



## MODIFIED LIP REPOSITIONING: A TECHNIQUE FOR SMILE ENHANCEMENT

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### ABSTRACT

This case report describes the use of surgical modified lip repositioning technique for the management of excessive gingival display. This procedure restricts the muscle pull of the elevator lip muscles by shortening the vestibular depth, thus reducing the gingival display while smiling. Healing was uneventful and follow-up examinations of 3 months revealed reduced gingival display.

**KEYWORDS :** Excessive gingival display, gummy smile, modified lip repositioning

### INTRODUCTION

Currently, a growing concern for beauty and physical look has impelled the practitioner to gauge the necessities of patient's smile and take into account the dynamic relationship between the dentition, gingivae, and lips whereas smiling, with larger demands relating to cosmetic and esthetic dentistry.<sup>1</sup>

A beautiful smile is comprised of three components, i.e., lip, teeth, and gingiva, all of which should be in harmony with each other.

Smiles can be classified as: social smile and enjoyment smile. The social smile is a voluntary, static facial expression, unstrained.<sup>2</sup> Due to moderate muscular contraction of the lip elevator muscles the lips part, and the teeth and sometimes the gingival scaffold get displayed. The enjoyment smile is involuntary. It results from maximum contraction of the upper lips elevator and lower lip depressor muscles inflicting full expansion of the lips, with maximum anterior tooth and gingival display.<sup>3</sup>

Smile can also be classified into three types, depending upon the exposure of tooth and gingival<sup>1</sup>: a. High smile: The smile in which complete cervico-incisal length of the maxillary incisors and the band of gingival is visible is called as high smile. b. Average smile: The smile in which 75-100% of the maxillary incisors is visible is called as average smile. c. Low smile: In this type of smile about less than 75% of maxillary incisor is only visible. d. Gummy smile: There can also be a category of excess gingival exposure called as gummy smile. This anatomical feature is defined by Peck and Peck as gingival smile line.

Four possible etiologies of excessive gingival display and the various treatment modalities are as follows<sup>4</sup>: Delayed eruption which results when gingiva fails to complete the apical migration over the maxillary teeth to a position that is 1 mm coronal to the cemento-enamel junctions.<sup>6,7</sup> In these patients, restoration of normal dentogingival relationships can be achieved with an esthetic crown lengthening, which is a well registered treatment modality that is highly effective in treating patients with delayed eruption.<sup>8,9</sup> The procedure involves shifting the gingival margins apically through soft and possibly hard tissue resection

Compensatory eruption of teeth in maxillary arch with concomitant coronal migration of the attachment apparatus, which includes the gingival margins. Orthodontic equalisation of the gingival margins of the maxillary teeth could also be thought about in this situation.<sup>10</sup> Resective surgery is also possible but may expose the narrow root surface and necessitate a restorative treatment.

Vertical maxillary excess where, there is an enlarged vertical dimension of the midface and "incompetent" lips. Treatment involves orthognathic surgery to restore normal inter-jaw relationships and also to reduce the gingival display.<sup>11</sup>

If the upper lip moves in an apical direction during smile and exposes the dentition and excessive gingiva, then surgical lip repositioning can be utilized to reduce the labial retraction of the elevator muscle and reduces the gingival display. This procedure was first described in the plastic surgery literature in 1973.<sup>12</sup>

This case report describes the surgical procedure and outcome of modified lip repositioning in the treatment of excessive gingival display.

### CASE REPORT

A 26-year-old female reported to the Department of Periodontology, GDCH Aurangabad, with the chief complaint of excessive gingival display during smile [Figure 1]. No significant family history or medical history was present. On clinical examination, a good amount of attached gingiva was present. The patient was having high smile line. However, when the patient was asked to smile, her teeth were visible from maxillary right first premolar to maxillary left first premolar molar with 5 mm gingival display. Modified Lip repositioning as a treatment option was discussed with the patient and a written informed consent was obtained.

Initially, scaling and root planing was done. After 1 week, patient was appointed for surgical procedure. Local infiltration was administered into the buccal vestibule between the first maxillary premolars. Outlines of incisions were made with pen on dried tissue (Figure 2). A partial thickness incision was created at the mucogingival junction from the mesial line angle of the right central incisor to the mesial line angle of the right first molar and a second partial thickness incision was made parallel to the first incision and 10–12 mm apical of the mucogingival junction in the labial mucosa. The incisions were then connected at the central incisor region without involving the maxillary labial frenum and at the right first molar region creating a quadrilateral outline (Figure 3). The epithelial band of approximately 10–12mm wide was excised leaving underlying connective tissue exposed (Figure 4). The mucosal flap was then advanced and sutured with interrupted sutures at the midline and other locations along the borders of the incision mucogingival junction using 4-0 Vicryl sutures (Figure 5). Postoperative instructions were given which included soft diet, limited facial movements, no brushing around the surgical site for 14 days, and placing ice packs over the upper lip. The patient was instructed to rinse gently with 0.2% chlorhexidine gluconate twice daily for 2 weeks. Postoperative ibuprofen 400mg twice a day (BD) for 3 days were prescribed.

