



A Case of Gummy Smile Correction: Modified Lip Repositioning Technique

Dr. Varsha Goswami, Dr. Sonika Bodhi*, Dr. Shruti Bhatnagar, Dr. Saket Banchhor

¹Lecturer, ²Reader, ^{3,4}Senior Lecturer

¹Department of Periodontics, Government Dental College, Raipur, Chhattisgarh, India

^{2,3,4}Department of Periodontics, Rungta College of Dental Sciences & Research, Bilai, Chhattisgarh, India

***Corresponding Author:**

Dr. Sonika Bodhi*

Department of Periodontics, Rungta College of Dental Sciences & Research, Bilai, Chhattisgarh, India - 490024.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Gummy smile or excessive gingival display has become a common concern in the present aesthetic conscious society. People in general, are aware more than ever about the effect of a perfect smile as well as the benefits it brings. Gummy smile can be a result of a variety of etiological factors and have equally diverse treatment options. The present report documents a case of excessive gingival display due to short upper lip and altered passive eruption of maxillary central incisors. Modified lip repositioning technique along with external bevel gingivectomy was used which is comparatively less invasive. It restricts the elevator muscles of lip resulting in less gingival display on smiling. The results obtained were desired and stable.

Keywords: Excessive gingival display, gummy smile, gingivectomy, lip repositioning

INTRODUCTION

A smile needs no words. The importance of smile is crucial, it provides you with certitude. Dental corrections using various methods have always been a priority in case of smile correction; however the importance of soft tissue cannot be neglected. The normal gingival display is defined as gum exposure between the inferior border of upper lip and gingival margin of anterior central incisors when smiling.^[1] A gingival display of zero to two millimetre (mm) along with two to four mm of teeth is considered pleasant, gingival display more than two mm is described as gummy smile.^[2] The etiologic factors for gummy smile can be dental, skeletal, muscular or combination of these. Bholia et al^[3] has classified the causes to be intra-oral and extra-oral. Intra-oral causes include: a) altered passive eruption, b) gingival enlargement, c) compensatory over-eruption with attrition, d) anterior dentoalveolar extrusion with deep bite, extra-oral

causes are: a) vertical maxillary excess, b) short upper lip, c) hyperactive upper lip.^[3]

Short upper lip is a condition when the length between subnasale to inferior border of upper lip is less than 15mm,^[4] normally perceived as 23 mm in males and 20 mm in females.^[5] This is diagnosed clinically by measuring the length of upper lip at rest revealing excessive amount of tooth display.^[5] The short lip can be accompanied with hypermobility and short clinical crown, thus increasing the gingival display during smiling. Lip repositioning is a surgical technique involving removal of a strip a mucosa from buccal vestibule thus restricting the retraction of elevator muscles; hence minimizing gingival display.^[6] This report presents a case of modified lip repositioning technique employed to correct gummy smile.

REPORT OF CASE

A 25 year old female patient reported to out-patient department of Periodontology, Rungta College of Dental Sciences and Research, with concern of unpleasant smile and excessive display of gums. No significant medical history and no contraindications for surgical procedure were present. Extra-oral examination revealed no gross facial asymmetry with potentially competent lips. While smiling, five to six mm of gingival display was observed at rest, extending from maxillary right second premolar to maxillary left second premolar. Intra-orally short clinical crown with regards to maxillary central incisors was noted. When the patient was asked to smile; the gingival display rose up to 12 mm, establishing a hyperactive short upper lip. Accordingly, lip repositioning surgery along with external bevel gingivectomy was planned. The patient was informed about the procedure and written consent was obtained. The surgical method performed was modification of Rubinstein & Kostianovsky^[7] technique.

Surgical procedure:

A UNC-15 probe was used to measure gingival display at rest as well as positions of osseous crest and cemento-enamel junctions of the maxillary central incisors (Figure 1). A marking pencil was used to outline the apical, coronal and lateral boundaries of the surgical site for lip repositioning (Figure 2). The coronal boundary was kept at mucogingival junction and was used as reference point to mark the apical boundary at a distance of 10-12 mm. The surgical site was anesthetized using 2% lidocaine with 1:80,000 epinephrine. Gingivectomy procedure was performed on maxillary central incisors; a tissue of two mm was removed to achieve desired gingival margin and zenith, without encroaching biologic width.

Lip repositioning incision was placed on either side of frenal attachment sparing the frenum intact. Two parallel horizontal incisions were made on either side of frenum; coronal extent was mucogingival junction, apically, it was till the marking, distal extent was up to mesial line angle of first molar, and mesially, incision stopped adjacent to frenum. Vertical incisions were given at mesial and distal end connecting the two horizontal incisions (coronal and apical incision). A partial thickness flap was raised; epithelium was removed, exposing underlying connective tissue. Minor salivary glands were carefully avoided. Tissue tags were removed making the surgical incision was

precise as possible. The mucosal flap was then approximated, tension free using continuous interlocking suture technique (Figure 3).

Routine post-operative instructions were given. Patient was advised to restrict lip movements. Analgesics (Diclofenac sodium 50 mg thrice daily for 5 days) and oral antibiotics (Amoxicillin 500 mg thrice daily for 5 days) was prescribed. Oral rinsing with 0.2% chlorhexidine gluconate twice daily for two weeks was advised. Brushing was refrained on the surgical site. Suture removal was done after two weeks.

