

Case Report

## **A Morphological Respected Rehabilitation of Maxillary Central Incisor: A Clinical Report**

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### **ABSTRACT**

In esthetic dentistry, central incisors are known as key elements and characterize the term "dominance of central incisors. Because of its median anterior position, a crown on the upper central incisor will be immediately compared with the natural tooth and the slightest differences will be immediately perceived. For the clinician, it poses the greatest restorative challenge. Shape, embrasures, incisal edge and angles should be respected. This article reports a clinical case of a maxillary central incisor's esthetic rehabilitation and aims to determine a check list that should be respected for each successful rehabilitation.

**Key words:** esthetic dentistry, maxillary, central incisors, rehabilitation.

### **INTRODUCTION**

The esthetic dentistry has become a major focus for the public in recent years. <sup>[1]</sup> Special attention is given to disposition of antero-superior teeth or the area called as esthetic zone where central incisors are known as key elements and characterize the term "dominance of central incisors". <sup>[2]</sup>

In an extensive rehabilitation, the practitioner is able to interpret freely shapes, dimensions and the arrangement of the central incisors to orient the personality of the smile. However, restoring a single central incisor seems to be more difficult.

Because of its median anterior position, a crown on the upper central incisor will be immediately compared with the natural tooth and the slightest differences will be immediately perceived. For the clinician, it poses the greatest restorative challenge. <sup>[3]</sup> Therefore, the success of its esthetic rehabilitation depends

on the ability to the integration within the intraoral and extra oral environments. The establishment of an harmony is very important, that's why, when forming a restoration of maxillary central incisor, careful attention and analyses of many factors should be carried on at the diagnosis step.

This article reports a clinical case of a maxillary central incisor's esthetic rehabilitation and aims to determine a check list that should be respected for each successful rehabilitation.

### **Clinical illustration:**

A 20-years healthy female patient consulted the fixed prosthetics department of dental clinic of Monastir, requesting for esthetic rehabilitation of right maxillary central incisor. She complained about the tooth's discoloration and asymmetry comparing to the homologue tooth and

reported that she avoided smiling because of the tooth unpleasant appearance. She asked for an esthetic smile. Intra -oral examination showed, a resin discolored restoration

(Figure1,2). Peri apical radiograph showed a pulpless tooth and adequate canal filling and the presence of a screw-post (figure3).



Figure1: Initial smile

Figure2: Discolored Resin restoration and non symmetric central incisors

Figure3: Peri apical radiograph showed an adequate canal filling and the presence of a screw-post

Diagnosis impression was taken, and on casts, a precise analyze was performed. Our findings were the following:

The tooth presented a shorter incisal edge comparing to the natural one that's why it seemed wider, Mesial incisor angle was too rounded. The incisor embrasure was much opened and not symmetrical to the homologue tooth which compromised esthetic results. The buccal one was also not respected. Tooth axis, shape and gingival margin were evaluated as normal. Then, wax was confectioned (figure 4).

To meet esthetic goals, the treatment plan included fiber reinforced post followed by Zirconia based crown. Axial preparations have been done and the screw-post was

eliminated (figure 5), then a composite resin post and core have been placed (figure 6). Impressions were taken and the tooth was temporized (figure8). Through the provisional prosthesis, the esthetic achievement was tested and the patient's satisfaction was obtained.



Figure 4: wax



Figure 5: Screw-post elimination after the axial preparation

The Framework was tried in after the master impression (Figure8), then, it was veneered with a compatible porcelain system. An esthetic try of the crown have been made before final glazing (figure9). This allowed the control of the crown's morphology,

edge, proximal angles, embrasures and color. Concerning the crown shape, it was modified by the transition lines' translation. Aspects such as contact points and occlusion were, also, assessed and adjusted. After the final cementation, the tooth shade

was in harmony with the surrounding dentition and the patient was fully satisfied

with the esthetically integrated outcome (figure 9,10,11).



