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Enhancing Smile Through Lip Repositioning And Crown Lengthening Procedures: A Combined Approach

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Abstract

Excessive gingival display refers to an overexposure of maxillary gingiva during smile. The prevalence of this is seen in 10% of population between age of 20-30 years and more in females than males. The causes of gummy smile are many. Variety of treatment modalities are available depending on the specific condition. In the present case report, gummy smile was because of hyperactive upper lip and altered passive eruption of teeth which was managed by combined approach i.e. lip repositioning and crown lengthening procedure. The amount of exposed gingiva was reduced and the anatomical crown were exposed thus enhancing the smile.

Keywords: Gummy smile; lip repositioning; crown lengthening; aesthetics.

Introduction

A pleasant smile is considered as a symbol of beauty in the modern society. A gummy smile is attributed to improper relation between gingival tissue and the tooth, with the gingival tissue in excess and a paucity of tooth portion [1] and is caused by variety of factors like altered passive eruption, hyperactive upper lip etc that can act alone or in combination. The gingival exposure of 1-2 mm during smile is considered pleasing [2] whereas, an gingival display of 4 mm or more is considered excessive and unattractive [3] which needs to be managed.

Case Report

A 23 years old female patient reported in the Department of Periodontology with the chief complaint of excessive display of gums. There was no significant medical or family history. On clinical examination extra orally, the face was bilaterally symmetrical there was high lip line with excessive gingival display of 7 mm was seen during smiling. The incisors were short and squarish in shape (Fig. 1).

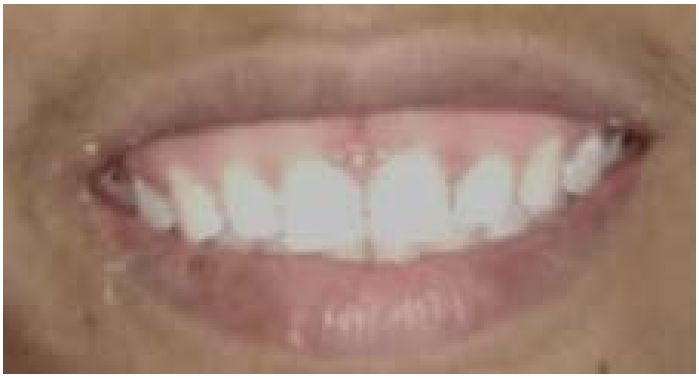


Fig.1: Pre-operative view.

The tooth width and length dimensions were altered and there was presence of pseudo pockets of about 3 mm. A healthy gingiva was present with adequate width of attached gingiva on facial aspect of maxillary anteriors. It was planned to manage by a combined approach i.e. lip repositioning and crown lengthening procedures.

Surgical Procedures

To increase the precision and predictability, two-staged procedures i.e. lip repositioning and crown lengthening were planned. At stage I, lip repositioning was performed, after 6 weeks stage II, crown lengthening was done. After adequate anesthesia and part-preparation. The amount of epithelium to be excised was determined by doubling the amount of gingival display i.e. 8 mm. The incision outline is marked with a sterile indelible pencil on a dried tissue (Fig.2).

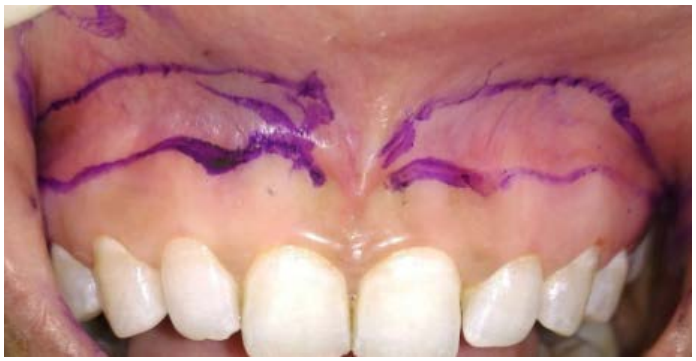


Fig. 2: Incision lines marked

The partial thickness incision was made along the muco-gingival junction from the mesial line angle of the right central incisor to the mesial line angle of right first molar and a second parallel incision was made at the labial mucosa at approximately 8 mm away from the first incision (Fig.3).

