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Clinical Management of Excessive Gingival Display with Lip Repositioning Surgery: A Case Report

Loren Pandu Satrio[1], Dyah Nindita Carolina[2], Chandra Andi Bawono[2]

[1] Periodontics Specialist Program, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Jawa Barat, Indonesia
[2] Department of Periodontics, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Jawa Barat, Indonesia

*Corresponding Author: dyah.nindita@unpad.ac.id

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ORCID : Satrio LP (0000-0003-0208-132X); Carolina DN (0000-0003-0208-1353); Bawono CA (0000-0003-1961-8479)
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ABSTRACT

Background: Excessive gingival display (EGD), commonly referred to as a "gummy smile," is defined by the exposure of more than 2 mm of gingival tissue during smiling, often leading to aesthetic concerns, particularly in female patients. The etiology of EGD can be multifactorial, involving dentoalveolar causes—such as gingival overgrowth, altered passive eruption, and short clinical crowns—or non-dentoalveolar causes such as vertical maxillary excess and hyperactive upper lip. Lip repositioning surgery (LRS) offers a conservative and minimally invasive alternative to orthognathic surgery in appropriate cases. **Case Report:** This case involves a 36-year-old female presenting with symmetrical facial proportions, competent lips, and excessive gingival display above the esthetic norm. Upon clinical evaluation, the primary contributing factor was identified as a hyperactive upper lip. The patient underwent lip repositioning surgery, which included partial-thickness incisions and mucosal strip excision in the maxillary vestibule to reduce lip elevation during smiling. The procedure was completed under local anesthesia with no intraoperative complications. At follow-up, the patient demonstrated significant improvement in smile aesthetics, with a notable reduction in gingival exposure and high levels of satisfaction. No adverse postoperative effects were observed. **Conclusion:** Lip repositioning surgery is a simple, safe, and effective technique for managing EGD caused by a hyperactive upper lip. It provides predictable aesthetic outcomes with minimal morbidity and is best indicated in cases with mild to moderate gingival display. Although short-term results are promising, long-term studies are needed to evaluate the stability and efficacy of the procedure over time.

Keywords: Excessive Gingival Display; Gummy Smile; Hyperactive Upper Lip; Lip Repositioning Surgery; Smile Aesthetics; Esthetic Dentistry

1. Introduction

An aesthetically pleasing smile emerges from harmony among the teeth, gingival margins, and lip framework. During a smile, not only teeth but also the gingiva may become visible in some individuals. Any disharmony among these elements may result in a less aesthetically pleasing appearance. [1] Excessive Gingival Display (EGD), commonly known as "gummy smile", refers to the overexposure of the maxillary gingiva during a dynamic smile. According to Bhola et al., displaying less than 1 mm of maxillary gingiva is considered aesthetically acceptable, whereas a display exceeding 1 mm is classified as EGD.[2] The American Academy of Periodontology categorizes this condition under mucogingival deformities. Accurate diagnosis and understanding of the etiology are crucial for selecting the appropriate surgical treatment.[3] Several causes of EGD include altered passive eruption (APE), vertical maxillary excess (VME), anterior dentoalveolar extrusion, gingival enlargement, hypermobile upper lip (HUL), short upper lip, and asymmetrical upper lip. Cases such as VME, characterized by excessive growth of the upper jaw, typically require orthognathic surgery.[4] This surgical approach, however, is costly and associated with high morbidity rates, leading many patients to decline the procedure.[5]

The lip repositioning surgery (LRS) is an effective, safe, and predictable procedure for reducing gummy smiles and is widely practiced. First introduced by Rubinstein and Kostianovsky in general plastic surgery in 1973, it was later adapted for dental practice by Rosenblatt and Simon in 2006. This procedure is suitable for patients with a short upper lip, HUL (lip mobility > 8 mm), and mild to moderate VME. It functions by restricting the action of the smiling muscles (zygomaticus minor, orbicularis oris, levator anguli, and levator labii superioris) through reduction of the maxillary vestibular depth.[4,6] Given its minimally invasive nature compared to orthognathic surgery, LRS presents a conservative and preferred alternative for managing EGD.[7] This article aims to describe the lip repositioning technique to decrease EGD by a simple, less invasive surgical procedure.

