

## Conservative and Prosthetic Rehabilitation Procedures for Solving Aesthetic and Periodontal Problems in the Anterior Region: Case Report

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### Abstract

**Objective:** Objective was to present the case of possible restorative treatment of the extended maxillary left central incisor, previously unsuccessfully restored, using all available space of the anterior maxillary segment, emphasizing significance of conservative treatment of the anterior adjacent teeth re-shaping.

**Case Report:** A male, thirty-year-old patient with localized periodontal disease followed by noticeable proximal and marginal extension of the left central incisor all-ceramic crown requested new treatment to improve his aesthetics, function and parodontal state.

**Conclusion:** The report provides conclusions that changing of crown shape/size and the level of marginal fit of all ceramic crown can improve esthetics and decrease inflammatory problems considering the whole anterior maxillary segment.

**Keywords:** All-Ceramics; Anterior Single Crown; Marginal Fit; Direct Composites

### Introduction

Contemporary dentistry considers various all ceramic single crowns for e.g. zirconia, lithium disilicate glass ceramics, alumina-based all ceramics to restore the anterior maxillary segment. All of the mentioned is indicated depending on different requests that therapist has to deal with. Also, disposal technology and technical support as so clinicians' and technicians' restorative skills may be a crucial demands for the long term prognosis for prosthodontic treatment [1]. The aesthetic demands regarding anterior single crown restoration are associated with colour differences between natural tooth and ceramic crown, ceramic- translucency/transparency, marginal sealing and crown-fitting in the dental arch [2]. Another potential problem with an anterior single crown restoration is an extent of the remaining space between adjacent teeth highlighted as boundary on placing the single crown restoration.

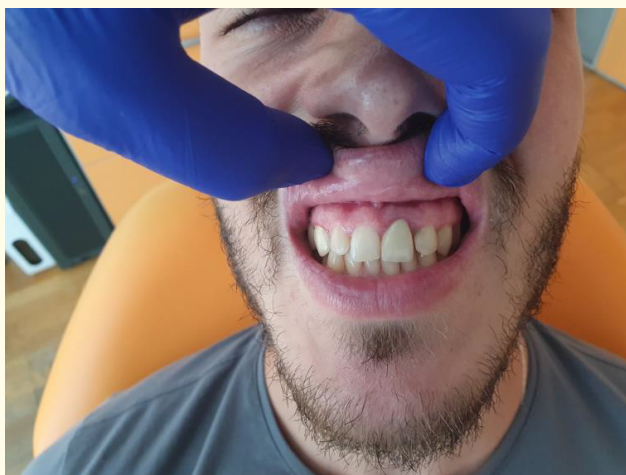
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Sometimes, a manipulation with this space by therapist is requested for successful therapy. The aim of this report was to present the case of possible restorative treatment of the extended maxillary left central incisor, previously unsuccessfully restored, using all available space of the anterior maxillary segment, emphasizing significance of conservative treatment of the anterior adjacent teeth re-shaping.

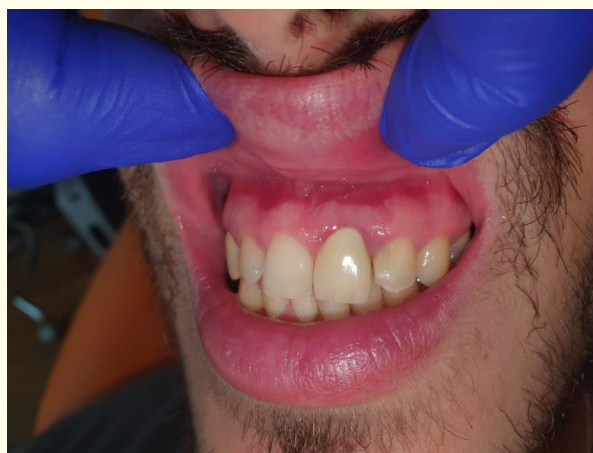
**Case Report**

A male, thirty- year-old patient with localised parodontal disease followed by noticeable proximal and marginal extension of the left central incisor all-ceramic crown requested new treatment to improve his aesthetics, function and parodontal state (Figure 1). Patient denied any trauma related to this condition nor systemic disease.



