

Lip Repositioning: Beyond the Periodontium, Periodontics – A Case Report.

Dr Himanshu Trivedi¹, Prof N D Gupta², Prof Afshan Bey³,
Dr Vivek Kumar Sharma⁴.

1,2,3,4 (Department of periodontics and public health dentistry, Aligarh muslim university, India)

Abstract:

Objective: A gummy smile or a high smile line may lead to a poor smile which can have impact on patient's appearance and confidence. This case report summarizes the use of surgical lip repositioning technique for the management of a gummy smile.

Clinical considerations: The procedure limits the muscle pull of the elevator muscles of the lip by shortening the vestibule, thus reducing the gingival display when smiling.

Conclusion: Healing was uneventful and follow-up examinations of 6 months revealed reduced gingival display and a better smile line. This technique is a less invasive and conservative alternative for patients who doesn't want an extensive therapy like orthognathic surgery.

Key words: Esthetics, Gummy smile, lip repositioning, Smile line.

I. Introduction

Excess Gingival Display, also known as a 'Gummy Smile', is a condition that affects the altogether appearance of an individual. A gummy smile can also be cause of embarrassment for those afflicted with it, and prevent them smiling to their full potential. Excessive gingival display is a cause of patient dissatisfaction that may occur because of various intraoral and extraoral etiologies¹.

Extraoral causes are vertical maxillary excess in which there is an enlarged vertical dimension of the midface and incompetent lips, hypermobile upper lip, short upper lip, measured from sub nasale to inferior border of upper lip or asymmetric upper lip. The average length of maxillary lip is 20-22 mm in young adult females and 22-24 mm in young adult males². Intraoral causes of EGD include delayed/ passive eruption³ in which the gingivae fail to complete the apical migration over the maxillary teeth to a position that is 1 mm coronal to the cement-enamel junctions, plaque/ drug induced gingival enlargement, disharmony of dental arches⁴, short clinical crown length and dentoalveolar extrusion with concomitant coronal migration of the attachment apparatus, which includes the gingival margins⁴.

It is important that the clinician assesses the essentials of patient's smile and consider the dynamic relationship between the patient's dentition, gingivae and lips at rest and while smiling⁵. Various treatment modalities have been tried till date for the treatment of excess gingival display which includes orthognathic surgeries, myectomies to detach smile muscle attachment^{1,2}, use of separator² and lip repositioning in conjunction with rhinoplasty². The lip line and skeletal condition of patient should be assessed to make a proper treatment plan leading to favourable results.

In patients of gummy smile with delayed eruption restoring the normal dentogingival relationships can be achieved with an esthetic crown lengthening, that is highly effective in treating patients with delayed eruption^{7,8}. The procedure involves shifting the gingival margins apically through soft and hard tissue resection. Orthodontic leveling of the gingival margins of the maxillary teeth may be considered in the situations of gummy smile because of compensatory eruption of the maxillary teeth⁹. Resective surgery is also possible but may expose the narrow root surface and necessitate a restoration at later stage.

In cases of vertical maxillary excess treatment involves orthognathic surgery to restore normal inter-jaw relationships and to reduce the gingival display¹⁰. When the patient smiles, if the upper lip moves in an apical direction and exposes the dentition and excessive gingivae, surgical lip repositioning may be performed to reduce the labial retraction of the elevator smile muscle and minimize the gingival display. This procedure was first described in the plastic surgery literature in 1973¹¹.

II. Case Report

A 24 year old male patient reported with a chief complaint of a excessive display of gums. There was no significant medical or family history and the patient was medically sound and fit for the surgical procedure. On clinical examination extraorally, the face was bilaterally symmetrical with incompetent lips. A severe

gingival display was seen during smiling which extended from the maxillary right second premolar to the maxillary left second premolar [Figure 1].

A diagnosis of moderate vertical maxillary excess with hypermobility of upper lip was made. As the patient preferred a less invasive procedure to treat his complaint, an informed consent was obtained after discussing the alternate treatment modalities, benefits, and possible complications for a lip repositioning procedure. Complete extraoral and intraoral mouth disinfection was carried out, and the surgical site was anesthetized between the first maxillary molars. A partial-thickness incision is made along the mucogingival junction (Figure 2). A second parallel incision is made at the labial mucosa at approximately 10-12 mm distance from the first incision (Figure 3). The two incisions are connected at the mesial line angles of the right maxillary first molar and the left maxillary first molar to create an elliptical outline. The epithelium is removed in the incision outline, leaving the underlying submucosa exposed (Figure 4). Bleeding was controlled by an additional local anesthesia infiltration and the use of electrocoagulation. First, interrupted suture was placed at the midline to ensure proper alignment of the lip midline with the midline of the teeth, then continuous interlocking sutures were used to approximate both flaps (Figure 5). At 10 days post operative, uneventful healing pattern was observed (Figure 6). Follow-up examinations after 6 months revealed reduced gingival display with increase in naso labial angle as seen clinically and in the radiographs (Figure 7,8).



Figure 1



Figure 2

Figure 3

Figure 4



Figure 5

Figure 6

Figure 7



Figure 8

III. Discussion

Unilateral excessive gingival display can deviate the upper lip and does not limit the amount of gingiva when a person smiles which can express concern as a dental procedure. Surgical lip repositioning treatment can be performed to reduce the labial retraction of the elevator smile muscles and minimize excessive gingival display. The procedure was first described in the literature of plastic surgery in 1973 by Rubinstein AM and Kostianovsky¹¹ which was advocated again by Litton and Fournier¹² for correction of excessive gum display in presence of short upper lip.

The objective of surgical lip repositioning is to limit the retraction of the elevator smile muscles (Zygomaticus minor, levator anguli oris, orbicularis oris and levator labii superioris) which creates narrow vestibule and restricted muscle pull and results in reduced gingival display during smiling. which is achieved by removing a strip of mucosa from the maxillary buccal vestibule and creating a partial- thickness flap between the mucogingival junction and the upper lip musculature. The lip mucosa is then sutured to the mucogingival line, resulting in a narrower vestibule and restricted muscle pull, thereby reducing gingival display during smiling.

IV. Conclusion

Surgical lip repositioning is a conservative treatment modality to reduce excessive gingival display. Present case report shows the wonderful outcomes, patient's satisfaction and uneventful healing complimenting the previous orthodontic treatment of the patient. The unique synchronization of two specialities i.e orthodontics and periodontics in this particular case has led to astonishing results and favourable outcomes paving the road for better patient care in future.

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