2. Case Report

A pleasing smile is a key component of facial aesthetics and psychological well-being. Excessive gingival display (EGD), often referred to as a "gummy smile," occurs when more than 2 mm of gingival tissue is visible during smiling. This condition, although not pathological, can result in aesthetic dissatisfaction and psychosocial discomfort, particularly among female patients who are more frequently affected. The etiology of EGD is multifactorial, ranging from dentoalveolar causes, such as altered passive eruption and short clinical crowns, to skeletal discrepancies, like vertical maxillary excess, and soft tissue factors, including a hyperactive upper lip. Accurate diagnosis is crucial in determining the most appropriate treatment approach, which can range from orthodontic interventions and periodontal surgeries to orthognathic procedures. Lip repositioning surgery (LRS) has emerged as a minimally invasive and effective alternative to orthognathic surgery in managing EGD due to a hyperactive upper lip. This case report presents the clinical application of LRS in a 36-year-old female patient with EGD attributed to upper lip hyperactivity, highlighting surgical technique, outcomes, and postoperative follow-up.

2.1. Clinical Evaluation

A 36-year-old female patient presented with a chief complaint of a "gummy smile" (Figure 1). On extraoral examination, the patient's face appeared bilaterally symmetrical with competent lips. Intraoral examination revealed gingival displays measuring 4 mm at regio 11 and 3 mm at regio 21, classified as excessive gingival display (EGD). Before proceeding to the surgical phase, the patient underwent prophylactic treatment and provided informed consent after receiving an explanation regarding the benefits and risks associated with lip repositioning surgery.

Figure 1. Patient's smile

2.2. Surgical Procedure

Adequate local anesthesia was administered before marking the surgical outline. A surgical marking pencil was used to delineate the outline, ensuring that the distance between the inferior and superior borders was twice the extent of the excessive gingival display (EGD) (Figure 2). The mucogingival junction served as the inferior border and was extended bilaterally to the distal aspects of the canine teeth.

