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Correction of unaesthetic Gummy Smile

Dr. Guljot Singh[1], Dr. Pragya Ajmera[2], Dr. Jagir Singh[3], Dr. Khushboo Agarwal[4], Dr. Narender Kumar[5], Dr. Shravani Chikhalikar[6].

[1]Professor and Head of the Department, Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
[2]Senior Lecturer, Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
[3]Senior Lecturer, Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
[4]Post Graduate Student (MDS Third Year), Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
[5]Post Graduate Student (MDS Third Year), Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
[6]Post Graduate Student (MDS First Year), Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India.

[*]**Corresponding author:**

Dr. Guljot Singh
Professor and Head of the Department
Department of Periodontics and Oral Implantology, Daswani Dental College and Research Centre, Kota, Rajasthan, India
Email ID : docguljot@gmail.com

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ABSTRACT

Introduction Excessive gingival display commonly refers to “gummy smile” is an aesthetic concern for patient. It is a multifactorial condition in which an overexposure of the maxillary gingiva (>3mm) is present during smiling. Lip repositioning is a simple surgical procedure to treat ‘gummy smile’.

Objective;The report aimed lip repositioning technique to decrease the amount of excessive gingival display in patients with gummy smile.

Methodology: Under LA, an incision is given in the depth of vestibule, borders are marked, a partial thickness flap is raised from left maxillary first molar to the right maxillary first molar at the mucogingival junction. Two incisions were joined and strip of partial thickness flap has been removed exposing the underlying connective tissue. These two incisions were closed using interrupted suture.

ResultsThe repositioning of the lip is more coronal position narrowing the vestibular depth with restricted muscle pull, with competent lips. The excessive gingival display was decreased to 2mm without relapse.

Conclusion; Lip repositioning procedure is an effective way of reducing the EGD. However, long-term stability of the results needs to be seen. None the less, this procedure appears to be a promising alternative treatment option for excessive gingival display.

1. INTRODUCTION

Excessive gingival display (EGD), commonly termed gummy smile, is an aesthetic concern condition characterized by an overexposure of the maxillary gingiva while smiling. It is distinguished by showing more than 3mm of the gingiva. The amount of discrepancy considered unattractive varies between populations; however, an excess of more than 3 mm is agreed upon worldwide. Peck and Peck (1995) have found that Excessive Gingival Display (EGD) also known as “gummy smile” is a common condition with a 2:1 female predilection. The harmony of the smile is determined not only by the shape, the position, and the color of teeth but also by the gingival tissues.

Lip repositioning procedure was first described in 1973 by Rubinstein and Kostianovsky as part of medical plastic surgery. Later on, it was introduced in dentistry, after being modified in 2006 by Rosenblatt and Simon.

It is one of the several developmental or acquired deformities and conditions that manifest in the periodontium. It is an aesthetic concern that can affect a large portion of the population, with a reported prevalence between 10.5% and 29%. The various causes of gummy smile include vertical maxillary excess, anterior dentoalveolar extrusion, altered passive eruption,

short or hyperactive upper lip, or combinations.

EGD may result from a single discrepancy, but is more commonly the result of an interplay of multiple factors. Proper diagnosis of etiological factors is essential to select the right treatment protocol. The etiology of EGD is variable: related to bony maxillary excess, related to conditions causing gingival enlargement, related to deficient maxillary lip length or related to excessive mobility of maxillary lip.

Different techniques have been used to restore the dento-gingival relation for the management of gummy smile. Such techniques include crown lengthening procedures, orthodontic leveling of the gingival margins of maxillary teeth, maxillary teeth intrusion, lip repositioning, orthognathic surgery and nonsurgical procedures like the use of the botulinum toxin. Anterior dentoalveolar extrusion is treated with orthodontic intrusion and vertical maxillary excess is treated with orthognathic surgery. The minor vertical discrepancy, are cost invasive and postoperative morbidity of the procedure cannot always be justified for the outcome achieved.

It is a conservative permanent surgical technique that offers a less invasive approach to EGD. The surgery aims to limit smile muscle pull (zygomaticus minor, levator anguli, orbicularis oris, and levator labii superioris) by reducing the depth of the upper vestibule

Objective

The aim of this article is to describe the lip repositioning technique to decrease gummy smile by a simple surgical procedure.

Case Report

A Female Patient of 21yrs of age with chief complaint of gummy smile reported into the OPD of Department of Periodontology and Oral Implantology in Daswani Dental College and Research Centre. The patient has already undergone orthodontic treatment for proclined teeth a year back. On oral examination the excessive gingival display on both gingival and teeth display during full smile were measured using a periodontal probe and a caliber, the excessive gingival display was more than 4-5 mm.Patient was told about the lip repositioning surgery with cost and the procedure with mighty side effects. The medical history was taken and it was unremarkable, dental history including her oral hygiene habits, other habits and any previous dental treatment besides Orthodontic work were discussed. Extra-oral and intra-oral examinations were prepared. Then periodontal charting was also made followed by requesting any extra radiographs needed.

