

Canine substitution for missing maxillary lateral incisors: A case report

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Abstract

Agensis of the maxillary lateral incisor is a frequent reason for consultation, representing about 20% of all dental anomalies we are confronted with. This frequent reason for consultation confronts the practitioner with a complex problem given the strategic position of this tooth in the smile and in the occlusal function. A subtractive coronoplasty of the canine may be necessary

to transform it into a lateral incisor. This work illustrates the management of a case report of unilateral agensis of the left lateral incisor by a coronoplasty of the adjacent canine tooth in order to avoid heavier prosthetic, orthodontic and implant solutions.

Keywords: Maxillary lateral incisors, Canine substitution, coronoplasty, composite

Introduction

Dental agensis is a number anomaly corresponding to the absence of a tooth, it is often a permanent tooth, it can be uni or bilateral affecting one or more teeth. The orofacial sphere and the smile are important elements of facial aesthetics. The incisors are located in a strategic aesthetic and functional area. Indeed, the premaxilla plays an important role in most functions. These functions can be disrupted when there is an agensis of the incisors.

A subtractive coronoplasty of the canines and possibly additive composite can be proposed to solve this problem. Indeed, advances in aesthetic dentistry are influencing our therapeutic attitude towards lateral incisor agensis. The shape of the canine is an important factor to consider from an aesthetic point of view when replacing a lateral incisor. The canine is a much larger tooth than the lateral incisor it replaces. With a larger crown and a more convex buccal surface, reshaping by subtraction is essential to obtain a functional occlusion and acceptable esthetics.

In this work, we will illustrate, through a clinical case, the steps of a coronoplasty of the canine for its transformation into a lateral incisor.¹⁻³

Case report

This is a 13-year-old female patient referred to our department complaining about the unaesthetic appearance of the anterior-superior sector following agensis of the left maxillary lateral incisor associated with the migration of the canine in its place (Figure 1). The patient wished to benefit from a solution that was both esthetic and economical. After an esthetic and functional analysis, an esthetic rehabilitation by canine transformation was indicated.

The light-curing dam was placed (Figure 2). Before starting the remodeling, the modifications were pre-programmed. Grinding of the canine tip to obtain an incisal edge approximating a lateral incisor,

reduction of the vestibular bulge, rounding of the distal angle (Figure 3,4), and rectification of the mesial surface with a direct composite resin restoration (Figure 5-7).



Figure 1 Preoperative clinical view.



Figure 2 Placement of the light-curing dam.



Figure 3 Grinding of the canine.



Figure 4 Result after grinding.



Figure 5 Etching.



Figure 6 Adhesive application and lightcuring.



Figure 7 Final result after composite resinrestoration.

Discussion

The incisors are located in a strategic aesthetic and functional area, the agenesis is confirmed by radiological examination, in particular the panoramic X-ray is an excellent reference. It is hereditary. The therapeutic decision will be taken after an aesthetic, functional and economic analysis: closure of the space, or opening with placement of a prosthesis or implant. This decision is difficult, often multidisciplinary.⁴

Each case is unique, but it is best to favor orthodontic space closure and substitution of the canine into a lateral incisor whenever possible. This is the most often preferred solution because it requires only a few surgeons and is less costly than opening the agenesis space.

The treatment time is also short compared to opening the space with retention during the growth phase. This avoids a long retention period between the end of orthodontic treatment and the final prosthetic restoration. Sometimes it is better to offer a short treatment to the patient in spite of lessconventional results to avoid loss of motivation

during the treatment. This is why a coronoplasty of the canine is necessary and a remodeling of the maxillary first premolar may be necessary. This technique is indicated for patients who refuse prosthetic treatment or those who lack the motivation for a long, multidisciplinary treatment and especially when the canine has a suitable morphology with a small mesio-distal diameter, an acceptable shade, an attenuated tip and a low neck position.⁵

The canine can present extremely varied anatomies. Indeed, its shape must be taken into consideration: rounded, triangular, wide or narrow. The more rounded it is, the easier the coronoplasty will be. On the other hand, if the canine is triangular, its greatest width will be at the top of the papilla; grinding the canine tip will not be enough to give an aesthetic shape to this tooth, it is thus essential to resort to composite resins first, and then to call upon cosmetic dentistry techniques.

The canine must be reshaped for aesthetic purposes, but also for occlusodontic purposes.

The risk of this procedure, if the morphology is not suitable, is to provoke dentinal hyperesthesia and, in the long term, pulp necrosis.

Grinding should always be done carefully and progressively with diamond burs under water spray, followed by polishing and fluoride application to avoid dentinal hyperesthesia and pulp heating. The crown of the canine being longer than that of the lateral incisor, the coronoplasty of the vestibular bulge is continued in the second stage by grinding its tip, making it possible to obtain an artificial incisal edge. This edge thus obtained must be slightly more gingival than that of the central incisor (0.5 mm) in order to optimize the aesthetic result. The canine, which is on average 1.2 mm wider than the lateral incisor, requires in a third step a minimal grinding of its proximal surfaces, more important distally while taking care to round the angle. The mesial surface will remain more vertical.^{6,7}

In the 4th step, the reduction of the thickness of the canine by grinding its palatal face in the occlusal third of the tooth brings more translucency to the edge.

If the grinding of the canine tip is not sufficient to give an aesthetic shape, composites should be considered. These modifications are done gradually to avoid the appearance of hyperesthesia, they allow the restoration of the occlusal function and the improvement of the dentolabial relations, which contributes to soften the line of the smile in a single visit. Enamel surfaces affected by the coronoplasty should be polished. If post-operative sensitivities appear, a topical application of fluoride will be necessary.

Additive direct coronoplasty or composite or ceramic veneers can also be performed when aesthetics are unacceptable.^{8,9}

Conclusion

Nowadays, the treatments performed must respond to the patient's requests. It is essential to analyze with the patient, the reasons and the real reasons for his consultation to reduce the risk of therapeutic failure. The problem of the longevity of a therapeutic solution is often discussed between patient and practitioner. The acceptance of a treatment by a patient is synonymous with a personal investment both in time and money. Indeed, the cost, complexity and duration of treatment of lateral incisor agenesis by gap opening and prosthetic replacement are not always adapted or accepted by patients. Canine transformation can be an excellent treatment alternative for maxillary lateral incisor agenesis. It is an option to maintain a natural dentition avoiding prosthesis and the risks of associated periodontal complications.

Acknowledgments

None.

Conflicts of Interest

None.

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