



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2018; 4(1): 06-08
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www.oraljournal.com
Received: 03-11-2017
Accepted: 04-12-2017

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Anterior aesthetic rehabilitation: A case report

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Abstract

Framing the teeth within the confines of the gingival architecture, has a tremendous impact on the aesthetics of the smile. The impact on the beauty of a smile from an uneven gingival contour height can be dramatic. Although the position of the gingival tissue zenith seems like a small detail, it can greatly influence the axial inclination and emergence profile of the teeth. The present article reports a case report of fractured anterior teeth with compromised crown height and gummy smile, treated with comprehensive endodontic- periodontal -aesthetic approaches for improving aesthetics.

Keywords: Gingivectomy, gummy smile

Introduction

A pleasant smile is considered a symbol of beauty and well being in the modern society. The appearance of anterior teeth has a significant emotional impact on patient [1]. A variety of factors including teeth form and position, dental midline, tooth width to length crown ratio, smile line, incisal embrasures, gingival tissue levels, symmetry of contralateral gingival margins and gingival display all influence the aesthetics [2].

Traumatic injuries are one of the primary reasons for the fracture of upper anterior teeth. The need for the treatment is primarily aesthetics [3]. The restoration is easy to accomplish if the occlusion confirms to simple class 1 relation. But in the present case with an end-to-end bite or a class 2 relation, the treatment is complex and challenging as it is not just aesthetics, it should also be in harmony with the patients existing occlusion [4].

Gummy smile is a challenge in patients requiring aesthetic treatment. Excessive gingival display can be due to various reasons like, vertical maxillary excess, hypertonic upper lip or a short upper lip. In these patients orthognathic surgery can be done, but it has certain disadvantages such as hospitalization and significant discomfort. On the other hand when gummy smile is due to intraoral reasons, it can be resolved by crown lengthening i.e. removing the gingiva via precisely planned incisions. The proportions of crown length are also very important. Normally, the gingival margin is 1 mm coronal to the cement-enamel junction (CEJ). If the gingival margin is greater than this, then the clinical crown is shorter than the anatomical crown and therefore crown-lengthening procedure is required. In the presence of a good crown to root ratio, aesthetic crown lengthening can provide an appropriate proportions of the anterior teeth, along with pleasing gingival symmetry [5].

The present article reports a case report of fractured anterior teeth with compromised crown height and gummy smile, treated with comprehensive endodontic- periodontal -aesthetic approaches for improving aesthetics.

Case report

A thirty eight years old female patient reported to the Department of conservative and endodontics, with a chief complaint of fractured upper front teeth and excessive display of her gum when she smiles. On clinical examination, Ellis class IV fracture irt 11, 21, 22 and edge-to-edge anterior teeth relationship with vertical maxillary excess were observed. Vitality test were with 11, 21, 21, 22 revealed that teeth were non vital. Based on the clinical and radiographic findings, a diagnosis of Elli's class IV fracture was made with 11, 12, 21 and 2. Considering the diagnosis, endodontic treatment was completed for 11, 12, 21, 22. Gingivectomy was planned from 13 to 22 to make the gingival zenith uniform.

Following local anesthesia (2% lignocaine HCl with adrenaline 1:80,000) gingivectomy was performed followed by crown preparation and temporization. Subsequently final restoration of porcelain-fused crown was placed.



Discussion

Dental treatment should aim at giving a functional and aesthetic restoration with minimum complications and longevity [6]. In the present case non vital teeth were

endodontically treated, crown root ratio were corrected by gingivectomy and metal-ceramic crown were placed to improve the esthetic and smile.

Crown-to-root ratio is intended to serve as an aid in predicting the prognosis of teeth [7]. Shillingburg suggested a 1:1.5 CRR as optimum for an FPD abutment or a 1:1 ratio as a minimum ratio for a prospective abutment under normal circumstances [8]. In the presence of a good crown to root ratio, esthetic crown lengthening can provide an appropriate proportions of the anterior teeth, along with pleasing gingival symmetry [9]. Crown lengthening procedure is an effective management strategy for gummy smile and Kois has stated that 3 mm of biological width is necessary to satisfy the requirements for a sound periodontium (2.04 mm, biologic width; 1 mm, sulcus depth). Violation of the biologic width may result in inflammation and bone resorption [1].

Aesthetic considerations in smile design have focused mainly on the anterior teeth region and details such as the Smile line, gingival zenith (apical point of the free gingival margin) position and level. Smile line refers to an imaginary line along the incisal edges of the maxillary anterior teeth, which should mimic the curvature of the superior border of the lower lip while smiling. Under ideal conditions, the gingival margin and the lip line should be congruent or there can be a 1–2 mm display of the gingival tissue. Showing 3–4 mm or more of the gingiva known as gummy smile, which often requires cosmetic periodontal re-contouring to achieve an ideal result [10].

Gingival zenith is the most apical point of the free gingival margin. Magne and Belser suggested that the gingival zenith position was distal to the long axis of all the maxillary anterior teeth. Rufenacht proposed that the gingival zenith position was distally displaced on the central incisors and canines only. In the present case gingival zenith was corrected by gingivectomy [11].

Anterior end to end relationships may be very stable if they are in harmony with centric relation and there is absence of wear or hyper mobility. If the anterior teeth are badly broken down due to severe tooth wear, the anterior guidance will be less than ideal or perhaps completely absent so, it should be restored. This would affect the esthetics and possibly the function of the finished restorations [12].

Tronstad *L et al* reported that endodontically treated teeth are more susceptible to fracture, not because of pulp removal per se, but due to the increased strain resulting from tooth substance loss, so full coverage crowns have been considered to restore the damaged teeth [13].

In the present case during, gingivectomy was used to remove excess gingival tissue for achieving an overall esthetically pleasing smile followed by placement of fiber post and crown.

Conclusion

Gummy smile can have a negative impact on the aesthetics and is associated with different aetiologies, which must be identified before treatment. The treatment plan depends on a number of factors, including the level of alveolar bone crest, the height and thickness of attached gingiva, and needs for interdisciplinary treatment.

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