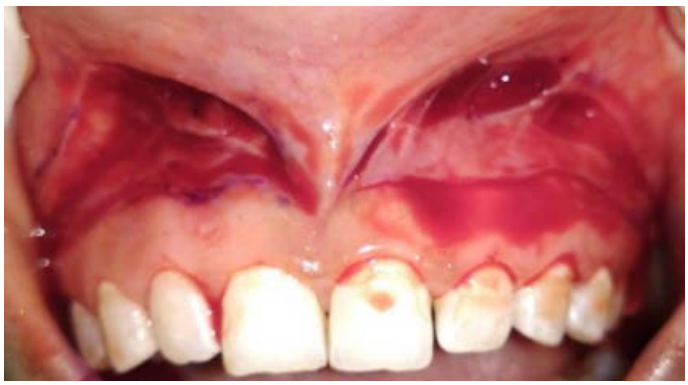


Fig. 3: Partial thickness incisions given.

Both incisions were connected on the mesial line angle of first molar and incisor region without involving labial frenum thus making an elliptical outline. The partial thickness flap was removed from the incision line leaving the underlying submucosa exposed (Fig.4).

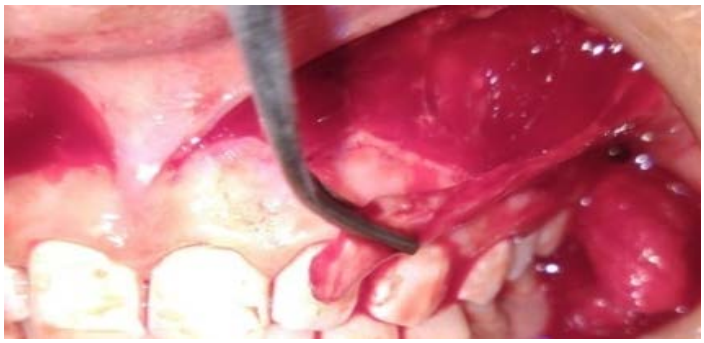


Fig. 4: Removal of strip of epithelium.

The same procedure was done for left side. The two incision lines were approximated with 3-0 black silk sutures (Fig. 5).

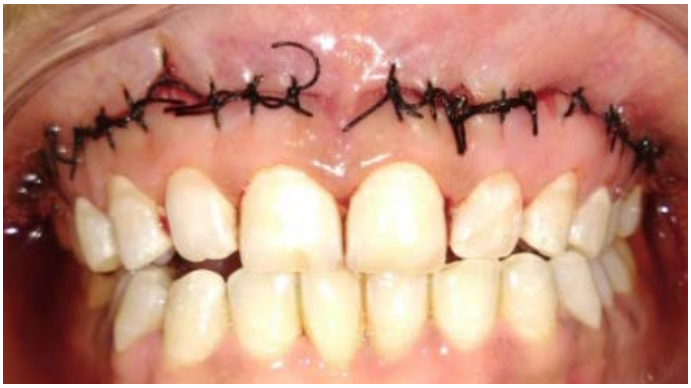


Fig. 5: Margins approximated with sutures.

Pressure was applied until hemostasis was achieved. Post-operative instructions were given. Oral antimicrobials and non-steroidal anti-inflammatory medications were administered post-operatively. Sutures were removed after 10 days and an uneventful healing pattern was observed. On 4 weeks follow-up, the gingival display was reduced to 3 mm (Fig.6,7). Intra oral peri apical radiographs were also taken (Fig. 8).

