Lip Lengthening – A Case Report

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ABSTRACT: Excessive gingival display is commonly referred to as "gummy smile."It is a condition where there is an overexposure of maxillary gingiva while smiling and is of a major esthetic concern for many individuals.Etiologies of gummy smile are multifactorial which include jaw deformities, tooth malpositioning, short or hyperactive upper lip. Various treatment options that have been advocated in the treatment of excessive gingival display are orthognathic surgery, lip repositioning, orthodontic treatment and botox injections. Lip repositioning which is a simple surgical procedure has been gaining popularity and is used to treat excessive gingival display. It is found to have lesser post-operative complications and a predictable surgical outcome. This case report describes the lip repositioning technique which was performed on a patient undergoing orthodontic treatment to decrease the gummy smile.

KEYWORD : Gummy Smile, Excessive Gingival Display, Lip Repositioning

INTRODUCTION

A smile plays a major role in expression and appearance of a person.[1]The harmony of a beautiful smile requires a balance between three essential elements such as the teeth, lips and the gingiva.[2] Gingiva has a significant impact on an individual's smile and therefore the margins of the gingiva should be healthy and harmonious.[3] Creating a perfect smile requires a multidisciplinary approach and careful treatment planning.[4]

Gummy smile is an aesthetic concern for many individuals. Excessive gingival display which is commonly known as gummy smile is due to an imbalance in the ratio of gingiva and tooth and results in a dominance in the gingival appearance.[5]It is distinguished by gingival exposure of more than 4mm.[6]The smile line is defined as the relationship between the upper lip and the appearance of upper incisors and canines or the gingival tissues of these teeth. The smile line can be classified as:[7]

Score 0: Low smile line: Interdental gingiva: <25% visible, gingival margin: visible, teeth masked

Score 1: Average smile line: Interdental gingiva : 25-75% visible, Gingival margin : visible on individual teeth

Score 2: High smile line: Interdental gingiva :>75% visible, Gingival margin : <3mm visible (overall)

Score 3: Very High smile line: Interdental gingiva: completely visible, Gingival margin: >3mm wide maxillary band of gingiva visible beyond the mucogingival line "gummy smile"

Proper diagnosis of the etiological factors is important to choose the appropriate treatment plan. The etiology of excessive gingival display is multifactorial. It may be caused by either dentoalveolar or non-dentoalveolar discrepancies. Short clinical crown, gingival hypertrophy/hyperplasia, altered passive eruption, dentoalveolar extrusion constitute the various dentoalveolaretiology. Whereas non-dentoalveolaretiology are vertical excess of maxilla,

incompetent upper lip and hyperactive upper lip.[4]There are various surgical and non-surgical approaches for treatment of excessive gingival display. They include intrusion of maxillary teeth, orthodontic treatment, lip repositioning procedure, orthognathic surgery and non-surgical approaches like botulinum toxin injections. Orthodontic intrusion is used to manage anterior dento-alveolar extrusion and orthognathic surgery is performed to manage vertical maxillary excess.[8]

When hyperactive upper lip is considered as the main etiology of gummy smile, various treatment modalities such as botulinum toxin, lip elongation associated with rhinoplasty, detachment of lip muscles, myotomy and partial removal and lip repositioning.[9]

Lip repositioning was first introduced by Rubinstein and Kostianovsky in 1973 as a part of medical plastic surgery.[10] Rosenblatt and Simon modified the procedure and introduced in dentistry in 2006. It is a less invasive approach in the treatment of excessive gingival display. [11] This case report describes the lip repositioning technique which was performed on a patient undergoing orthodontic treatment to decrease the gummy smile.

CASE REPORT

A 25 year old female patient was referred to the Department of Periodontology for the treatment of excessive gingival display. The patient had been undergoing orthodontic treatment since 1 year. Clinical examination revealed incompetent lips and excessive maxillary gingival display of about 3-4mm while smiling. (Figure 1) Patient had no relevant medical history or family history. Treatment options, benefits and complications were discussed with the patient. Informed consent for lip repositioning procedure was obtained from the patient. The treatment goal was to achieve an aesthetic smile by reducing the excessive gingival display.