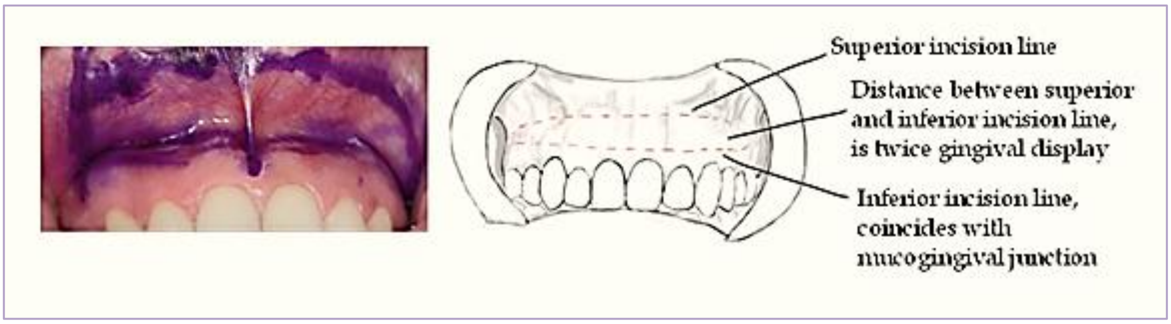

Figure 2. Outline of LRS

After marking the outline, a partial-thickness incision was performed, tracing the previously marked outline, starting from the inferior border and extending upwards to the superior border. Partial-thickness dissection was then conducted to excise the outlined mucosal tissue (Figure 3a). The muscles within the dissected mucosal region were horizontally sutured using a simple interrupted technique with absorbable 5-0 monofilament sutures (Figure 3b). The procedure continued with suturing the frenectomy area and the distal portions of the outline using simple interrupted technique with non-absorbable 4-0 nylon sutures. Continuous interlocking suturing was then performed with non-absorbable 5-0 sutures to stabilize the new mucosal margins (Figure 3c). After surgery, the patient was prescribed antibiotics (amoxicillin 500 mg every 8 hours), analgesics (mefenamic acid 500 mg every 8 hours, as needed), and instructed to apply Gengigel topically twice daily for one week. The patient was also advised to minimize movement and tension on the upper lip, particularly when speaking, smiling, or laughing, for two weeks post-operatively. Sutures were removed during the follow-up visit two weeks after surgery (Figure 3d).

Figure 3. a) Exposed connective tissue after the epithelial excision. b) Horizontally simple interrupted sutures. c) Situation after the sutures. d) Suture removal after two weeks. e) and f) Patient's smile before and after LRS.

3. Discussion

Excessive gingival display (EGD) is defined as the exposure of more than 2 mm of gingiva during smiling, measured from the lower border of the upper lip to the gingival margin of the maxillary incisors. Its prevalence is higher among females compared to males and is often perceived as less aesthetically pleasing, particularly in women. [2,7] The etiology of excessive gingival display (EGD) can be singular or multifactorial, including acquired, hereditary, and skeletal factors. Accurate diagnosis of these etiological factors is essential for selecting appropriate treatment. For simplicity in treatment selection, EGD etiology is classified into five types (Table 1).[2]

Table 1. Classification of execessive gingival display (EGD) based on etiology

EGD(A)	EGD(B)	EGD(C)	EGD(D)	EGD(E)
Altered passive eruption	Bony maxillary excess	Conditions causing gingival enlargement	Deficient maxillary lip length	Excessive mobility of maxillary lip

Source: Bhola et al., 2015

EGD caused by dentoalveolar factors, such as gingival hypertrophy, altered passive eruption, or short tooth crowns, can be managed through aesthetic or restorative treatments and/or periodontal plastic surgeries. On the other hand, EGD due to non-dentoalveolar factors, including vertical maxillary excess, incompetent or short upper lip, or hyperactive upper lip, may be treated with orthognathic surgery, botulinum toxin injections, or lip repositioning surgery.[2,7]

In our patient's case, the primary etiology was identified as a hyperactive upper lip. The patient's facial proportions across the three horizontal thirds were symmetric without any disproportionate enlargement of the inferior third. The crown height-width ratio of the maxillary central incisors was within the accepted range (65%–85%), and the maxillary lateral incisors were approximately 70%.[8] Therefore, lip repositioning surgery (LRS) was selected for this patient.

LRS is a conservative surgical procedure for EGD treatment, dating back to the 1970s, and has undergone various modifications over time. This technique involves limiting smile muscle contraction by removing an elliptical band of mucosa from the buccal vestibule depth, approximately twice the gingival display above the gingival margin of the maxillary teeth, with partial-thickness incisions [(9)]. There is a modified technique in which the maxillary labial frenulum is maintained, and two mucosal strips, one at each side of the frenulum, are removed. Leaving the frenulum intact helps maintain the position of the labial midline, prevents changes in lip symmetry, and decreases the morbidity associated with the procedure, but limits the possibility of correcting EGD in the region of the maxillary central incisors.[8] For this reason, in the present case, not to maintain the frenulum was decided, as we need to correct EGD in the region of the maxillary central incisors.