Patient reported mild pain and tension while movements in first week of surgery, pain subsided after a week. No untoward event was noted. Follow up was done after 6 months. The outcome was positive with reduced gingival display, stable gingival contours and position. (Figure 4)

DISCUSSION

Lip repositioning technique was described by Rubinstein & Kostianovsky,^[7] as part of medical plastic surgery. Litton and Fournier^[8] advocated this technique for correction of gummy case due to short upper lip. The original technique involved frenal attachment in incision, this resulted in possibility of midline shift, modified technique do not involve detachment of frenal fibres; thus maintaining labial midline and reducing post-operative morbidity.^[6] Hence the modified technique was preferred.

There have been other treatments to limit the lip mobility and therefore reducing the excessive gingival display which include: botulinum toxin (Mazzuco and Hexsel 2010), lip elongation associated with rhinoplasty (Ezquerria et al 1999), myotomy and partial removal (Ishida et al. 2010).

In the present surgical case, there was reduction in gingival display of three millimetres when compared from zenith of maxillary central incisors. The final follow up was done after six months and results were stable. Riberio et al showed favourable results of reduced gingival display after modified lip repositioning technique.^[9] Thaker et al used a bioresorbable membrane in a case of modified lip repositioning, after elevating partial thickness flap. They showed successful outcome with long term results.^[6] Silva et al have showed satisfactory results in smile line after lip repositioning surgery using

similar technique.^[10] The technique includes removal of mucosal strips, bilaterally and approximation of flap margin at a coronal position.

Though the results are stable in our study but literature have contradictory results too. Dayakar et al reported a case of surgical repositioning and showed positive result after 6 months. However after a period 12 months, complete relapse was reported.^[11] There was no relapse noted in the present case, nevertheless a more prolonged follow up will clear up the stability of result obtained.

The success of any case depends upon various factors such as accurate diagnosis, appropriate treatment modalities, suitable case selection and proper protocol to implement the aforementioned factors. The present case was thoroughly studied before applying the treatment procedure; hence obtaining the desired result. Nonetheless, the contraindications for a lip repositioning surgery includes less than adequate width of attached gingiva and severe vertical maxillary excess. Inadequate attached gingiva may present problems with flap design and approximation; whereas in case of vertical excess, unsatisfactory results may be presented.^[12,13]

CONCLUSION

The modified lip repositioning, as per literature, is advised for cases of short upper lip and hyperactive upper lip for reducing the gingival display. The present case was apposite for the same. The case report demonstrated good result with patient comfort, thus proving it a suitable technique. Long term follows up and elaborate study designs should be done to investigate the effectiveness of the technique.

REFERENCES

1. Sharma A, Sharma S, Garg H, Singhal V, Mishra P. Lip repositioning: A boon in smile enhancement. *J Cutan Aesthet Surg* 2017; 10:219-22.
2. Pausch NC, Katsoulis D. Gender-specific evaluation of variation of maxillary exposure when smiling. *J Craniomaxillofac Surg* 2017; 45:913-20.
3. Bholra, M., Fairbairn, P.J., Kolhatkar, S., Chu, S.J., Morris, T., de Campos, M., 2015. LipStaT: the lip stabilization

technique indications and guidelines for case selection and classification of excessive gingival display. *Int. J. Periodontics Restorative Dent.* 35, 549–559.

4. Ahmad I. Anterior dental aesthetics: Dentofacial perspective. *Br Dent J* 2005; 199:81–88.
5. Sabri R. The eight components of a balanced smile. *J Clin Orthod* 2005; 39:155-67.
6. Thaker DD, Shah S, Shah RS, Kikani A. An integrated modified lip repositioning using bioresorbable collagen membrane: A long-lasting auxiliary treatment approach for gummy smile. *J Int Clin Dent Res Organ* 2019; 11:43-8.
7. Rubinstein AM, Kostianovsky AS. Cosmetic surgery for the malformation of the laugh: Original technique in Spanish. *Prensa Med Argent* 1973; 60:952.
8. Litton, C., Fournier, P., 1979. Simple surgical correction of the gummy smile. *Plast. Reconstr. Surg.* 63, 372–373.
9. Ribeiro-Junior NV, Campos TV, Rodrigues JG, Martins TM, Silva C. Treatment of Excessive Gingival Display Using a Modified Lip Repositioning Technique. *J Periodontics Restorative Dent* 2013; 33:309–315.
10. Silva CO, Ribeiro-Junior NV, Campos TV, Rodrigues JG, Tatakis DN. Excessive gingival display: Treatment by a modified lip repositioning technique. *J Clin Periodontol* 2012; 40:260-5.
11. Dayakar MM, Gupta S, Shivananda H. Lip repositioning: An alternative cosmetic treatment for gummy smile. *J Indian Soc Periodontol* 2014; 18:520-3.
12. Rosenblatt A, Simon Z. Lip repositioning for reduction of excessive gingival display: A clinical report. *Int J Periodontics Restorative Dent* 2006; 26:433-7
13. Simon Z, Rosenblatt A, Dorfman W. Eliminating a gummy smile with surgical lip repositioning. *J Cosmetic Dent* 2007; 23:100-8.

Figure Legends

Figure 1: Preoperative view.



Figure 2: Incision outline made with a marking pencil.



Figure 3: Gingivectomy on maxillary central incisors and removal of epithelial lining



Figure 4: Six-months postoperative view.