The patient was advised to rinse her mouth with 0.2% chlorhexidine mouthwash prior to surgery. Pre-operative photographs were taken. (Figure 2) Extra-oral disinfection was performed using 2% betadine. The surgical area was anesthetized using local anesthetic agent (lignocaine 2% with epinephrine 1:100,000). With the help of a sterile marking pencil, the outline of the incisions on the surgical area was marked.(Figure 3)

A partial-thickness incision was given at the mucogingival junction from the mesial aspect of first premolar on the right side to the mesial aspect of first premolar on the left side. A second partial-thickness incision was then given in the labial mucosa parallel to the first incision, approximately 10-12mm apical to the mucogingival junction. (Figure 4) The first and the second incisions were then connected on either side to create an elliptical outline. A strip of the flap containing epithelial tissue was excised exposing the underlying connective tissue. (Figure 5 & 6) The outlines of the incisions were then sutured with simple interrupted sutures by advancing the mucosal flap to the mucogingival junction. (Figure 7) Proper alignment of lip midline to the midline of teeth was ensured.

Patient was prescribed appropriate antibiotic and post operative pain was managed by analgesics. Post operative instructions were given – patient was asked to reduce lip movements for a week and to apply ice packs extra orally. Patient was recalled

after 2 weeks for suture removal. The patient had reported mild discomfort for a week following the surgery. The healing was found to be satisfactory. (Figure 8 & 9)

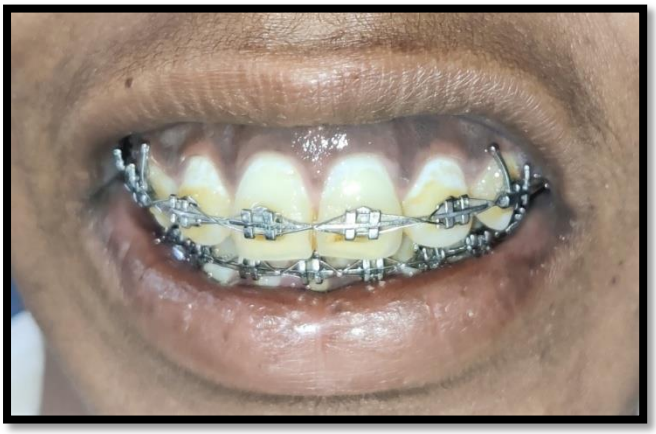

Figure 1: Clinical examination shows excessive gingival display

Figure 2 : Pre-operative photograph

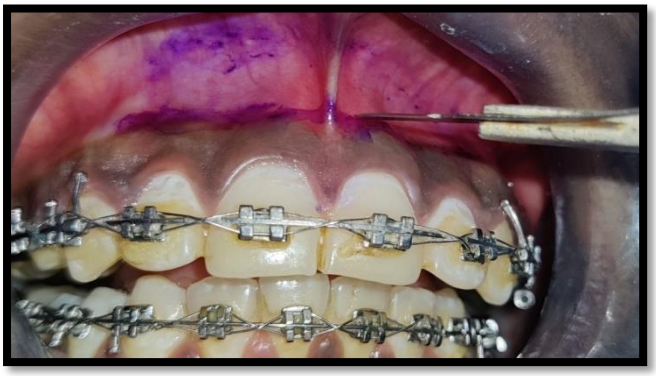

Figure 3: Outline of the incisions marked with marking pencil.