Before proceeding to the lip repositioning procedure patient was asked for routine blood investigation, complete blood count, HbA1c, Clotting Time, Bleeding Time, and Blood pressure measurement.

All the reports of these investigations were normal and under desired range.

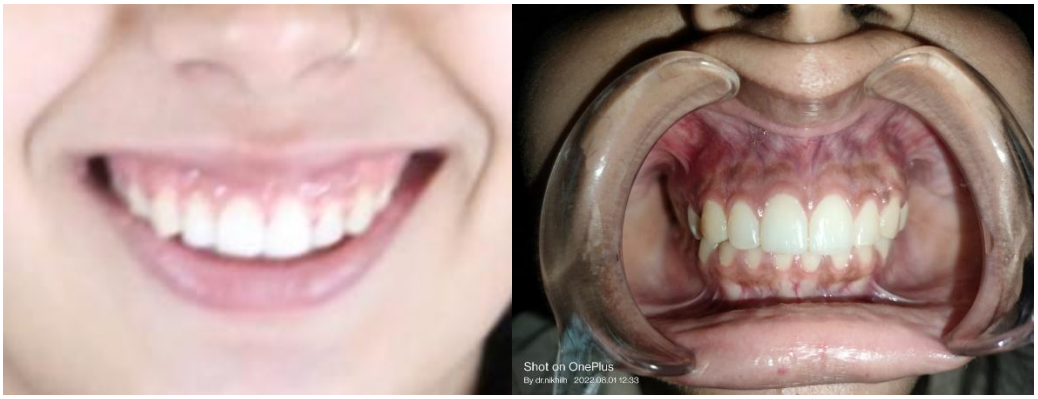
2. METHODOLOGY

First, adequate local anesthesia was achieved. The technique consists of giving an elliptical incision in the depth of the vestibule. A marking pencil was used to outline the borders of the elliptical incision The inferior border of the incision was placed at the mucogingival junction and was extended from the mesial aspect of the first premolars bilaterally a partial thickness flap is raised by the help of scalpel from left maxillary first molar to the right maxillary first molar at the mucogingival junction. Two incisions were joined and strip of partial thickness flap has been removed exposing the underlying connective tissue. These two incisions were closed by using 3-0 non-resorbable interrupted suture.

Post-operative instruction

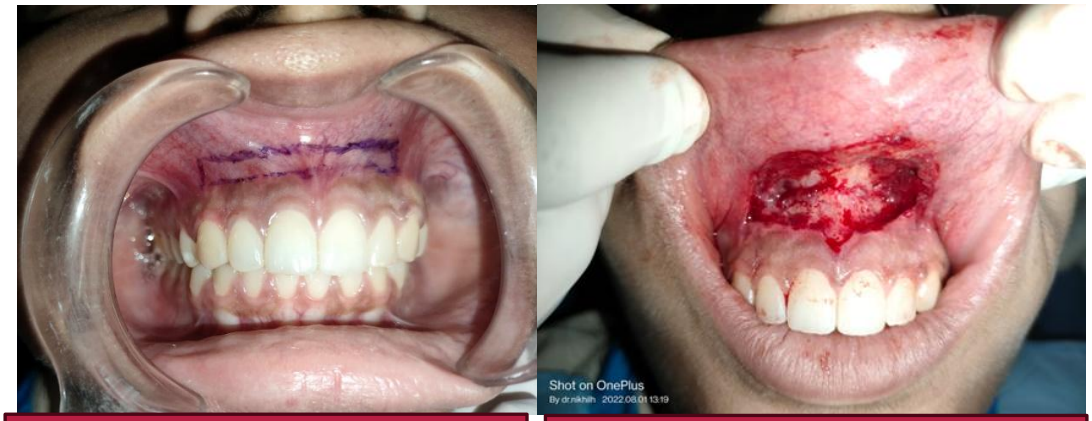
Prescriptions for analgesics (Aceclofenac 100mg + Serratiopeptidase 15mg every 8 hours as needed), antibiotics (Amoxicillin 500mg + Clavulanic acid 125mg) with Proton Pump inhibitors (Pantoprazole 40 mg + domperidone 30 mg) and chlorhexidine gluconate 0.12% (gentle bathing of the surgical area twice daily for 2 weeks) were given. Patient was instructed to apply ice packs at 20-minute intervals for 24 hours and soft diet during the first postoperative week. Oral hygiene can be reinstated after 48 hours. Additional instructions include avoiding any manipulation or mechanical trauma to the surgery and minimizing lip movements when smiling or talking the first 2 weeks postoperatively. Sutures were removed at the 1-week postoperative visit.

