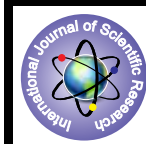


## Smile Designing by Eliminating a Gummy Smile with Surgical Lip Repositioning: A Case Report



### Medical Science

**KEYWORDS :** Lip repositioning, Mucobuccal fold, Lip line, Partial thickness flap

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### ABSTRACT

*Excessive gingival display, commonly referred to as a gummy smile can be source of embarrassment for some patients. Delayed eruption and tooth malpositioning can be predictably treated with resective surgery and orthodontics. In patients with jaw deformities, orthognathic surgery can be performed, but this requires hospitalization and entails significant discomfort. The case presented here describes a surgical technique for lip repositioning to reduce gingival display. The procedure restricts the muscle pull of the elevator lip muscles by shortening the vestibule, thus reducing the gingival display while smiling. In our experience this procedure is safe, predictable with minimal risk or side effects and is an alternative treatment modality in esthetic treatment.*

### INTRODUCTION

Our objective of restorative dentistry is to create ideal esthetics for the patients smile. Advances in dental materials and laboratory techniques have led to excellent mimicry of the natural dentition with crowns, veneers and composite restorations. However, some patients who present with gingival and skeletal deformities may require more complex esthetic rehabilitation. For these challenging patients, a multidisciplinary approach can be beneficial to enhance the balance and harmony between all three components of the smile: lips, teeth and gingiva.

Excessive gingival display can be major cause of patient embarrassment. In the so called gummy smile, the gingiva are the dominant feature when compared to the lips and teeth. At least 50% of patients exhibit some form of gingival display in a normal smile<sup>1</sup>. However, exaggerated or forced smile patterns in up to 76% of all patients may exhibit gingiva. In absolute number, a normal gingival display between the inferior border of the upper lip and the gingival margin of the anterior central incisors during a normal smile is 1-2 mm<sup>2</sup>. In contrast, an excessive gingiva to lip distance of 4mm or more is classified as an attractive<sup>3</sup>.

### Four etiologies

Excessive gingival display has four possible etiologies. First, it may be a result of delayed eruption in which the gingiva fail to complete the apical migration over the maxillary teeth to a position that is 1 mm coronal to the cemento-enamel junctions. 4, 5 In these patients, restoring the normal dentogingival relationships can be achieved with an esthetic crown lengthening, which is a well documented treatment modality that is highly effective in treating patients with delayed eruption.<sup>6,7</sup> The procedure involves moving the gingival margins apically through soft and possibly hard tissue resection.

The second possible cause is compensatory eruption of the maxillary teeth with concomitant coronal migration of the attachment apparatus, which includes the gingival margins. Orthodontic leveling of the gingival margins of the maxillary teeth may be considered in this situation<sup>8</sup>. Resective surgery is also possible but may expose the narrow root surface and necessitate a restoration.

The third possibility is vertical maxillary excess in which there is an enlarged vertical dimension of the mid-face and "incompetent" lips. Treatment involves orthognathic surgery to restore normal inter-jaw relationships and to reduce the gingival display<sup>9</sup>; this involves hospitalization and significant side effects for patients.

Fourth, when the patient smiles, if the upper lip moves in an apical direction and exposes the dentition and excessive gingiva, then surgical lip repositioning may be utilized to reduce the labial retraction of the elevator smile muscle and minimize the gingival display. This procedure was first described in the plastic surgery literature in 1973<sup>10</sup> and was recently published in the dental literature.<sup>11</sup>

During patient examination, it is important to establish the etiology responsible for the excessive gingival display. A diagnosis of delayed eruption, tooth malpositioning, and excessive skeletal deformities might best be treated by crown lengthening, orthodontics, and/or orthognathic surgery.

Lip repositioning is suggested as an additional treatment modality for patients with lip permobility exposing undesired gingiva in a smile. The objectives of this article are to present a case in which the surgical technique of "lip repositioning" was used to reduce gingival display, and to suggest the technique's use as an alternative treatment modality.

### CASE REPORT

A 29 year, old, female had come to Bharati Vidyapeeth Deemed University Dental College & Hospital, Pune with a chief complaint of gummy smile [Figure 1]. She wanted a procedure that would reduce the gingival display when she smiled. A diagnosis of moderate vertical maxillary excess was made.