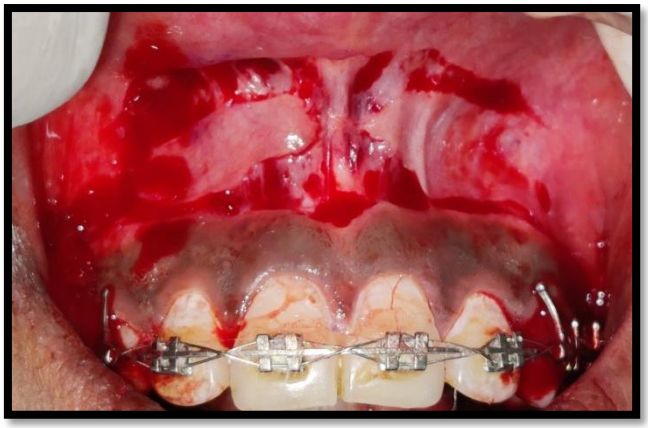

Figure 4: Incision lines

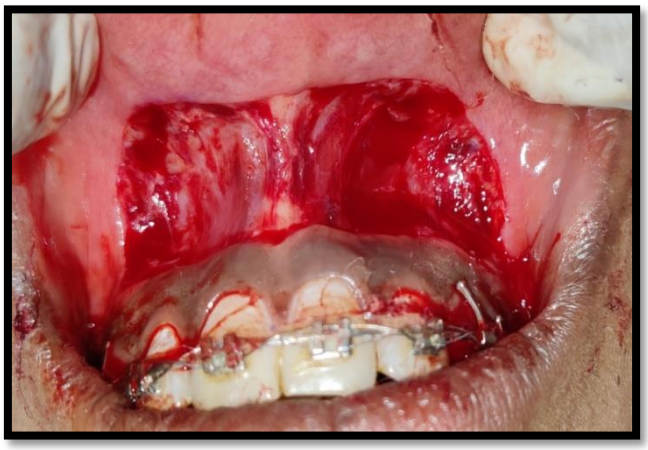

Figure 5: Exposed underlying connective tissue

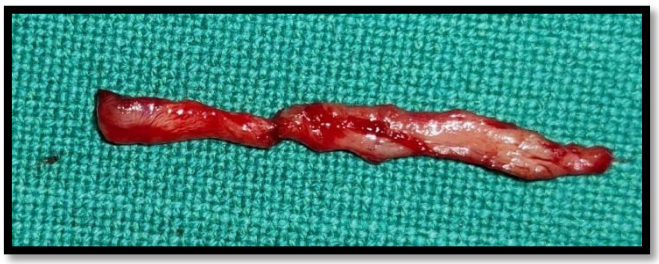

Figure 6 : Excised portion of the flap

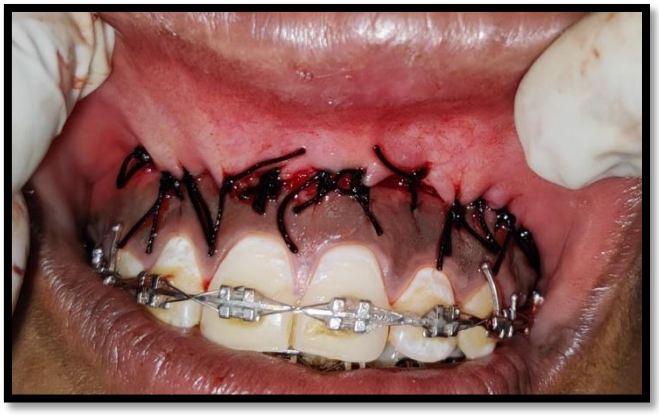

Figure 7 :Margins approximated with sutures

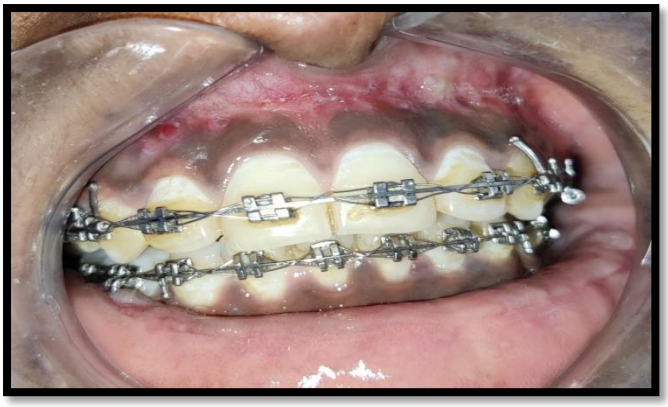

Figure 8: Scar tissue formation 2 weeks post-operatively

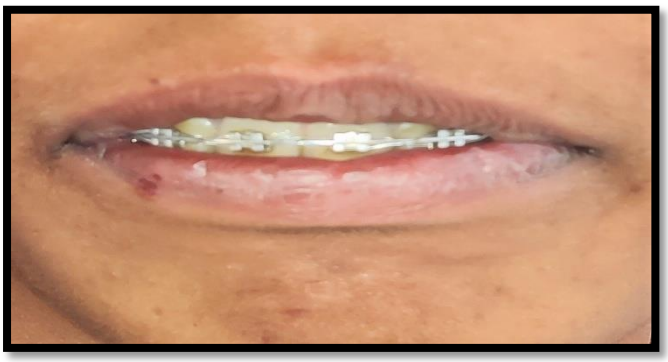

Figure 9: Post-operative smile after 2 weeks

DISCUSSION

Excessive gingival display is of multifactorial etiology and needs to be treated in a sequential manner.[12]Proper understanding of the etiological factor is necessary to arrive at a right treatment protocol. Various treatment modalities have been considered for the correction of excessive gingival display such as myotomy, orthognathic surgery and also less invasive procedures such as lip repositioning, crown lengthening, botulinum toxin injections.[13]

Lip repositioning surgery, botulinum toxin and myotomy have almost similar treatment outcomes in reducing the gingival display.[9]In a systematic review and meta-analysis, Dos santos-pereira et al. noted that other non-surgical approaches in the treatment of excessive gingival display like botulinum toxin injections had a similar result as that of lip repositioning procedure but it required multiple injections to maintain the stability of the outcome.[14] Myotomy is more invasive technique when compared to lip repositioning surgery. The disadvantage of myotomy is the post-operative morbidity, paresthesia.[15]

Lip repositioning surgery has gained popularity in the recent years in the treatment of excessive gingival display due to the less invasive approach and less post-operative complications.[13]In 2006, Rosenblatt and Simon re-introduced this technique in dentistry after certain modifications. A partial thickness elliptical shaped incision was placed at the alveolar mucosa and removed about 10-12mm of mucosa. They achieved satisfactory output in a case of 8months follow-up.[11]Similarly, Humayun et al. also achieved good results with one year follow up.[16]

In this case report, lip repositioning technique was carried out on a patient who has been undergoing orthodontic treatment since 1 year. A multidisciplinary approach has helped to provide the patient with a better esthetic smile.

