



Lip Repositioning for Reduction of Excessive Gingival Display: A Clinical Report



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Excessive gingival display can be managed by a variety of treatment modalities, depending on the specific diagnosis. This case report demonstrates the successful management of excessive gingival display with a lip-repositioning procedure. This is accomplished by removing a strip of mucosa from the maxillary buccal vestibule, then suturing the lip mucosa to the mucogingival line. This results in a narrower vestibule and restricted muscle pull, thereby reducing gingival display during smiling. This article reviews the basic technique for lip repositioning and discusses the indications and contraindications for this novel procedure in dentistry. (Int J Periodontics Restorative Dent 2006;26:433–437.)

Excessive gingival display is a common cause of patient dissatisfaction. Patients may complain of a “gummy smile” and “short” maxillary anterior teeth. With this chief complaint, the gingival appearance is dominant, giving an apparent imbalance in an excessive gingiva-to-tooth ratio.

Excessive gingival display is associated with different etiologies, which must be identified before treatment. It is imperative, therefore, for the clinician to (1) evaluate the essentials of the patient's smile, and (2) consider the dynamic relationship between the patient's dentition, gingivae, and lips while smiling.¹

Delayed eruption as a cause of excessive gingival display and its treatment by esthetic crown lengthening are well documented.^{2,3} Soft and hard tissue resection is an effective method to restore normal tooth dimensions and dentogingival relationships.

Jaw deformities can also cause excessive gingival display and require orthognathic surgery.⁴ Surgery for the treatment of vertical maxillary excess can restore normal occlusal relationships and reduce gingival display. However, this surgery is associated

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Fig 1 (left) Preoperative smile.

Fig 2 (right) Incision outline is made with a marking pencil (digitally drawn here for improved visibility).



Fig 3 (left) The epithelial layer is removed.

Fig 4 (right) A partial-thickness flap exposes the underlying connective tissue.



with significant morbidity and requires hospitalization. Therefore, lip repositioning is recommended as an alternative treatment for excessive gingival display.

The objective of lip repositioning is to minimize the gingival display by limiting the retraction of the elevator smile muscles (eg, zygomaticus minor, levator anguli, orbicularis oris, and levator labii superioris). This is accomplished by removing a strip of mucosa from the maxillary buccal vestibule and creating a partial-thickness flap between the mucogingival junction and the upper lip musculature. The lip mucosa is then sutured to the mucogingival line, resulting in a narrower vestibule and restricted muscle pull,

thereby reducing gingival display during smiling. This procedure was originally described in the plastic surgery literature 30 years ago.⁵

Clinical report

A 30-year-old woman presented with a chief complaint of a "gummy smile." Her treatment goal was to minimize gingival display in her smile (Fig 1). The patient's medical history was non-contributory, and there were no contraindications to surgical treatment. A clinical examination revealed moderate maxillary gingival display. With an exaggerated smile, the patient's teeth were visible from the maxillary right

first molar to the maxillary left first molar, with 3 to 4 mm of excessive gingival tissue display. The maxillary anterior teeth had normal anatomic proportions. Informed consent was obtained after discussion of the alternatives, benefits, and possible complications of lip repositioning.

Local anesthetic (Xylocaine 2% with epinephrine, 1:100,000, and epinephrine, 1:50,000; Dentsply) was administered in the vestibular mucosa and lip from maxillary right to left first molar. A marking pencil was used to outline the incisions on the dried tissues (Fig 2). A partial-thickness incision was made at the mucogingival junction from the mesial line angle of the right first molar to the mesial line angle of



Fig 5 (left) Interrupted sutures are applied to stabilize the desired line of closure.

Fig 6 (right) The wound is sutured continuously.



Fig 7 Healed site after 8 weeks.



Fig 8 Postoperative smile.



Fig 9 Smile after 8 months of follow-up.

the left first molar. A second partial-thickness incision, parallel to the first, was made in the labial mucosa, 10 to 12 mm apical to the mucogingival junction. The incisions were connected at each first molar, creating an elliptical outline. The epithelium was removed within the outline of the incisions (Fig 3), leaving the underlying connective tissue exposed (Fig 4). Care was taken to avoid damage to any minor salivary glands in the submucosa. Local anesthetic and electrocoagulation were used to control bleeding. The parallel incision lines were approximated with interrupted stabilization sutures (Maxon 6/0, Tyco Healthcare) at the midline and other locations along the borders of the incision to ensure proper

alignment of the lip midline with the midline of the teeth (Fig 5). Then, a continuous interlocking suture was used to approximate both flap ends (Fig 6).

Nonsteroidal anti-inflammatory drugs (ibuprofen 600 mg four times daily for 2 days) and oral antibiotics (amoxicillin 500 mg three times daily for 1 week) were given after surgery. The patient was given instructions for the application of ice packs and was told to minimize lip movement when smiling and talking for 1 week. Postoperative healing occurred with a minimum of ecchymosis and discomfort. The patient reported "tension" on her upper lip and "slight pain" when smiling for 1 week after surgery.

Sutures were removed 2 weeks later. The suture line healed in the form of a scar that was not apparent when the patient smiled, because it was concealed in the upper lip mucosa (Figs 7 and 8). A follow-up examination 8 months later showed a reduction in the patient's excessive gingival display (Fig 9).

Discussion

This clinical report describes the use of lip repositioning for the reduction of excessive gingival display. The procedure originated as a plastic surgical treatment but has rarely been described in the dental literature. Variations in lip repositioning have been reported.⁶⁻⁹ The original technique^{5,10} did not include severing of the muscle attachment after flap reflection. Other authors advocated performing myectomies to detach the smile muscle attachment.⁶⁻⁸ The rationale for using myectomies was to allow for tension-free suturing and to prevent relapse.

Another method to prevent reattachment of the smile muscles is to use an alloplastic or autogenous separator.⁹ This spacer is placed with a nasal approach between the elevator muscles of the lip and the anterior nasal spine and thus prevents superior displacement of the repositioned lip.

Lip repositioning has also been performed in conjunction with rhinoplasty.⁶ The nasal approach allows both surgical procedures to be combined; the surgical site is extended only minimally. This should be done *only* if rhinoplasty is to be performed *and* if the patient desires a remedy for excessive gingival display.

Reports of postoperative bruising, discomfort, and swelling of the upper lip in the literature, and in the authors' experience, are rare.¹⁰

A more infrequent complication may be formation of a mucocele because of the severing of minor salivary glands in the upper lip. The authors experienced one case of a mucocele, which resolved on its own. Other rare complications that have been reported in the literature are parasthesia⁷ and transient paralysis.¹⁰

Contraindications for lip repositioning surgery are the same as for any periodontal surgery. Patients with inadequate attached gingiva in the maxillary anterior sextant may not be candidates for lip repositioning; the limited amount of tissue creates difficulties in flap design, stabilization, and suturing that could lead to relapse. Patients with severe vertical maxillary excess are not candidates for lip repositioning; instead, such patients should be treated with orthognathic surgery.

Conclusion

Lip repositioning can help improve esthetics in the maxillary anterior sextant. This procedure minimizes gingival display via placement of the upper lip in a more coronal position.

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