

## DECISION MAKING FOR MANAGEMENT OF EXCESSIVE GINGIVAL DISPLAY & SURGICAL TECHNIQUE OF LIP REPOSITIONING: A CASE REPORT

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### Abstract

In the era of aesthetic dentistry a high smile line is a challenge well known to any aesthetically minded dentist. The exposure of more than three mm of the gum during the smile is known as gingival or gummy smile. This condition is known as excessive gingival display (EGD). EGD can be due to altered passive eruption, Hypermobile upper lip, Short upper lip, Vertical maxillary excess.

Lip repositioning surgery (LRS) is a new aesthetic surgical procedure for managing excessive gingival display. It involves precise resection of maxillary mucosal tissues with suturing of the lip in a more coronal position. With the help of reversible surgical trial patient and doctor can preview final results. Thus LRS turns out to be new conservative approach for managing EGD. This case report presents decision making for management of excessive gingival display and surgical technique of Lip Repositioning Surgery for Management of Excessive Gingival Display.

### Keywords:

Lip Repositioning Surgery,  
Excessive Gingival  
Display, Aesthetic  
Dentistry.

## INTRODUCTION

In the era of aesthetic dentistry, people are not only concern about their teeth but also regarding their smile and appearance. The smile itself and the aesthetics of the smile are influenced by three components teeth, gums and lip. An attractive smile depends on the proper proportion and arrangement of these three elements. Any imbalance in one of these three factors may affect aesthetic appearance of the smile. An estimated 50% of patients show some amount of gingiva above the central incisors when smiling<sup>[1]</sup>. Gingival display of one to three mm during smiling is accepted to be normal. The exposure of more than three mm of the gum during the smile is known as gingival or gummy smile. This condition is known as excessive gingival display (EGD). There are different aetiologies for EGD and the decision making for treatment planning is mentioned in (Table 1)<sup>[2]</sup> and (Fig 1)<sup>[2]</sup> given bellow.

A number of authors have written in detail on the diagnostic approach to this situation, and generally, the diagnoses considered are a hypermobile upper lip, short upper lip, and/or vertical maxillary excess.<sup>[4,5]</sup> In many patients, the aetiology is likely a combination of one or more diagnoses.<sup>[6]</sup>

The case report presented here discusses decision making in treatment planning of EGD and the surgical technique of lip repositioning procedure with fully reversible trial for managing EGD. The patient was given chance to preview the surgical result. Once the patient was fully satisfied with the reversible surgical trial, permanent surgery was performed.