LRS was effective in treating EGD. On average, a 2.71 mm reduction in EGD can be expected with the procedure up to 3–6 months, indicating acceptable short-term stability. Other conservative approaches, such as botulinum toxin injections, presented similar EGD reductions at 6 months (2.80 mm); however, repeated injections are needed to maintain the desired outcome in a stable state.[7]

Contraindications of this surgery are the presence of an inadequate zone of attached gingiva, which can create difficulties in flap design, stabilization, and suturing. Others are severe vertical maxillary excess and a thin gingival biotype. The presence of a severe vertical maxillary excess establishes the need for orthodontic treatment or an orthognathic surgery, whereas the chances of relapse are higher with a thin gingival biotype. Rare complications have been reported after LRS, including discomfort, bruising, and swelling of the upper lip. Rosenblatt and Simon reported on one patient with a mucocele that resolved without treatment.[7] The true nature of relapse regarding the procedure is challenging to identify, but the muscle memory trying to restore its preoperative activity may partially explain the phenomenon. It seems reasonable to state that some amount of relapse should be expected after the procedure in the long term.[7,9] In the present case, the functional and aesthetic parameters required by the patient were achieved, and she was satisfied with the outcome of the procedure.

4. Conclusion

Lip repositioning surgery is a simple procedure that offers an excellent alternative to other methods with higher morbidity rates. However, it is crucial to make a proper diagnosis to propose the appropriate treatment plan. In a long-term evaluation, other studies will be necessary to assess the stability and effectiveness of this technique.

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6. References

1. Long Han X, Yun SJ, Hui ZV, Etiology-Based HX. Etiology-Based Treatment Strategy for Excessive Gingival Display: Literature Review OPEN ACCESS Citation. Rem Publ LLC, | World J Surg Surg Res [Internet]. 2019;2:1103. Available from: http://surgeryresearchjournal.com
2. Bhola M, Fairbairn P, Kolhatkar S, Chu S, Morris T, de Campos M. LipStaT: The Lip Stabilization Technique— Indications and Guidelines for Case Selection and Classification of Excessive Gingival Display. Int J Periodontics Restorative Dent. 2015;35(4):549–59.
3. Mele M, Felice P, Sharma P, Mazzotti C, Bellone P, Zucchelli G. Esthetic treatment of altered passive eruption. Periodontol 2000. 2018;77(1):65–83. Available from https://doi.org/10.1111/prd.12206
4. Gonzales-Medina K, Mendoza-Geng A, Vergara-Buenaventura A. The Lip Repositioning Surgery: A Review of the Technique's Evolution. Eur J Gen Dent. 2021;10(3):176–82. Available from: http://dx.doi.org/10.1055/s-0041-1736380
5. Felix A, Tomaz G, Cristina L, Marinho N, Rafaela A, Aquino L De, et al. Impact of orthognathic surgery on the treatment of gummy smile : an integrative review. Oral Maxillofac Surg. 2020;
6. Tawfik OK, Peter HEE nahass, Stephen S, Cutler CW, Brunner M. Lip repositioning for the treatment of excess gingival display : A systematic review. J Esthet Restor Dent. 2018;(November):1–12. Available from: https://doi.org/10.1111/jerd.12352

7. Sarfi D, Bouzoubaa SM, Ben Yahya I. Lip repositioning technique. A simple surgical procedure to improve the harmony and symmetry of the smile: A case report. Adv Oral Maxillofac Surg [Internet]. 2022;6(February):100260. Available from: https://doi.org/10.1016/j.adoms.2022.100260
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(4):e408–12. Available from: https://doi.org/10.4317/jced.54721
9. Gomes A, Dds N, Fernando J, Henriques C, Dds SAB pereira. Effectiveness of lip repositioning surgeries in the treatment of excessive gingival display : A systematic review and. 2020;(November):1–12. Available from: https://doi.org/10.1111/jerd.12695

Authors Contribution

Contribution	Satrio LP	Carolina DN	Bawono CA
Concepts or ideas	√		
Design	√		
Definition of intellectual content	√	√	√
Literature search	√		
Experimental studies	√	√	√
Data acquisition	√		
Data analysis	√	√	√
Statistical analysis			
Manuscript preparation	√	√	√
Manuscript editing	√		
Manuscript review	√	√	√

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