CASE REPORT

Lip repositioning: an instant confidence booster

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ABSTRACT:

Background: Esthetics or unesthetic engenders an emotion that connects what is pleasant or unpleasant. Three years down the line after passing from my dental school, I joined Department of Periodontology as a postgraduate trainee and I was trained to appreciate the comprehension of esthetic principles through scientific knowledge of normal anatomy, logical evaluation and inter-pretation of clinical results post perio-esthetic surgeries. During the initial year, I was recommended, correction for Excessive Gingival Display (EGD) or ”gummy smile”- that heralds significant esthetic dentistry milestone.

Methods: This procedure was carried out for EGD with incompetent short upper lip. The procedure was accomplished by removal of a partial thickness strip of mucosa of facial vestibule from the maxillary right first molar to left first molar and suturing the lip mucosa to the mucogingival line. Therefore, the vestibular depth significantly reduced from 4.65mm to 3.25mm.

Results: This lip repositioning procedure resulted in a narrower vestibule and restricted muscle pull, thereby resulting in reduced gingival display during smiling. The variations of the treatment are as follows:

1. Vestibular depth reduced from 4.65mm to 3.25mm, and
2. Gingival visibility (Interdentally) reduced from 6mm to 3mm and (Mid-facially) reduced from 4mm to 2mm.

Conclusion: This procedure reduces the visibility of excessive gingival display because of reduction in vestibular depth. My long follow-up will assess the amount of relapse and stability achieved.

Key words: Excessive gingival display, gummy smile, lip repositioning

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Introduction

A smile is an expression denoting pleasure, joy, happiness, or amusement. Smiling is something that is understood by everyone irrespective of one's culture, race, or religion. Smile is a means of communicating emotions throughout the world.

A smile is an important gestural method of communication and is an interaction between the teeth, the lip framework, and the gingival scaffold.[1] One of the most important or distinct features of dental and facial esthetics is the vertical anterior tooth display.[2] Esthetic judgment is made by viewing the patient from the front in dynamic states like conversation, facial expressions, and smiling.[3]

The harmony of the smile is determined by the shape, the position, and the color of teeth and also by the gingival tissues. The gingival margin should be healthy and harmonious and today both patients and dentists are more aware of the impact of the gingiva on the beauty of the smile[4] and particularly the periodontist can influence the appearance of the patient's smile.[1]

The amount of visibility of the periodontium depends on the position of the smile line, which is defined as the relationship between the upper lip and the visibility of gingival tissues and teeth. The smile line is an imaginary line following the lower margin of the upper lip and usually has a convex

appearance.[4] Few publications exist regarding the relationship between teeth and periodontium visibility during the smile.[5,6] Most dental professionals believe that during smiling the upper lip should position itself at the gingival margin of the maxillary central incisors.[7,8] However, it is known that displaying a certain amount of gingiva is esthetically acceptable and in many cases imparts a youthful appearance.[2,9] Common cause of patient dissatisfaction is excessive gingival display. Patients may complain of a “gummy smile” and “short” maxillary anterior teeth.

At least 50% of patients exhibit some form of gingival display in a normal smile.[5] However, exaggerated or forced smile patterns in up to 76% of all patients may exhibit gingiva. In absolute numbers, a normal gingival display between the inferior border of the upper lip and the gingival margin of the anterior central incisors during a “normal” smile is 1-2 mm.[10] In contrast, an excessive gingiva-to-lip distance of 4 mm or more is classified as “unattractive” by lay people and general dentists.[11]