*Figure 1: Observation and inspection protocol during first visit of the patient.*

Incisor was previously endodontically treated and restored using fiber post. Patient was not satisfied due to obvious poor esthetic and gingivitis (Figure 2).



*Figure 2: Inflammation of the marginal gingiva leads to colour change of the anterior gum.*

Thus, patient requested to be re-treated in accordance with dentist suggestions. Also, a pathological movement of the maxillary left central incisor toward vestibular was registered during standard clinical examination due to occlusal trauma. After clinical inspection and laboratory treatment planning on models for analyzation, several negative sides of previously treatment were highlighted as of high priority: poor composite fillings placed on proximal surfaces of the adjacent teeth, 11 and 22, and oversized maxillary left central incisor with the consequent marginal inflammation and discoloration-lividity of the marginal gingiva (Figure 3).



**Figure 3:** *Gingival discoloration with oversized and movable left central incisor.*

Following clinical and laboratory steps were conducted: At first, all-ceramic crown and damaged fiber-post were removed and endodontics was performed (Figure 4 and 5).



**Figure 4:** *Occlusal viewpoint of the tooth of interest with an old post removed.*



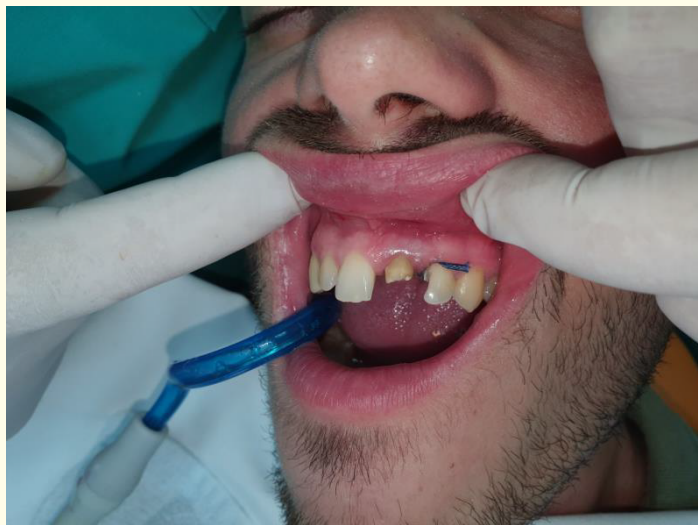
**Figure 5:** Labial viewpoint of the remaining incisor prepared for the new post and core build-up.

A new RelyX fiber post size 2, with diameter of 1.6 mm (3M ESPE, Neuss, Germany) was made for left incisor. The fiber post made of 3M ESPE was permanently cemented using RelyX U200 Automix resin cement (3M ESPE, Germany). A bulk fill composite Tetric Evoceram with IVA colour signed (Ivoclar Vivadent, Germany) was used to restore the core (Figure 6).



**Figure 6:** Restoration of the core using the bulk-fill composite.

For this patient, it was recommended not to fabricate temporary crown to avoid overloading of already disassembled and shaky tooth as to rehabilitate deteriorated marginal gingiva. Simultaneously with these procedures, adjacent teeth were conservatively treated using Tetric Evoceram A 3.5 dentin composite resin (Ivoclar Vivadent) due to basic colour of all anterior teeth in order to increase the interproximal dimension i.e. mesio-distal diameter, actually to decrease the space for left incisor (Figure 7 and 8).