An alternate treatment option of orthognathic surgery by an oral and maxillofacial surgeon was discussed with the patient. She preferred a less invasive procedure to address her chief complaint, and informed consent for a lip repositioning procedure was obtained.

**PROCEDURE**

The surgical site was anesthetized with a conventional anesthesia between the first maxillary molars. The local infiltration was administered in the buccal vestibule, with additional infiltration for hemostasis purposes. The incision outline was marked with a sterile pencil on the dried tissues [ Figure 2]. A partial-thickness incision was made along the mucogingival junction. A second parallel incision was made at the labial mucosa at approximately 10-12 mm distance from the first incision [Figure 3]. The two incisions were connected at the mesial line angles of the right maxillary first molar and the left maxillary first molar to create an elliptical outline. The amount of tissue excision should be double the amount of gingival display that needs to be reduced, with a maximum of 10-12 mm of tissue excision [Figure 4]. The epithelium was removed in the incision outline, leaving the underlying submucosa exposed which was undermined. The two incision lines were approximated with 4-0 stabilizing direct-loop interrupted sutures. Care should be taken regarding proper alignment of the midline of the first and second incision lines (lip midline and teeth midline). Once the flaps were stabilized, an additional continuous 5-0 interlocking suture was used to secure complete closure [ Figure 5] & periodontal pack was given.

**Post-operative care**

Nonsteroidal anti-inflammatory medications were given post-operatively. Patient was instructed to minimize lip movement for one week & other post-operative instructions were given. Postoperative symptoms usually include some mild discomfort for several days and a feeling of "tension" when the patient smiles.

**RESULTS**

Immediately after surgery, the patient reported "tightness" of her upper lip when she smiled and mild swelling that subsided after two days. Loose sutures were removed over a period of two weeks and the remaining sutures were left to be resorbed on their own. One month follow-up examination revealed reduced gingival display [Figure 6].

**CONCLUSION**

This case showed uneventful healing of the surgical site and minimal post-operative discomfort. The esthetic outcome was predictable after the procedure. This procedure limits the retraction of the smile elevator muscles, thus reducing the gingival display shown in a smile.

Surgical lip repositioning is an effective procedure to reduce gingival display by positioning the upper lip in a more coronal location. The long term stability of the results remain to be seen, but it holds promise as an alternative treatment modality in esthetic rehabilitation.



[Figure 1] Pre Surgical -Gummy smile



[Figure 2] The incision outline was marked with a sterile pencil on the dried tissue



[Figure 3] Parallel incision was made at the labial mucosa



[Figure 4] Excised Tissue



[Figure 5] Continuous 5-0 interlocking suture was given.



[Figure 6] Post surgical Followup after 1 month.

**REFERENCE**

1. Crispin BJ, Watson JF. Margin placement of esthetic veneer crowns. Part I: Anterior tooth visibility. *J Prosthet Dent* 45:278-282, 1981. | 2. Vig RG, Brundo GC. The kinetics of anterior tooth display. *J Prosthet Dent* 39: 502- 50; 1978. | 3. Kokich VO Jr, Kiyak HA, Shapiro PA. Comparing the perception of dentists and lay people to altered dental esthetics. *J Esthet Dent* 11:311-324, 1999. | 4. Garguilo A, Wenz F, Orban B. Dimensions and relations at the dentogingival junction in humans. *J Periodontol* 132:261-267, 1961. | 5. Maynard JG Jr, Wilson RD. Physiologic dimensions of the periodontium significant to the restorative dentist. *J Periodontol* 50:170-174, 1979. | 6. Lee EA. Aesthetic crown lengthening: classification, biologic rationale, and treatment planning considerations. *Pract Proced Aesthet Dent* 16:769-778, 2004. | 7. Chu SJ, Karabin S, Mistry S. Short tooth syndrome: diagnosis, etiology, and treatment management. *J Calif Dent Assoc* 32:143-152, 2004. | 8. Kokich VG. Esthetics: the orthodontic-periodontic restorative connection. *Semin Orthod* 2:21-30, 1996. | 9. Ezquerro F, Berrazueta MJ, Ruiz-Capillas A, Arregui JS. New approach to the gummy smile. *Plast Reconstr Surg* 104:1143-1150; discussion 1151-1152, 1999. | 10. Rubinstein AM, Kostianovsky AS. Cirugia estetica de la malformacion de la sonrisa. *Pren Med Argent* 60:952, 1973.