In a study conducted by Jacobs et al. in 2013, a mean reduction of gingival display of 6.4 ± 1.5 was observed in seven patients who had undergone lip repositioning surgery.[17]In 2013, Vital et al. reported a case of two patients treated with modified lip repositioning technique and obtained significant improvement in the amount of gingival exposure and esthetic satisfaction after a 6 month follow up.[18]

Farista et al. carried out a combination of laser-assisted crown lengthening along with lip

repositioning technique and obtained satisfactory esthetic results at 6-months post surgery, but noticed a mild recurrence at 1-year follow up.[19]The systematic review by Tawfik et al. showed that lip repositioning successfully enhanced excessive gingival display by 3.4 mm.[4]

Lip repositioning technique has various advantages over the other technique since it is safe, simple, less time consuming, less invasive, easy to perform and cost-effective.It has limited morbidity and the most severe complication reported was mucocele formation.[5]

Lip repositioning surgery is contraindicated in certain cases where there is minimal zone of attached gingiva which causes difficulties in flap design, stabilization and suturing. Patients with severe vertical maxillary excess cannot be managed by this procedure.[11]

This case has given successful outcome of lip repositioning technique in the correction of excessive gingival display. This technique not only improved patient compliance but also gave satisfactory healing results. Most of the published records of lip repositioning technique with long term follow up 12 months or more are from case reports. Additional studies and research with larger sample size and follow up are required to assess the long term outcome of this technique.

CONCLUSION

Esthetics has become an important part of periodontal treatment plan. Excessive gingival display which is also known as “gummy smile” affects the smile esthetics and is of a major concern to many patients. Lip repositioning has emerged as a promising and an effective approach in the treatment of excessive gingival display. This case report shows the satisfactory result obtained after the lip repositioning technique. This technique is found to be simple, cost-effective, patient - friendly with minimal side effects. It can be a treatment of choice in those patients who are not willing for orthognathic surgeries. However further studies are required to assess the long-term stability of this procedure.