**Figure 7:** Composite filling removed from the mesial surface of the lateral incisor.



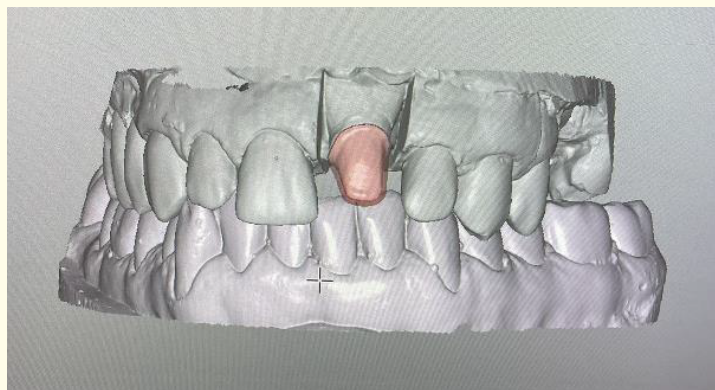
**Figure 8:** Modulation of the proximal surfaces of the adjacent teeth using Tetric Evoceram composite material.

In this way, a thin space between adjacent teeth, 22 and 11 will improve aesthetics of the anterior region with equalisation of both, left and right maxillary incisors (Figure 9).

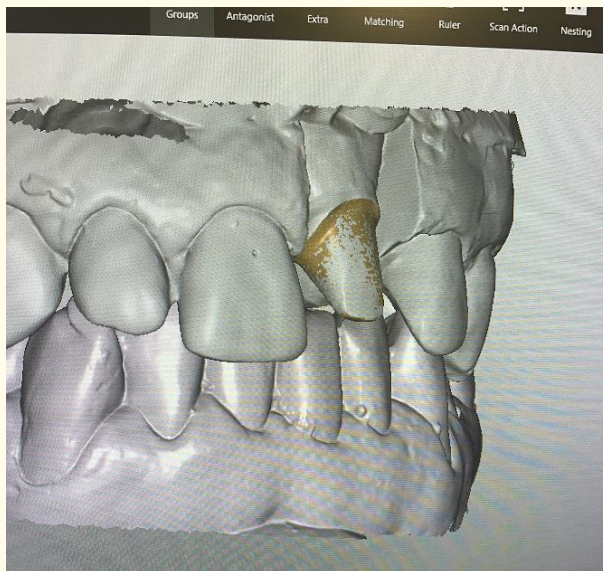


**Figure 9:** A narrow space between adjacent teeth - incisal aspect of viewpoint.

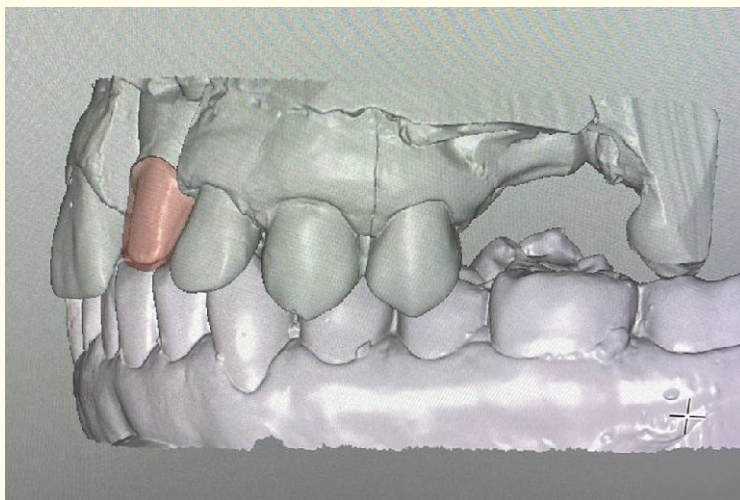
After tooth preparation, the anterior region of interest in the upper jaw was scanned using CAI segment (Scanner S600, Zirkonzahn, Germany) and then data were transferred to exocad software (Zirkonzahn, Germany) where the final contours of maxillary left incisor were designed (Figure 10-12).



**Figure 10:** Exocad labial viewpoint in central occlusion.



**Figure 11:** *Overlap of anterior teeth in exocad.*



**Figure 12:** *Sagittal view of bimaxillary relationship in exocad.*

Finally, milling procedure was conducted using M5 Heavy metal milling unit (Zirkonzahn Modelier, Germany) and zirconia crown was fabricated employing cut-back technique with Prettau Zirkonzahn zirconia (Figure 13 and 14).



