in the smile zone. As a result, treatment planning must be highly individualized, considering each patient's clinical characteristics, occlusal relationship, aesthetic expectations, and psychological profile. There is no universally ideal solution; thus, treatment modalities should be selected based on case-specific functional, periodontal, and aesthetic parameters, with a strong emphasis on long-term success.[3]

A retrospective study by Robertsson and Mohlin compared two primary treatment strategies for managing maxillary lateral incisor agenesis: orthodontic space closure using canine substitution and space opening followed by prosthetic rehabilitation. Their results indicated higher patient satisfaction and superior periodontal health in the group treated with space closure.[4]

Spear et al.[5] emphasized that the successful management of anterior aesthetics should be guided by aesthetic principles and executed through interdisciplinary collaboration. Treatment should begin with a comprehensive aesthetic analysis and incorporate considerations of function, structure, and biological

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health, requiring coordinated efforts among orthodontists, prosthodontists, periodontists, and oral surgeons.

Maxillary lateral incisor agenesis is often not an isolated anomaly. It frequently coexists with other dental irregularities, including microdontia of the lateral incisors, agenesis of other permanent teeth, ectopic eruption of maxillary canines, and distoangulation of mandibular second premolars.[6] These associated anomalies complicate diagnosis and must be carefully considered during both orthodontic and prosthetic treatment planning.

Furthermore, as highlighted by Kavadia et al.,[7] current evidence is insufficient to definitively endorse one treatment modality over another for maxillary lateral incisor agenesis. Therefore, a multidisciplinary diagnostic approach and individualized treatment-planning process are essential for selecting the most appropriate therapeutic strategy for each patient.

This study is a retrospective clinical case series aimed at evaluating treatment options for patients presenting with the congenital absence of one or two maxillary incisors. All patients were managed using a combination of orthodontic and prosthetic interventions. A total of four patients were included; all treated at the Panacea Clinic in Ferizaj. The sample consisted of two female patients aged 15 and 19 years, and two male patients aged 17 and 23. Inclusion criteria were congenital absence of one or two maxillary incisors and availability of complete diagnostic documentation, including radiographs and clinical photographs. The study adhered to the ethical principles outlined in the Declaration of Helsinki. All patients provided informed consent for participation in this study and the use of their clinical data.

Each case was evaluated individually, and treatment was planned through interdisciplinary collaboration involving orthodontists and prosthodontists. The therapeutic approach—either space closure with canine substitution or space opening for prosthetic replacement—was selected based on the specific clinical, aesthetic, and functional needs of each patient.

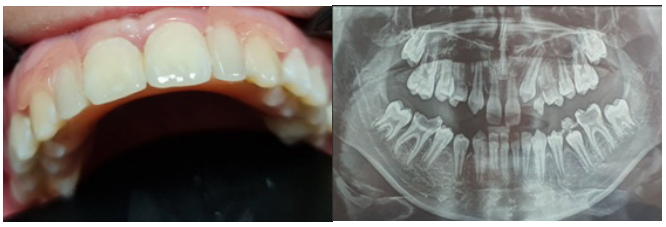
This study presents four clinical cases treated at our clinic, involving patients with congenital absence of one or two maxillary incisors. Each patient underwent a comprehensive clinical, radiographic, and aesthetic evaluation. The therapeutic approach varied from orthodontic space closure with aesthetic reshaping of the canines to space opening followed by prosthetic rehabilitation, depending on the individual needs of each case. Treatment was planned in close collaboration between the orthodontist, the prosthodontist, and maxillofacial surgeon. Post-treatment follow-up lasted at least six months.

Case 1

A female patient presented with agenesis of both maxillary lateral incisors. After a thorough clinical evaluation, an interdisciplinary treatment plan was developed, combining orthodontics with prosthetics. Given the patient's young age and ongoing skeletal growth, it was decided to open the spaces orthodontically and to maintain them using a removable, acrylic partial denture with two lateral incisors. Orthodontic therapy focused on creating space for prosthetic replacements and aligning the canines in their proper anatomical positions to ensure correct interdigitation with the mandibular dentition (Figures 1,2).

(a) (b)

Fig. 1. *(a) The beginning of the treatment; (b) The removable acrylic partial denture, replacing the missing incisors.*



(a) (b)

Fig. 2. *(a) Occlusal view; (b) Panoramic radiograph.*

Case 2

A 19-year-old female patient presented with agenesis of the maxillary left lateral incisor. Following a comprehensive clinical evaluation, an interdisciplinary treatment plan combining orthodontic and prosthetic approaches was formulated. One of the primary objectives of orthodontic treatment was to correct a midline deviation that had shifted to the left. After orthodontic space opening and alignment of the left canine into proper occlusion, the midline was successfully corrected. To replace the missing lateral incisor, a multilayer zirconia-bonded appendix bridge was placed. The patient opted for this conservative prosthetic solution and declined implant placement. The final aesthetic and functional outcomes were satisfactory, and occlusal harmony was restored (Figure 3).