Four possible etiologies of excessive gingival display and the various treatment modalities are as follows:[12] • Delayed eruption as a result the gingiva fails to complete the apical migration over the maxillary teeth to a position that is 1 mm coronal to the cemento-enamel junctions.[13,14] In these patients, restoring the normal dentogingival relationships can be achieved with an esthetic crown lengthening, which is a well-documented treatment modality that is highly effective in treating patients with delayed eruption.[15,16] The procedure involves moving the gingival margins apically through soft and possibly hard tissue resection • Compensatory eruption of the maxillary teeth with concomitant coronal migration of the attachment apparatus, which includes the gingival margins. Orthodontic leveling of the gingival margins of the maxillary teeth may be considered in this situation.[17] Resective surgery is also possible but may expose the narrow root surface and necessitate a restoration • Vertical maxillary excess in which there is an enlarged vertical dimension of the midface and “incompetent” lips. Treatment involves orthognathic surgery to restore normal inter-jaw relationships and to reduce the gingival display,[18] this involves hospitalization and significant side effects for patients • When the patient smiles, if the upper lip moves in an apical direction and exposes the dentition and excessive gingiva, then surgical lip repositioning may be utilized 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 1973[19] and was recently published in the dental literature.[20]

So it is very important to establish the etiology responsible for the excessive gingival display. Lip repositioning is suggested as an additional treatment modality for patients with lip hypermobility exposing undesired gingiva in a smile.[12] This article gives a short review on lip repositioning and a case report of the surgical technique that was used to reduce gingival display.

The objective of lip repositioning is to minimize the gingival display by limiting the retraction of the elevator smile muscles (e.g., zygomaticus minor, levatoranguliorис, orbicularis oris and levator labiisuperioris) 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.[20]

This technique was originally described as cosmetic surgery by Rubinstein and Kostianovsky[19] for correction of a gummy smile caused by a hypermobile lip. This surgical procedure was designed to be shorter, less aggressive, and was thought to have fewer postoperative complications compared to orthognathic surgery. The procedure was advocated again by Litton and Fournier[21] for the correction of excessive gingival display in the presence of a short upper lip. This was accomplished by detaching the muscles from the bony structures to coronally position the upper lip and no complications were reported. After a period of 25 years, two case reports again described this procedure.[12,20] The authors described good results. This technique is also termed as mucosal coronally positioned flap in a recently published case report[22] wherein this technique demonstrates short-term successful use of this technique for the management of excessive gingival display in the presence of slight vertical maxillary excess and hypermobility of the upper lip. First case of lip repositioning done by an Indian dentist was by Gupta et al.[23]

Contraindications of lip repositioning include the presence of a minimal zone of attached gingiva, which can create difficulties in flap design, stabilization and suturing, and severe vertical maxillary excess.[12,20]

Previous reports have shown increased chances of relapse in cases with thin biotypes.[12,20] From a surgical design standpoint, the amount of epithelium to be excised varies considerably. In the first report,[19] although an elliptical-shaped incision was used, the amount of epithelium to be excised was not specified. To achieve optimal results, in one study,[22] the mucosal coronally positioned flap was advanced a distance of two times the gingival display arbitrarily excising 10 to 12 mm,[12,20] and in some instances up to 20 mm[24] of epithelium as described in previous reports.

Postoperative symptoms usually include some mild discomfort for several days and a feeling of “tension” when the patient smiles.[12] The procedure is safe and has minimal side effects like postoperative bruising, discomfort, and swelling of the upper lip.[22]

Variations in surgical lip repositioning have been reported in the medical literature. Several articles[21,24] advocate severing the smile muscle attachment to prevent relapse of the smile muscle into its original position, this may also minimize the flap tension during suturing. Another method to prevent reattachment of the smile muscles is to use an alloplastic or autogenous separator.[25] This spacer is placed with nasal approach between the elevator muscles of the lip and the anterior nasal spine, thus preventing the superior displacement of the repositioned lip. Lip repositioning has also been performed in conjunction with rhinoplasty.[26] There are case reports of lip repositioning combined with depigmentation and crown lengthening,[27] frenectomy and crown lengthening[28] in single visit. Laser has also been used for lip repositioning procedure combined with crown lengthening.[29]

Conclusion

Surgical lip repositioning is an effective procedure to reduce gingival display by positioning the upper lip in a more coronal location. The long-term stability of the results remains to be seen, but it is a promising alternative treatment modality in esthetic rehabilitation.

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