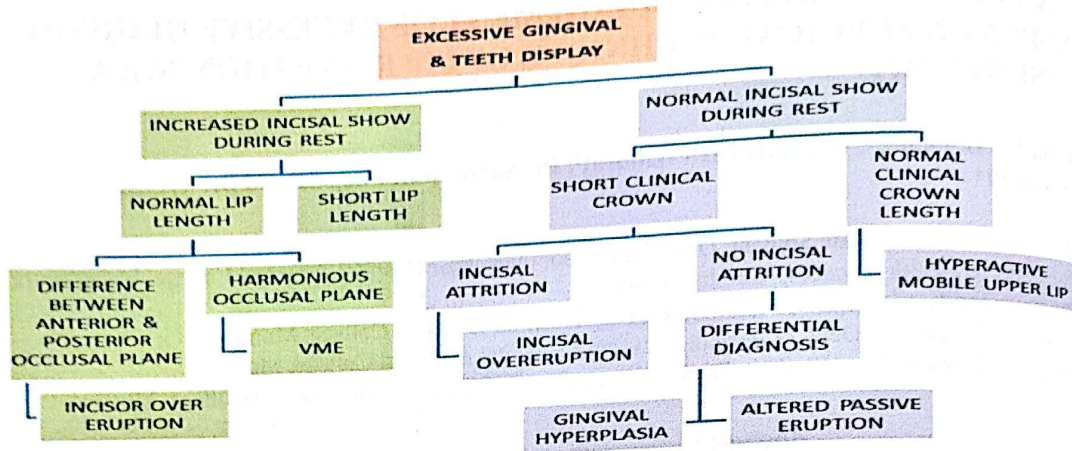


Fig. 1- Diagnosis of aetiology for Excessive Gingival Display

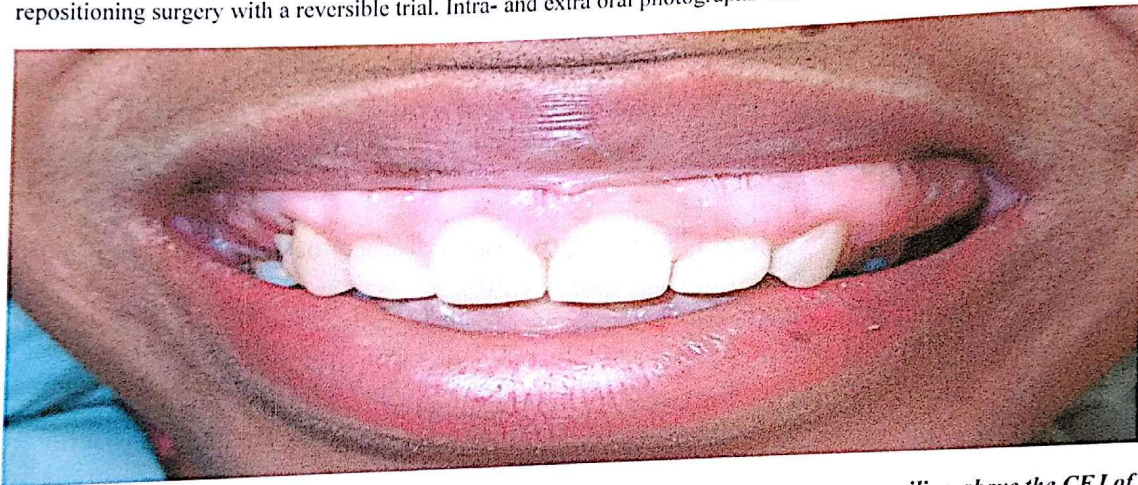
Table- 1 Various aetiologies, diagnosis and treatment for excessive gingival display.

Sr.No	Etiology of EGD	Diagnosis	Treatment
1	Short Lip (measured from the subnasale to the lower border of the upper lip)	Increased gingival exposure during rest, lip length less than 20 to 24 mm in young Adults.	Lip Repositioning Surgery
2	Gingival Enlargement Plaque-/drug-induced gingival Enlargement	Clinical examination H/o of Drug intake Normal incisor exposure at rest, short clinical crown, No attrition,	SRP, Drug substitution, Plaque control  <b>Gingivectomy</b> - less than 6 teeth, sufficient keratinised gingiva, no attachment loss, absence intrabony defect  <b>Flap surgery</b> -more than 6 teeth, less keratinised gingiva, underlying bony defect <sup>[3]</sup>
3	Altered/Delayed passive Eruption	Normal incisor exposure at rest, short clinical crown, No attrition,	Gingivectomy/ crown lengthening, with/without osseous reduction upon trans gingival probing

4	Anterior dentoalveolar extrusion	Tooth wear at the anterior region (compensatory incisor over eruption) or with anterior deep bite. In cases with deep bite, there is usually a discrepancy in the occlusal plane between the anterior and posterior segments	orthodontic intrusion of the involved teeth moving the gingival margin apically, surgical periodontal correction with or without adjunctive restorative therapy, or an interdisciplinary comprehensive treatment plan
5	Vertical maxillary excess (VME)	Increased gingival exposure during rest, Normal lip length, Harmonious occlusal plane, Increased lower facial height on Cephalometric analysis measured between the palatal plane and the incisal edge of the maxillary incisors.	<b>Degree I:-2-4mm EGD</b> Orthodontic intrusion Orthodontics and periodontics. Periodontal and restorative therapy  <b>Degree II:-4 to 8 mm EGD</b> Periodontal and restorative therapy. Orthognathic surgery (Le Fort I osteotomy)  <b>Degree III:-≥ 8 mm EGD,</b> Orthognathic surgery with or without adjunctive periodontal and restorative therapy
6	Hyperactive upper lip	Normal incisor exposure during rest, Normal clinical crown length	Levator myectomy and partial removal technique. implant spacer technique, Botulinum toxoid injection

## CASE REPORT

A female patient, aged 21 was reported to Department of Periodontics, Nair Hospital Dental College, Mumbai on 5th January 2014, with a chief complaint of excessive display of gums upon smiling. Patient had forwardly placed premaxilla with angle's class II malocclusion. Patient had vertical maxillary excess. Patient had five to seven mm of gingival display upon smiling above the CEJ of maxillary anterior teeth. (Fig. 2) Risks, benefits, and treatment alternatives were discussed with patient and written consent was obtained. Patient was agree to undergo the lip repositioning surgery with a reversible trial. Intra- and extra oral photographs were taken for planning and records.