Case Reports Pictures



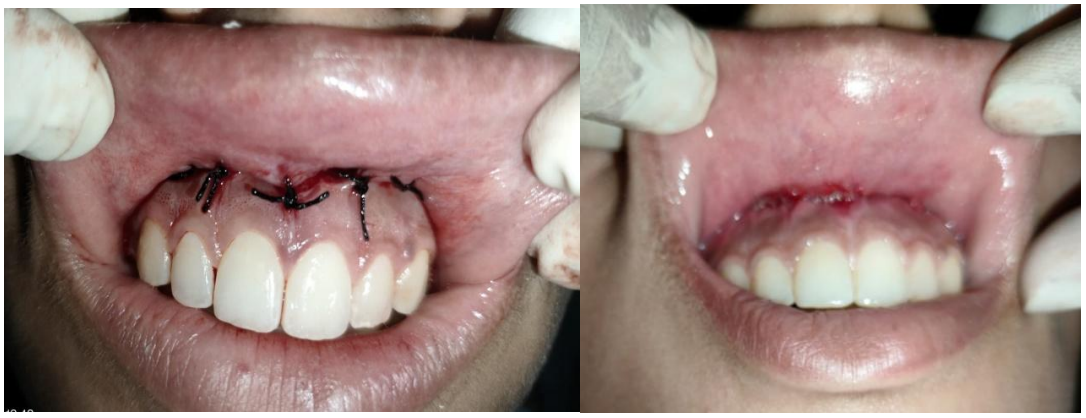
PRE-OPERATIVE

INTRA-ORAL IMAGE



Making done at Vestibule

Exposed Tissue after Debridement



Suture Placed

7 days Post-Operative

6 month Follow up

PRE-OP AND POST-OP FULL IMAGE

3. RESULTS

Gingival display at baseline was 4-5 mm which changed drastically at 6 months postoperatively. The repositioning of the lip is more coronal position narrowing the vestibular depth with restricted muscle pull, with competent lips. The excessive gingival display was decreased to 2mm in first 12 weeks and 1 mm more in later 12 weeks without relapse and patient was satisfied with the aesthetic outcome of the treatment.

4. DISCUSSION

This report aimed to document lip repositioning technique to decrease the amount of gingival display in patients with gummy smile. This technique was designed to be shorter, less aggressive and to have fewer postoperative complications compared to orthognathic surgery. The aetiology of Excessive gingival display is variable. The contraindications for this technique include the presence of a minimal zone of attached gingiva, which can create difficulties in flap design, stabilization and suturing. Another contraindication is several vertical maxillary excesses (VME). Degree II VME has gingival and mucosal display of 4 to 8 mm. In the other hand, in degree III VME more than 8 mm of soft tissue are seen. In both cases, an interdisciplinary approach is required. Humayun et al. (2010) and Bhola et al. (2015). For this patient, the measurements revealed VME degree II since the amount of gingival display ranged between [5–7 mm] according to (Garber and Salama, 1996). The degree of lip mobility was [10–14 mm] which exceeds the normal range of [6–8 mm] according to Peck et al. (1992) and McLaren and Rifkin (2002). On the other hand, lip repositioning is contraindicated with severe VME degree III of [>8 mm] gingival show according to (Bhola et al., 2015) and with a limited amount of KAG or a short vestibule according to (Rosenblatt and Simon, 2006).

If relapse occurs, it can be resolved by either revisiting the surgical site to incise more mucosa as needed or by the use of Botox injections as it was suggested in the following articles Humayun et al. (2010), Bhola et al. (2015), Rosenblatt and Simon (2006), Polo (2008) and Patel (2013).

There are common post-operative complications mentioned such as minor discomfort and some lip movement restriction to swelling, bruising and paraesthesia. Some rare complications are also reported such as mucocele which occurs due to damage to minor salivary glands and it resolves on its own. Also, there can be shift observed in midline of lip while smiling or patient mouth is in rest position.

Despite, various contraindications and the limited availability of the studies focused on the outcome of lip repositioning, the

systematic review published by Tawfik et al. showed that lip repositioning successfully improved EGD by 3.4 mm.

Silva et al. in 2012 reported successful management of excessive gingival display in a study wherein thirteen patients with excessive gingival display were treated with a modified lip repositioning technique. Subjects were satisfied with their smile after surgery and would likely choose to undergo the procedure again (92%).

5. CONCLUSION

Lip repositioning technique is a simple procedure that offers an excellent alternative to other procedures with higher morbidity rates. Lip repositioning procedure is an effective way of reducing the Excessive gingival display. However, long-term stability of the results needs to be seen. However, this procedure appears to be a promising alternative treatment option for excessive gingival display. With patient getting satisfied from the aesthetics outcomes and less painful and cost-effective alternative for orthognathic surgery.

Conflict Of interest

None

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