REFERENCES

1. Grover HS, Gupta A, Luthra S. Lip repositioning surgery: A pioneering technique for perio-esthetics. Contemp Clin Dent. 2014; 5:142-145.
2. Ezquerra F, Berrazueta MJ, Ruiz-Cappilas A and Arregui JS. New approach to gummy smile. PlastReconstr Surg. 1999; 104: 1143-1150.
3. Gaddale R, Desai SR, Mudda JA, Karthikeyan I. Lip repositioning. J Indian Soc Periodontol 2014;18:254-8.
4. Tawfik OK, El-Nahass HE, Shipman P, Looney SW, Cutler CW, Brunner M. Lip repositioning for the treatment of excess gingival display: A systematic review. J Esthet Restor Dent. 2017;00:1–12.
5. Sheth T, Shah S, Shah M, Shah E. Lip reposition surgery: A new call in periodontics. Contemp Clin Dent 2013;4:378-81.
6. Deepthi K, Yadalam U, Ranjan R, Narayan SJ. Lip repositioning, an alternative treatment of gummy smile - A case report. J Oral Biol Craniofac Res 2018;8(3):231-3.
7. Jensen J, Joss A, Lang NP. The smile line of different ethnic groups in relation to age and gender. *Acta Med Dent Helv.* 1999;4:38–46.
8. Faus-Matoses V, Faus-Matoses I, Jorques-Zafrilla A, Faus-Llácer VJ. Lip repositioning technique. A simple surgical procedure to improve the smile harmony. J Clin Exp Dent 2018;10:e408–e412.

9. Silva CO, Ribeiro-Junior NV, Campos TV, Rodrigues JG, Tatakis DN. Excessive gingival display: Treatment by a modified lip repositioning technique. J Clin Periodontol 2013;40:260-5.
10. Rubinstein AM, Kostianovsky AS. Cirugiaestetica de la malformacion de la sonrisa. Pren Med Argent 1973;60:952
11. Rosenblatt A, Simon Z. Lip Repositioning for Reduction of Excessive Gingival Display: A Clinical Report. Int J Perio Rest Dent. 2006; 26:433-437.
12. Foudah MA. Lip repositioning: An alternative to invasive surgery a 4 year follow up case report. Saudi Dent J. 2019;31: S78-S84
13. Ramesh A, Vellayappan R, Ravi S, Gurumoorthy K. Esthetic lip repositioning: A cosmetic approach for correction of gummy smile – A case series. J Indian Soc Periodontol 2019;23:290-4.
14. dos Santos-Pereira SA, Cicareli Alvaro José, Idalgo FA, et al. Effectiveness of lip repositioning surgeries in the treatment of excessive gingival display: A systematic review and meta-analysis. J EsthetRestor Dent. 2020;1–12.
15. Bhola M, Fairbairn PJ, Kolhatkar S, Chu SJ, Morris T, de Campos M. LipStaT: the lip stabilization technique—indications and guidelines for case selection and classification of excessive gingival display. *Int J Period Restor Dent.* 2015;35:549–559.
16. Humayun N, Kolhatkar S, Souiyas J, Bhola M. Mucosal coronally positioned flap for the management of excessive gingival display in the presence of hypermobility of the upper lip and vertical maxillary excess: A case report. J Periodontol 2010;81:1858-63
17. Jacobs PJ, Jacobs BP. Lip repositioning with reversible trial for the management of excessive gingival display. Int J Periodontics Restorative Dent 2013;33:169-75.
18. Ribeiro-Júnior NV, Campos TV, Rodrigues JG, Martins TM, Silva CO. Treatment of excessive gingival display using a modified lip repositioning technique. Int J Periodontics Restorative Dent 2013;33:309-14.
19. Farista S, Yeltiwar R, Kalakonda B, Thakare KS. Laser-assisted lip repositioning surgery: Novel approach to treat gummy smile. J Indian Soc Periodontol 2017;21:164-8.

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