ORIGINAL RESEARCH PAPER

Periodontology

PERIO-ESTHETIC: A SURGICAL APPROACH TO TREAT GUMMY SMILE BY LIP REPOSITIONING WITH GINGIVECTOMY

KEY WORDS: Lip repositioning, Excessive gingival display, Gummy smile

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ABSTRACT

In current era people wants various types of therapies to have a beautiful and attractive personality in our aesthetic-conscious world. A pleasant smile can give supreme confidence to an individual's personality. Our smile is a reflection of our persona and individuality. However, a stunning grin consists of the ideal harmony of pink and white. Depending on the accuracy of the diagnosis, a range of therapeutic techniques can be used to control this imbalance of excessive gingival display (EGD). This case report demonstrates the management of excessive gingival display with lip repositioning procedure along with crown lengthening. Surgical healing was satisfactory with minimal post-operative sequelae and significant reduction in gingival display was observed in 1,2 weeks, 1 month follow-up. This procedure is minimally invasive cost effective technique.

INTRODUCTION :

A brilliant grin may make a person's personality come alive. Our grin is a reflection of our identity and individuality. An attractive smile is largely dependent on the health and appearance of the gums. An unbalanced gingiva-to-tooth ratio produces the "gummy smile," which is a dominating gingival look.

When smiling normally, a proper gingival display should be between the gingival margin of the central incisors and the inferior border of the upper lip, which should be 1-2 mm. On the other hand, it is considered unsightly if there is a gap of 4 mm or more between the excessive gingiva and the lip. Excessive gingival display (EGD), is a common reason why patients are unhappy and can result from a number of intraoral or extraoral etiologies.

The treatment method for correcting a gummy smile depends on the specific etiologic factor involved. In pronounced cases involving excess growth of the maxilla, orthognathic surgery is required. Cases in which the gummy smile is due to gum overgrowth can be more easily corrected via crown lengthening or a gingivectomy procedure where the excess gum is removed to expose the natural length of the teeth.

If the cause of the gummy smile is hypermobility of the upper lip caused by the lip elevator muscles, Botox injections may be used as a temporary solution to the problem. However, as the average gingival display will return to baseline values 6 to 8 months post injection, a more permanent solution is desirable. In cases where multiple factors are involved, different treatment combinations might also be indicated.

The lip repositioning technique is an excellent alternative to more costly procedures with higher morbidity rates. The lip reposition surgery was originally described in the medical literature by Rubenstein and Kostianovsky in 1973. The Lip repositioning surgery originally did not include severing the muscle attachments. Later on, different investigators modified the technique by proposing the detachment of the elevator muscle in cases of a short upper lip, myectomies or partial resection of 1 or 2 levator labii superior muscles, and partial transection of the lip elevator muscles and implantation of an alloplastic or autogenous spacer. All these modifications were made to prevent relapses.

Lip repositioning is recommended as an additional treatment modality for patients with excessive gingival display associated with hypermobile lip. The objective of lip repositioning is to shorten the vestibule and limit the retraction of the lip elevator muscles by removing a strip of mucosa from the maxillary buccal vestibule and attaching the lip mucosa to the mucogingival line, thereby reducing the gingival display at smiling. An accurate diagnosis and careful case selection are critical for the success of any lip repositioning procedure. Contraindications of lip repositioning include severe vertical maxillary excess (> 8 mm) and the presence of a minimal zone of the attached gingiva, which can create difficulties in flap design, stabilization, and suturing. It is crucial that the clinician assesses the key components of the patient's smile and investigates the dynamic relationship between the patient's teeth, gingivae, and lips when the patient smiles.

Case Report:

A healthy 24 year male presented with a chief complaint of gummy smile. He had undergone fixed orthodontic treatment for 2.5 years. Main objective of our treatment is to correct his excessive gingival display. A through intraoral and extraoral examinations was done. On examination, patient had an excessive gingival display extending from maxillary right 2nd premolar maxillary left 2nd premolar with short clinical crowns. Lip repositioning surgery with crown lengthening was planned. There was no medical and family history and patient was fit for the surgical procedure. Informed consent was taken before the surgical procedure. First lip repositioning was planned and then crown lengthening was planned.