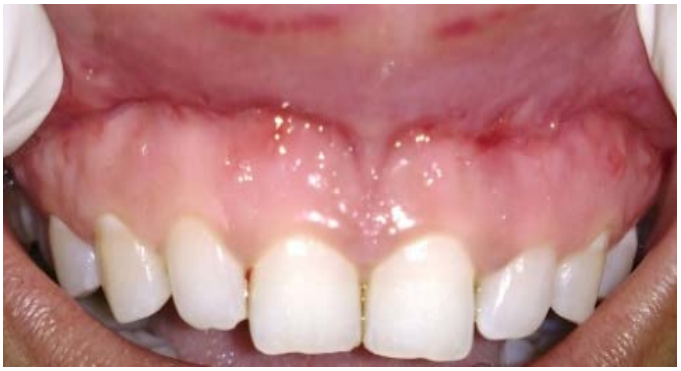


Fig. 6: After suture removal.

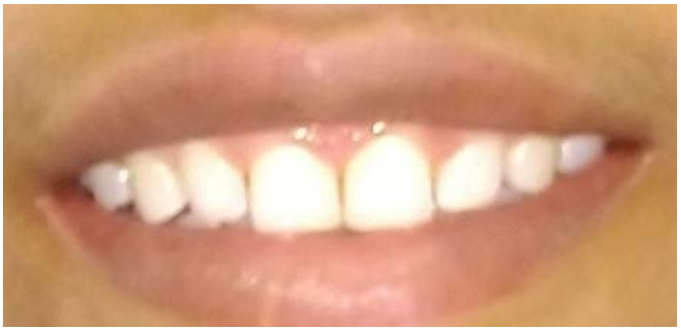
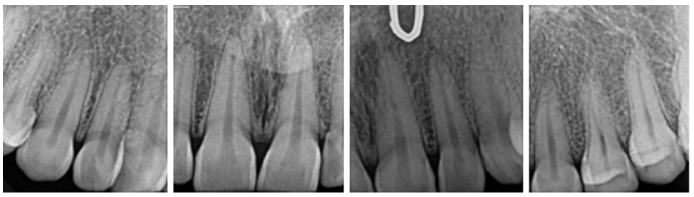


Fig.7: After suture removal.



After 6 weeks of stage I, a stage II crown lengthening was performed, the surgical procedure was simplified by excising 2-3 mm of gingival tissue from gingival margin. The tissue was excised with an external bevel incision (Fig.9,10), following an scalloped margin considering the normal contours of gingiva (Fig.11).

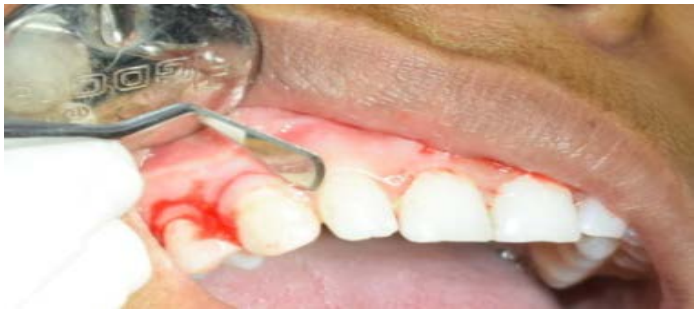


Fig.9: External bevel gingivectomy

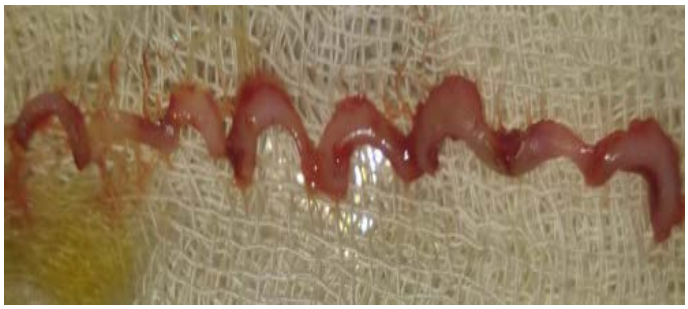


Fig.10: Excised tissue.

Fig.11: Immediate post-operative view.

