

# SURGICAL CORRECTION OF GUMMY SMILE BY LIP REPOSITIONING WITH MYOTOMY TECHNIQUE: A CLINICAL REPORT

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## ABSTRACT

*Excessive gingival display can result in compromised esthetics and poor patient appearance. It can be managed by a variety of treatment modalities, depending upon the etiological factor responsible for it. This case report demonstrates the successful management of excessive gingival display with a lip-repositioning procedure with myotomy technique. The surgery was done by removing a strip of mucosa from the maxillary buccal vestibule, and then dissecting the muscle fibre attachment and finally suturing the lip mucosa at the mucogingival line. This technique is an alternative to invasive surgical techniques and it is a useful adjunct to reduce the chances of relapse and improve patient satisfaction.*

**Keywords:** Excessive gingival display, Gummy smile, Lip repositioning, Myotomy.

## INTRODUCTION-

A common growing concern with regard to appearance is excessive gingival display. Most of the patients complain of gummy smile and excessive amount of gingival display during smiling and talking. This leads to dissatisfaction with beauty and physical appearance of an individual. With regard to gummy smile of an individual, lips, teeth and gingiva form a complex in which gingivae is the dominant component. In a sample of over 450 adults, aged 20–30 years, 7% of men and 14% of women were found to have a gummy smile. [1] One important aspect of dentistry is to create ideal esthetics for the patient's perfect smile. Goldstein classified smile line (consisting of the lower edge of the upper lip during smile) according to the degree of exposure of the teeth and gums into three types: High, medium, or low gummy smiles (GSs) ranged from mild, moderate, and advanced, to severe. [2]

Excessive gingival display is associated with many etiological factors which can be Extraoral or intraoral, and these factors must be considered before treatment. Some extraoral causes of a gummy smile can be jaw deformities such as vertical maxillary excess (VME), which require orthognathic surgery. Surgery for the treatment of vertical maxillary excess can restore normal occlusal relationships and reduce gingival display. [3] Delayed eruption and hypermobile upper lip (HUL), or a short upper lip can also be the cause of gummy smile. The average length of the maxillary lip is 20–22 mm in young adult females and 22–24 mm in young adult males. [4] Delayed eruption treated by esthetic crown lengthening is well documented. [5,6] It is imperative, therefore, for the clinician to (1) evaluate the essentials of the patient's smile, and (2) consider the dynamic relationship between the patient's dentition, gingivae, and lips while smiling. [7]

Lip repositioning technique is suggested as an alternative and less invasive treatment approach for excessive gingival display. The objective of lip repositioning is to minimize the gingival display by limiting the retraction of the elevator smile muscles (eg, zygomaticus minor, levator anguli, orbicularis oris, and levator labii superioris.) The technique of lip repositioning procedure was originally described in the plastic surgery literature. [8]

The objective of the present case report is to present a case of surgical correction of excessive gingival display with less invasive and alternative surgical technique of lip repositioning.

## CASE REPORT-

A 27 years old female patient presented with a chief complain of a gummy smile. Patient had non contributory medical history and she was systemically healthy. Clinical examination revealed good periodontal health and moderate amount of attached gingiva. During smile the patients teeth were visible from right maxillary right first molar to maxillary left first molar with 8-9 mm of gingival display [Fig.1]. The maxillary anterior teeth had normal anatomic proportions. Patient was informed and discussed about lip repositioning as a treatment option to correct gummy smile. Written informed consent was obtained from the patient.

## **SURGICAL PROCEDURE-**

Patient underwent oral prophylaxis and was asked to take pre medication- amoxicillin 625mg one hour prior to surgery and asked to rinse with 0.2% chlorhexidine gluconate solution for 1 min. The incision lines were marked with haematoxylin sterile pencil on dried tissue [Fig.2]. Local anesthesia was administered using 2% lidocaine with 1:100,000 epinephrine dilution. Local infiltration was administered in the vestibule mucosa from maxillary right to left first molar.

A partial thickness incision was made along the mucogingival junction connecting the mesial line angles of right and left maxillary first premolars. And a second partial thickness parallel incision was made at the base of the vestibule. The two incisions were connected by giving vertical incisions [Fig.3]. Then partial thickness flap was raised and epithelium was removed completely [Fig.4] with in the outline of incisions and underlying connective tissue was exposed. After that myotomy was performed by dissecting all the muscle fibre attachment present in vestibule underneath the flap [Fig.5].