**Figure 13:** Cut-back technique with Prettau Zirkozahn zirconia; frontal view.



**Figure 14:** Cut-back technique with Prettau Zirkozahn zirconia; lateral view.

Immediately after the colour, size, shape and marginal sealing was checked, the crown was definitely modulated with faceted ceramic Sopha for zirconia (Figure 15) and the crown was fitted in the right position and permanently cemented using resin composite cement RelyX U200.





**Figure 15:** Cementation of the left incisor all ceramic crown.

One month after the zirconia was cemented, the inflammation of marginal gingiva disappeared. Aesthetics of anterior maxillary segment was obviously changed for the better which is confirmed by figures and patient satisfaction (Figure 16 and 17). However, certain lividity was found which is a consequence of trauma and the time is needed to complete rehabilitation procedure, if the same is achieved.



**Figure 16:** One month after crown cementation.



**Figure 17:** No signs of inflammation nor blood during inspection; tooth is embedded in the bone.

Contusion of marginal gingiva was excluded through shallow position of the crown edge, enabling gingiva insertion toward the tooth crown compared to previous situation (Figure 18).



**Figure 18:** Overall change shows different shape, size and marginal fit of left central incisor.

## Discussion

In this case, dentists were used simple conservative and prosthetic procedures of changing shapes of adjacent teeth to obtain optimal space for incisor-crown placement. Inadequate composite fillings were removed, resized and reshaped to achieve harmony in the anterior teeth fitting. Prosthodontist did not hang down already prepared and a rounded shoulder margin nor significantly changed the angulation, just grinded the resin crown using fine diamonds burs around the tooth axis, to avoid secondary trauma of marginal gingiva in the region of gingival gap [3,4]. Dentists did not fabricate temporary crown due to relieve stress in parodontal structures around left central incisor to neutralize the eventual occlusal overloads and occlusal trauma.

Additionally, this enabled marginal gingiva to return to normal physiological position before the first preparation-grinding, toward the dental neck i.e. column dentist [5]. Crown margins are determined as the critical factor for aesthetics, adequate restoration strength, material support as for loads distribution, and if not properly considered it may lead to therapeutic failure [6].

Adjustment of different levels, the marginal edge of all ceramics and the neck of natural adjacent tooth by setting both contours at the same line, improved aesthetics, in addition.

## Conclusion

The report provides conclusions that changing of crown shape/size and the level of marginal fit of all ceramic crown can improve esthetics and decrease inflammatory problems considering the whole anterior maxillary segment. Also, fixation of the left incisor was recorded after 1 month therapy. Future observation of patient will reveal the real condition of the maxillary left central incisor and its periodontium.

## Bibliography

1. Datla Srinivasa Alla., *et al.* "Dental Ceramics: Part II – Recent Advances in Dental Ceramics". *American Journal of Materials Engineering and Technology* 3 (2015): 19-26.
2. Barão VA., *et al.* "Factors to achieve aesthetics in all-ceramic restorations". *The Journal of Craniofacial Surgery* 21.6 (2010): 2007-2012.
3. Paniz G., *et al.* "Dual-Center CrossSectional Analysis of Periodontal Stability Around Anterior All-Ceramic Crowns with a Feather Edge or Chamfer Subgingival Preparation". *International Journal of Periodontics and Restorative Dentistry* 40.4 (2020): 499507.
4. Amiri-Jezeh M., *et al.* "Der Einfluss von Restaurations- rändern auf die parodontale gesundheit--eine ubersicht [The impact of the margin of restorations on periodontal health--a review]". *Schweizer Monatsschrift für Zahnmedizin* 116.6 (2006): 606-613.
5. Walter C. "Der Einfluss von Restaurations- rändern auf die parodontale gesundheit--eine ubersicht [The impact of the margin of restorations on periodontal health--a review]". *Schweizer Monatsschrift für Zahnmedizin* 116.6 (2006): 606-613.
6. Forberger N and Göhring TN. "Influence of the type of post and core on in vitro marginal continuity, fracture resistance, and fracture mode of lithia disilicate-based all-ceramic crowns". *Journal of Prosthetic Dentistry* 100.4 (2008): 264-273.

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