Periodontal dressing was applied (Fig.12). The patient was recalled at one-week for periodontal dressing removal,

two-week and four-week (Fig.13) intervals. It was very pleasing to see a confident smile on patient's face.

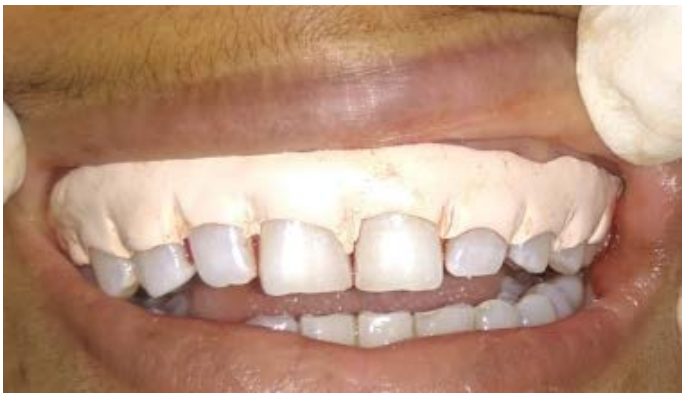


Fig.12: Coe-pak placed.

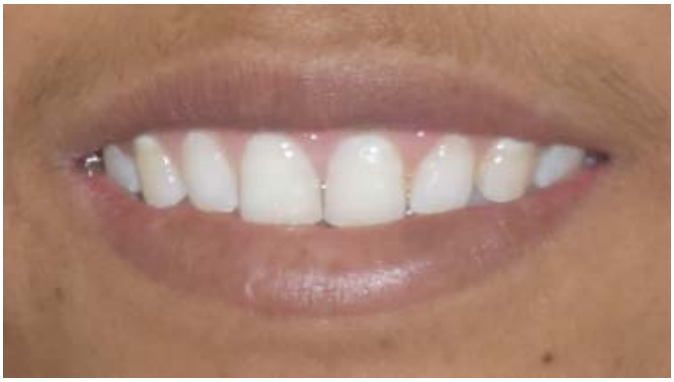


Fig.13: After 4 weeks.

Discussion

Lip repositioning was first reported by Rubinstein and Kostianosky[4] in 1973, for management of gummy smile. In 2006 and 2007, use of elliptical surgical design was described. [5] There is a modified technique in which the maxillary labial frenulum is maintained and two mucosal strips, one at each side of the frenulum, are removed [6]. Intact frenulum helps maintaining the position of the labial midline, prevents changes in lip symmetry and decreases the morbidity associated with the procedure and lesser complications.

Altered passive eruption aggravates the situation of gummy smile. In this, the gingival margin is located incisal to the cervical convexity of the crown. Coslet et al [7] classified altered passive eruption in to two types based on the location of the mucogingival junction in relation to the alveolar bone crest, and further classified these in to two subgroups based on the position of the alveolar bone crest in relation to the cemento-enamel junction.

Garber & Salama[8] suggested that there are only two treatment options for cases of altered passive eruption: first, a simple gingivectomy to expose the hidden anatomy of tooth in cases of altered passive eruption type 1A; and, second, an apically repositioned full-thickness flap, with or without osseous resective surgery, in other cases of altered passive eruption. An evaluation of clinical and anatomic crown lengths in patients with a high lip line is important because incomplete anatomical crown exposure may be the principle factor in the esthetics.[9] In the present case, the amount of keratinized gingiva present was 6 mm in relation to incisors, therefore external bevel gingivectomy was performed. On full exposure of the anatomic crown, there was a dramatic improvement in esthetics by reduction of the gingival exposure. Based on these parameters, two different surgical procedures were done to achieve the best possible and stable esthetic outcome.

Conclusion

Lip repositioning is an innovative and effective way to improve the gummy smile. This technique is an easy and cost-effective technique to produce a satisfactory result which can be further improved by crown lengthening procedure in cases of altered passive eruption. Patient was highly satisfied and left the clinic with a cheerful smile.

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