The two incision lines were then approximated with interrupted sutures using 5-0 silk sutures. The first suture was given at the midline to ensure proper alignment of lip midline with the midline of teeth then remaining suturing was performed to approximate both the flap ends and completed using the same suturing technique. [Fig.6]

Patient was instructed to rinse with 0.2% CHX twice daily for three weeks. Amoxicillin (500mg twice daily for 5 days)and ibuprofen (400mg thrice daily for 3 days) were prescribed after surgery. Patient was also advised to apply intermittent ice pack over the upper lip for next 24 hours to reduce the postoperative swelling and to minimize the lip movement.

Healing was satisfactory and uneventful and patient reported minimal discomfort. Sutures were removed after 14 days. A follow up was done after 1 month post surgery and at the end of 12 months. Follow up examination revealed marked reduction in excessive gingival display. [Fig.7]

## **DISCUSSION**

The case report describes the surgical procedure of lip repositioning for excessive gingival display. Lip repositioning is an effective treatment option to correct gummy smile. The procedure originated first in the literature as a plastic procedure by Rubinstein & Kostianovsky in 1973. Later on variations in lip repositioning have been reported. [9-12]

The original technique of lip repositioning encountered tension during flap closure and patient experienced stretching or pain in upper lip post operatively. It was reported in previous cases that patients experienced post operative discomfort even after suture removal and persistant painin the operated area. [13, 14]

Therefore, this present technique of lip repositioning advocated myotomy as done in previous studies [9-11] in which dissection of muscle fibres attachment was done along with the original technique to allow tension free closure of the flap and suturing. It also reduced post operative patient discomfort and the feeling of stretching over the area.

Various other techniques were also employed to prevent reattachment of the smile muscle by using an alloplastic or autogenous separator. According to this technique the spacer is placed with nasal approach between the elevator muscles of the lip and the anterior nasal spine. [12]

Lip repositioning has also been performed in conjunction with rhinoplasty. [9] This technique is performed via nasal approach which combines both surgical procedures. The indications of this technique include onlyif rhinoplasty is required and patient desires a remedy from excessive gingival display. Lip repositioning technique can also be used to treat patients with excessive gingival display for maxillary complete arch fixed implant-supported prostheses.[15]

The esthetic crown lengthening is also performed to treat excessive gingival display in case of altered passive eruption (APE) of teeth. Usually, it contemplates the use of gingivectomy or apically repositioned flap with or without ostectomy, depending on the type of APE [16]

In contrast to above mentioned procedures, the use of botox injection which contains botulinum toxin represents a fastest, simple and effective method to correct gummy smile. [17] However the results of this non surgical method are transient and inconsistent and it requires 6 months post treatment.

The present technique is a conservative approach that allows the labial frenum to be preserved thus establishing greater tissue stability. [18,19] also it is a feasible alternative approach with consistent clinical outcomes.

Contraindications for this particular surgery are the same as for any periodontal surgery. But before selecting the case clinician should kept in his mind, all the indication for this less invasive approach to treat excessive gingiva display.

Incorporating myotomy with lip repositioning has obvious advantages which include tension free flap closure, decrease post operative pain and discomfort, eliminate the chances of relapse and provides permanent resolution from gummy smile, thus providing satisfactory esthetic outcome.

## CONCLUSION

The use of lip repositioning technique associated with myotomy is an effective and less invasive approach as compared to other surgical procedure to treat gummy smile.

It reduces the chances of relapse and provide long term promising results. However knowledge of various etiological factors and indication of the surgical technique is essential to define the treatment protocol.

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## FIGURES



Figure 1- Pre operative photograph with smile  
Sterile haematoxylin pencil



Figure 2- Incision outline is marked with



Figure 3- Horizontal and vertical incisions



Figure 4- Epithelium is removed



Figure 5- Exposed connective tissue after dissection of muscle fibres



Figure 6- Interrupted sutures placed and mucosa stabilized



Figure 7- Twelve months post operative view