(a) (b)

(c) (d)

Fig. 3. *(a) Before treatment; (b) The beginning of the orthodontic treatment; (c) The end of the orthodontic treatment; (d) The final treatment.*

Case 3

A male patient aged 17 years presented to our clinic seeking orthodontic treatment. Clinical and radiographic

evaluation revealed agenesis of the left maxillary lateral incisor , along with atypical crown morphology, Angle's Class II malocclusion, deep bite, and a pronounced curve of Spee. The treatment plan involved distalization of the left canine to create space for the prosthetic replacement of the missing lateral incisor. On the right side, a multilayer zirconia crown was planned following orthodontic treatment. After correction of the malocclusion to a stable Angle's Class I relationship, prosthetic rehabilitation was completed with a Maryland bridge on the left side, following the patient's preference. As a dental technician, he opted for a conservative, adhesive solution. A zirconia crown was fabricated for the right side. Final impressions were taken to fabricate retention splints and maintain the achieved results (Figures 4,5).

(a) (b)

Fig. 4. *(a) The beginning of the orthodontic treatment; (b) The final treatment.*

Fig. 5. *The panoramic radiograph.*

Case 4

A male patient aged 23 years presented for aesthetic concerns related to the spacing between his anterior teeth. Clinical and radiological evaluation confirmed the bilateral congenital absence of maxillary lateral incisors as the primary cause of the diastemas (Figures 6,7). Orthodontic treatment was chosen to close the spaces, as this solution was both aesthetically optimal and preferred by the patient. Canine substitution will be used to achieve a harmonious smile line, and the treatment outcome will meet both functional and aesthetic expectations. The patient is undergoing fixed therapy (Figure 8).

Fig. 6. *The panoramic radiograph.*

(a)

(b) (c)

Fig. 7. *(a) The frontal view; (b) Right view; (c) Left view.*

Fig. 8. *(a, b) The beginning of the orthodontic treatment; (c, d) Closed space with power chain.*

Discussion

Hypodontia, excluding third molars, is the most common dental developmental disorder, with a reported prevalence ranging from 1.6% to 6.9%. The teeth most frequently missing are the mandibular second premolars and maxillary lateral incisors.[7,2] The global prevalence of maxillary lateral incisor agenesis, according to Polder et al.,[8] is 1.55%, whereas Aktan et al.[11] found that the prevalence of lateral incisor agenesis in

the Turkish population is approximately 2.4%. Polder et al.,[8] in their meta-analysis on the prevalence of permanent tooth agenesis, found that its occurrence is significantly lower in North America than in Europe and Australia. The most frequently missing teeth are the mandibular second premolars, followed by the maxillary lateral incisors and the maxillary second premolars. Agenesis typically occurs unilaterally, except in the case of maxillary lateral incisors, which are more likely to be missing bilaterally.

According to Garib et al.,[6] congenital absence of maxillary lateral incisors is frequently associated with other dental anomalies such as microdontia of lateral incisors (38.8%), agenesis of maxillary premolars (10.3%) and mandibular premolars (7.9%), as well as palatal displacement of canines. These associated findings significantly complicate the treatment-planning process and underscore the need for a multidisciplinary approach.

Muhamad and Abdulgani[2] emphasized the importance of collaborative management in cases involving maxillary lateral incisor agenesis. They concluded that such cases require personalized planning and close cooperation among orthodontists, prosthodontists, and periodontists to achieve a predictable and aesthetically acceptable result for the patient, as in the cases we presented in this article.

Lateral incisor agenesis is primarily a genetic anomaly, although environmental factors may also contribute. It significantly affects oral aesthetics and function. As there is no universally applicable treatment approach, each case requires an individualized, multidisciplinary solution.[6,10]

Wright and colleagues, in their study using dental models, compared the tooth dimensions in patients with agenesis of maxillary lateral incisors to those with complete dentition. They concluded that patients missing one or more maxillary lateral incisors exhibited a generalized reduction in tooth size—not only in the maxilla but also in the mandible—thereby supporting a broader genetic influence on dental development.[9]

Conclusion

The management of one or two missing maxillary incisors requires a comprehensive and patient-specific approach. Treatment planning should be guided by a thorough evaluation of clinical, occlusal, aesthetic, and psychological factors unique to each individual.

Given the variability in presentation and patient expectations, there is no universally optimal treatment modality. Therefore, the decision between orthodontic space closure and prosthetic rehabilitation must be made collaboratively through interdisciplinary consultation among orthodontists, prosthodontists, and other relevant specialists.

The clinical cases presented in this series illustrate that personalized, combined orthodontic-prosthetic treatment strategies can lead to highly favorable aesthetic and functional outcomes. These findings underscore the importance of individualized care protocols and reinforce the value of multidisciplinary teamwork in addressing anterior dental agenesis.

Ethical Statements

All patients have provided written informed consent. These reports do not contain any personal information that could be used to identify the patient.

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Conflicts of Interest

The authors declare that they have no competing interests.

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