At 1-week post operative followup, uneventful healing occurred. After 2 months of follow up, scar formation was observed. Follow-up examinations revealed a significant reduction in the amount of gingival display at the 3-month follow-up visit was seen. (figure 6). Our results indicate good stability at the 1-year follow up



Figure 1: 5 mm of gingival display



Figure 2: outline of incisions



Figure 3: Partial thickness incision was made



Figure 4: Partial thickness flaps removed on both sides



Figure 5: Interrupted sutures were placed



Figure 6: Post-operative- After 3 months

## DISCUSSION

Silva et al.<sup>13</sup> showed successful management of excessive gingival display using a modified lip repositioning technique. Treatment comprised removal of two strips of mucosa, bilaterally to the maxillary labial frenum, and coronal repositioning of the new mucosal margin. Most of the subjects showed satisfied results in their smile after the surgery. Delayed eruption of maxillary teeth and tooth malposition can be predictably treated with respective surgery and orthodontics; orthognathic surgery can also be performed. The case presented here involves surgical technique to reduce excessive gingival display. Patients who have a high smile line expose a broad width of gingival tissue and often express concern about their "gummy smile." Therefore, the earlier-mentioned procedure is safe with minimal side effects as the patient did not complain of any postoperative complication. On contrary, the use of botulinum toxin represents an easy, fast, and efficacious technique for the esthetic correction of a gummy smile; however, the results obtained by this nonsurgical approach always remain questionable. Surgical intervention by lip repositioning establish a permanent method for treating a gummy smile. Modified lip repositioning, does not include the maxillary labial frenum. The main objective for preserving the maxillary labial frenum is that it prevents the midline being shifted thus guiding for an esthetically pleasing smile and also avoids the morbidity associated with the removal of maxillary labial frenum.

## CONCLUSION

Modified lip repositioning is an effective method to reduce excessive gingival display by positioning the upper lip in a more coronal position. The long-term stability of the results remains to be seen, but it is a promising alternative treatment modality in esthetic rehabilitation.

## REFERENCE:

1. Jacobson A. Psychological aspects of dentofacial esthetics and orthognathic surgery. *Angle Orthodontist* 1983;54:18-35.
2. Ackerman JL, Ackerman MB, Brensinger CM, Landis JR. A morphometric analysis of the posed smile. *Clin Orthod Res* 1998;1:2-11.
3. Suchita Madhukar Tarvade (Daokar), Gauri Agrawal, "Smile analysis: A review Part I," *Int J Contemp Dent Med Rev*, vol. 2015, Article ID: 200115, 2015.
4. Sheridan JJ, John J, Sheridan. DDS, MSD, on air-rotor stripping. *J Clin Orthod* 2008;42:381-8.
5. Simon Z, Rosenblatt A, Dorfman W. Eliminating a gummy smile with surgical lip repositioning. *Cosmet Dent* 2007;23:100-8
6. Garguilo A, Wenz F, Orban B. Dimensions and relations at the dentogingival junction in humans. *J Periodontol* 1961;132:261-7.
7. Maynard JG Jr, Wilson RD. Physiologic dimensions of the periodontium significant to the restorative dentist. *J Periodontol* 1979;50:170-4.
8. Lee EA. Aesthetic crown lengthening: Classification, biologic rationale and treatment planning considerations. *Pract Proced Aesthet Dent* 2004;16:769-78.
9. Chu SJ, Karabin S, Mistry S. Short tooth syndrome: Diagnosis, etiology and treatment management. *J Calif Dent Assoc* 2004;32:143-52
10. Kokich VG. Esthetics: The orthodontic-periodontic restorative connection. *Semin Orthod* 1996;2:21-30.
11. Ezquerro F, Berrazueta MJ, Ruiz-Capillas A, Arregui JS. New approach to the gummy smile. *Plast Reconstr Surg* 1999;104:1143-50.
12. Rubinstein AM, Kostianovsky AS. Cosmetic surgery for the malformation of the laugh: Original technique in Spanish. *Prensa Med Argent* 1973;60:952.
13. Silva, CO, Ribeiro-Júnior, NV, Campos, TVS, Rodrigues, JG, Tatakis, DN. Excessive gingival display: treatment by a modified lip repositioning technique. *J Clin Periodontol* 2012