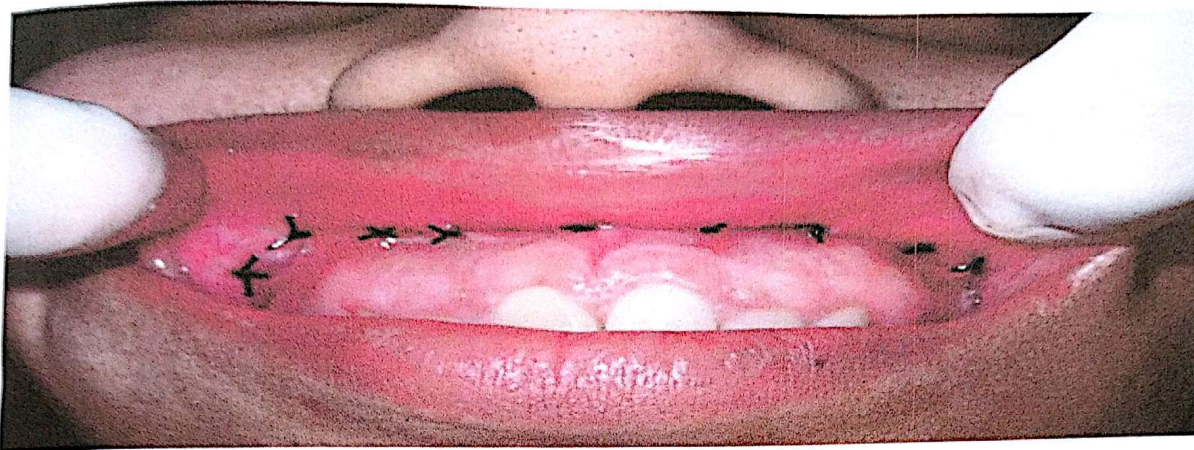


*Fig. 2- Preoperative clinical picture of Patient with 5 to 7 mm of gingival display upon smiling above the CEJ of maxillary anterior teeth.*

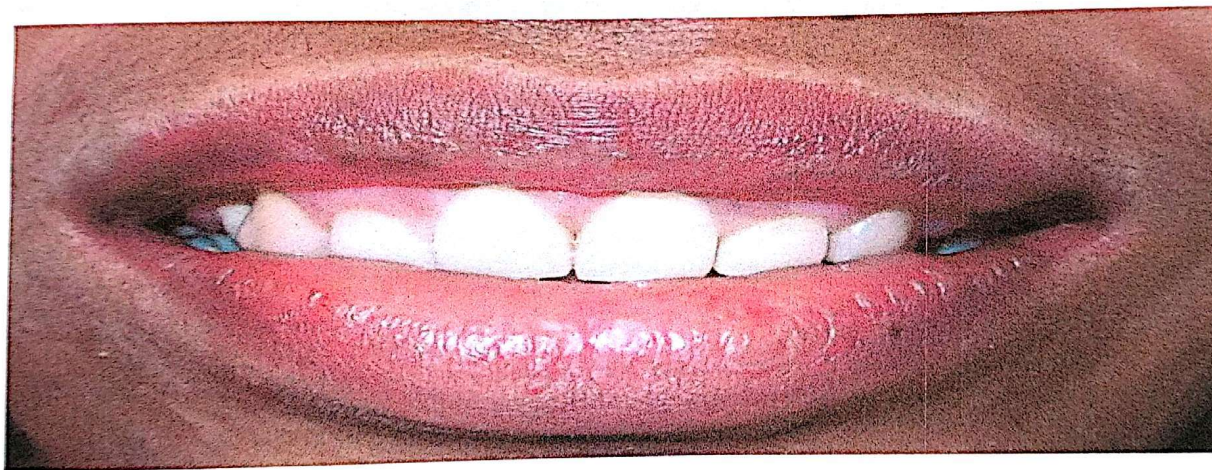
## SURGICAL PROCEDURE

The treatment was planned in the sequence of reversible lip repositioning, patient evaluation and approval, and definitive surgical repositioning. Topical lignocaine jelly was applied for reversible suture trial. For reversible trial superior and inferior borders were marked with bleeding points. The inferior border of this is defined by the mucogingival junction from the mesial aspect of the first molars bilaterally. The superior border is best described as moustache-shaped—slightly inferior in the area of the labial fraenum, cresting in the area of the canine, and tapering toward the posterior.

As a general rule, it has been suggested that the distance between the superior and inferior borders be twice the length of repositioning desired in the smile.<sup>[7]</sup> Nine to ten, 3-0 silk sutures were placed approximately at the labial fraenum, above both canines and premolars, as needed (Fig 3). This allowed the upper border to be drawn down to the mucogingival junction thus inverting and tucking behind the tissue proposed for excision. At this point, photographs were taken and the patient was able to evaluate the potential result (Fig. 4). Patient was given a chance to view the photographs and use a mirror. Patient was allowed to go to the home overnight prior to the definitive surgery.



*Fig. 3- Presurgical Trial with silk sutures placed approximately at the labial fraenum, above both canines and premolars.*



*Fig. 4- Reversible surgical trial showing preview of final lip position in patient.*

Once the patient was satisfied with final lip position via reversible trial, next the temporary sutures were removed. A partial-thickness incision was made first across the superior border, then the inferior, connecting in the posterior bilaterally. The epithelium bounded by these incisions was then removed. (Fig 5a, 5b).