



## Perio Esthetics: Correction of Gummy Smile by Lip Repositioning

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### Abstract

*Excessive gingival visualization is a cosmetic problem for patients*

*It is a condition in which there is overexposure of the upper gingiva (> 3mm) during the smile. There are many causes of a gummy smile which includes vertical excess of the maxilla, short overactive upper lip, altered passive eruption, anterior dentoalveolar extrusion, or their combinations. The correct diagnosis of all the etiological factors is essential for its correct management. Diverse approaches have been used to reestablish the dentogingival relationship for the management of the gummy smile. Surgical lip repositioning is a conventional surgical technique used to manage excess gingival display. It is a largely unknown treatment modality. This limits the lift of the lips to the smile and increases the fullness of the lips. This technique was designed to be shorter, less aggressive, and have fewer postoperative complications than orthognathic surgery. In the current case series, a patient is presented who has been successfully managed with lip repositioning. This article aims to describe the lip repositioning technique to minimize the gummy smile with a simple surgical procedure.*

**Keywords:** Lip repositioning, gummy smile, smile harmony, Vertical Maxillary Excess.

### Introduction

Excessive Gingival Exposure (EGD), commonly called a gummy smile, is a condition characterized by overexposure of the maxillary gingiva during the smile<sup>1</sup>. It is distinguished by showing more than 1.5-2 mm of gingiva<sup>2</sup>. The amount of discrepancy considered unattractive varies between populations; however, an excess of more than 3mm is agreed worldwide<sup>3</sup>. EGD can result

from a single discrepancy, but more commonly it is the result of the interaction of multiple factors. The correct diagnosis of the etiological factors is essential to select the appropriate treatment protocol. The etiology of EGD is variable: related to excess maxillary bone, related to conditions that cause gingival enlargement, related to insufficient length of the upper lip, or related to excessive maxillary lip mobility<sup>4</sup>. Many techniques have

been used to restore the dentogingival relationship to manage the gummy smile. Such techniques include crown lengthening procedures, orthodontic leveling of the gum margins of the maxillary teeth, intrusion of the maxillary teeth, lip repositioning, orthognathic surgery, and non-surgical procedures such as the use of botulinum toxin<sup>5</sup>. Anterior dentoalveolar extrusion is treated with orthodontic intrusion and maxillary vertical excess is treated with orthognathic surgery<sup>1</sup>. However, in cases with less vertical discrepancy, the cost, invasiveness, and postoperative morbidity of the procedure cannot always be justified by the result obtained. The lip repositioning procedure was first described in 1973 by Rubinstein and Kostianovsky as part of medical plastic surgery. It was later introduced to dentistry, having been modified in 2006 by Rosenblatt and Simon. It is a permanent conservative surgical technique that offers a less invasive approach to EGD. The objective of the intervention is to limit the muscular traction of the

smile (zygomaticus minor, levator angle, orbicularis oculi, and levator upper lip) by reducing the depth of the upper vestibule<sup>2</sup>.

### Procedure

The goal of this article is to describe the lip repositioning technique to minimize the gummy smile with a simple surgical procedure. A 26 year old female patient came to the Sharma Dental Clinic with a chief complaint of excessive display of gums while smiling. Her medical and family history was non contributive. On extra oral evaluation, the face was bilaterally symmetrical, lips were competent. During intraoral examination, a 4.5 mm of increased gingival display was observed during smiling which extended from the maxillary right premolar to maxillary left premolar (Figure 1) Written informed consent was obtained after a discussion of the risks, benefits, and treatment alternatives. Intraoral and extraoral photographs were taken for planning and recordings.



**Figure 1:** Preoperative view showing excessive gingival display



**Figure 2:** Intraoral view showing adequate width of attached gingiva



**Figure 3:** Surgical site marked with Indelible pencil



**Figure 4:** Postoperative view



**Figure 5:** Sutures placed



**Figure 6:** After one month view

### **Surgical procedure:**

First, adequate local anesthesia was obtained. The technique consists of making an elliptical incision deep in the vestibule. A marker pen was used to outline the edges of the elliptical incision. The lower edge of the incision was placed at the mucogingival junction and extended from the mesial aspect of the first premolars bilaterally. As a general rule, it has been suggested that the distance between the upper and lower edges should be twice the desired repositioning length on the smile. Partial thickness incisions were made using a scalpel on the upper edge and then the lower edge. The demarcated mucosa is removed by partial thickness dissection, revealing the underlying connective tissue. The remaining bilateral closure was completed with interrupted sutures to stabilize the new mucosal margin in the gingiva. Non-absorbable sutures were used (3-0 silk)

**Postoperative Instructions:** Analgesics was advised (ibuprofen 600 mg for every 8 hours as needed) ,0.12% chlorhexidine gluconate (gentle bathing of the operated area twice daily continue for 2 weeks). The patient was instructed to apply ice packs at every 20 minute intervals for 24 hours along with soft diet intake for the first postoperative week. Oral hygiene to be restored after 48 hours. Additional instructions included avoidance of any manipulation or mechanical trauma in surgical site and reduced lip movements while smiling or speaking during first 2 weeks after surgery. The sutures were removed during 1st week of postoperative visit. The final extraoral situation can be seen in figure6.

### **Discussion**

This article aims to explain the lip repositioning technique to decrease the gummy smile with a simple conventional surgical procedure. This technique was designed to be shorter, less aggressive, and have fewer postoperative complications than orthognathic surgery<sup>7</sup>. The correct diagnosis of the etiological factors is the first step in selecting the appropriate treatment protocol. The etiology of EGD is variable. It can involve extraoral or introoral components. This technique is contraindicated in presence of a minimal area of attached gingiva, which can generate difficulties in designing, stabilizing, and suturing the flap. Another contraindication is represented by various vertical maxillary excesses (VME). Grade II VME has 4 to 8 mm gingival and mucosa visualization. On the other hand, in grade III VME, more than 8 mm of soft tissue is observed. In both cases an interdisciplinary approach is required<sup>7</sup>.

To regulate other factors discrete to the hyperfunction of the levator lip muscle, certain characteristics must be taken into account. The facial proportions must be symmetrical in the horizontal two thirds, without identifying a greater proportion of the lower third, which could characterize excessive vertical growth of the maxilla. Another factor to consider is the distance between the gingival margin and the CEJ, which is ideally <1.5 mm. Distances greater than 1.5 mm indicate an excess of gingival tissue covering the crown of the tooth, typical of an altered passive eruption. Finally, the relationship between the length and the height of the crown must be evaluated. The width of the upper central incisor

should be approximately 80% of its length, with an accepted variation between 65% and 85%, and the upper lateral incisors approximately 70%<sup>3</sup>.

The technique described in the present cases is a modification of the original Rubinstein and Kostianovsky technique, initially used in medical plastic surgery and adapted for use in dentistry. Some authors believe that using a reversible procedure prior to definitive surgery is currently the best way for both the patient and the physician to preview the desired result before proceeding with elective surgery. It consists of making a mark along the proposed surgical resection. Once the area is marked, sutures are used to complete the reversible procedure. This allows you to drag the upper border to the mucogingival junction, turn it over, and fold it behind the proposed tissue for excision. At this point, photographs are taken and the patient can assess the potential outcome<sup>6</sup>.

### Conclusion

The current study shows that after a month of follow-up, this technique can produce steady results. To conclude, the lip repositioning technique is a simple procedure offering great alternative compared to other procedures with increased morbidity rates. In this cases, the functional and aesthetic parameters required by the patients were achieved and was satisfied with the result of the procedure.

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