Figure 6: Composite Resin Post and core

Figure7: Provisional prosthesis which testes the esthetic and functional results

Figure 8: The Framework trying



Figure9: Esthetic trying before the ceramic's Glazing: control of transition's lines, incisal edge, incisal and gingival embrasures

A: Before the transition lines' translation

B: After the transition lines' translation which modified the crown's shape with a respected ratio

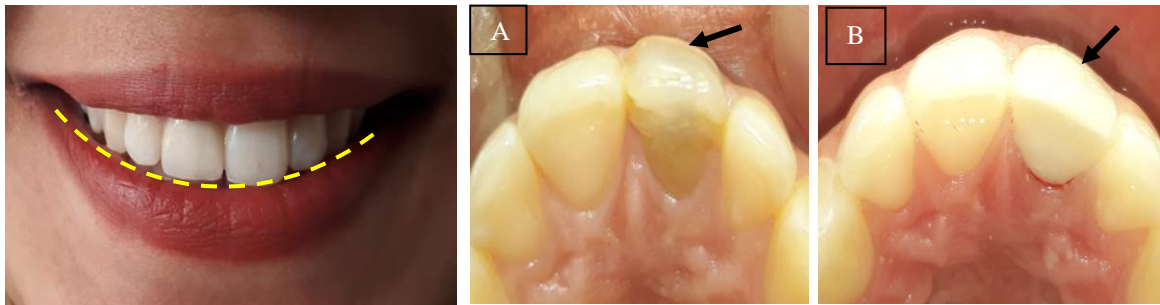


Figure10: Smile view showing a respected smile curve

Figure11: intra oral view

A: A non respected buccal embrasure

B: After the rehabilitation

## DISCUSSION

Central incisors should be highlighted as true protagonists of smile that's why morphological characteristics should be respected when restoring this tooth, mainly:

**Dimensions:** The upper central incisor is the largest tooth of anterior sector. The mean length and width are respectively 10.4mm and 8.5mm. [3,4] Chiche [5] reported

ratios from 75 to 80% which are considered more esthetic.

**Shape and transition lines:** Transition lines are morphological boundaries which define the optical width of the tooth. [6] Its work is important for shape's illusion, which is done during the fitting of non glazed ceramic (figure9).

**Embrasures:** Incisal embrasures are very important for the smile individualization which's depth and angulation can give

illusion of a more mature person or a younger person. [7] For this case, the buccal embrasure was not respected also as it is illustrated on the intra oral view (figure 11).

**Incisal edge:** An ideal smile arc has the maxillary incisal edges slightly contouring the lower lip as we obtained in the illustrated case (figure 10). [2] The presence

of incisal asymmetries especially in maxillary central incisors negatively influences smile esthetics. [4,8]

When ceramic trying, these characteristics have to be controlled from different views: frontal, lateral, occlusal and upper.

To meet esthetic goal, a check list proper to the upper central incisor can be helpful:

**Table1: Morphological characteristics that should be respected from different views**

	Frontal view	Lateral view	Occlusal view	Upper view
dimensions	*			
Shape and transition lines	*			
Incisal edge	*		*	*
Proximal angle	*		*	
Gingival and incisor embrasures	*		*	*
Buccal embrasure		*	*	

## CONCLUSION

Restoring one central incisor remains an aesthetic challenge for the practitioner. To achieve successful rehabilitation, both of previous knowledge of this tooth's morphology and an attentive study on the diagnostic cast, should be carried on .The dentist have to simulate the natural one in order to obtain an integrated crown. The Shade selection and the ceramic system are also combined factors for success. [9,10]

## REFERENCES

1. Alsulaimani F, Batwa W .Incisors' proportions in smile esthetics. J Orthod Sci. 2013; 2,3:109-12.
2. Machado AW. 10 commandments of smile esthetics. Dental Press J Orthod. 2014;19, 4:136-57.
3. Lasserre JF, Symbiose G. Forme et de harmonie l'incisive centrale.IND.2008; 41:2469-2474.
4. Paris JC, Etienne JM. Au centre du sourire L'incisive centrale. IFN.2007;18, 2 : 100-12.
5. Chiche, G.J. Pinault, A. Esthetics of anterior fixed prosthodontics. Quintessence Pub. Co. 1994.
6. Maier B .Directives esthétiques pour prothèses à l'allure naturelle. cosmetic dentistry. 2012; 3: p22-25.
7. Lasserre Jf, Laborde G, Koubi S, Lafargue H, Couderc G, Maille G, Botti S, Margossian P. Réalités Cliniques. 2010; 21, 3: 183-95.
8. Ribeiro JB, Alecrim Figueiredo B, Wilson Machado A. Does the presence of unilateral maxillary incisor edge asymmetries influence the perception of smile esthetics?. J Esthet Restor Dent. 2017; 29:291-7.
9. Luke S. Kahng, C.D.T. Material Selection and Shade Matching for a Single Central Incisor The Journal of Cosmetic Dentistry. 2006;22,1:80-6.
10. Daouahi N, Hadyaoui D, Saafi J, cherif M. Esthetic Rehabilitation with Zirconia Based Crowns. Int J Dent Oral Health, 2015;1(1): 6-10.

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