Complete extraoral and intraoral mouth disinfection was carried out with 2% Betadine, followed by infiltration of local anesthesia (2% lignocaine hydrochloride) in the vestibular mucosa and lip extending from right 2nd premolar to left 2nd premolar. For lip repositioning, the surgical area was marked from the mucogingival junction and extended 10 mm in the vestibule. Incisions were made in the surgical area and both superior and inferior partial thickness flaps were raised from maxillary left central incisor to maxillary left second premolar. Leaving the frenulum intact helps maintain the position of the labial midline, prevent changes in lip symmetry.The incisions were then connected with each other on the distal end in an elliptical outline. The epithelium was then removed within the outline of the incision, leaving the underlying connective tissue exposed. Care was taken to avoid damaging minor salivary glands in the submucosa. The parallel incision lines were approximated with interrupted stabilization sutures at the midline. Continuous inter-locking non-resorbable sutures (silk 4-0) were used to approximate both flaps. The patient was followed up after 1 week, 2 week, 3 week and 1 month.

After surgery non-steroidal anti-inflammatory medicines (Ibuprofen 400 mg three times per day for three days) given. Application of an ice pack after surgery is advised in order to prevent swelling. Patient is advised to reduce lip movements while speaking and smiling. With just little ecchymosis and pain, post-operative recovery took place. Following surgery, the patient had discomfort for a week when smiling.

Two weeks later, the sutures were removed. Because it was hidden by the upper lip mucosa, the sutures line healed as a scar that was not visible when the patients smiled. Two weeks later, the patient's excessive gingival display had decreased.

After 1 month (stage-2) crown lengthening by gingivectomy was planned and Local anesthesia was given via local infiltration with 2% lignocaine with 1:100,000 epinephrine. After that probing depth is measured by inserting UNC-15 probe into gingival sulcus. Acrylic stent was used as a guide. Bleeding points were marked and according to that external bevel incision and crevicular and interdental incision was given to increase the size of the teeth.

Gingivoplasty was done to make a knife edge margin. Biologic width was maintained . periodontal pack was given for 5 days. And after that post operative instructions were given. Advised ice application on same day to prevent swelling. Patient is recalled after 7 days for follow up. Patient was not having any post-operative complaints. He was satisfied with his smile. Patient kept on follow up for 14,30 days .

DISCUSSION :

The surgical design used in the present case was described in 2010 and involved removing an elliptical band of epithelium whose width was twice that of the gingival display.

This case presentation describes the treatment of a young male patient with an Excessive gingival display, vertical maxillary excess, and a hyperactive upper lip. During maximum smiling, the patient had a 10-mm excessive gingival display. The first treatment plan proposed to the patient was orthognathic surgery and gingivectomy.

The patient refused orthognathic surgery because the morbidity and potential complication rate associated with orthognathic surgery were not acceptable to his for an elective cosmetic treatment. Therefore, an alternative treatment was proposed: Lip repositioning surgery and gingivectomy, procedures with low morbidity and good acceptance by patients.

The outcome was successful, with a decrease of excessive gingival display from 10 to 2-3 mm in the region of the left and right central incisors, from 9 to 1.5 mm in the right canine region, from 7 to 1.5 mm in the left canine region, at 3-month follow-up. Patient was very satisfied with his smile.

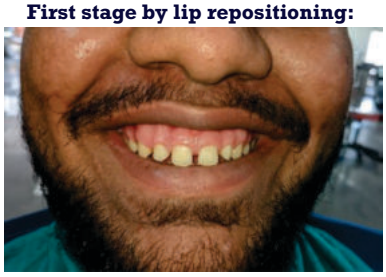
The modified lip repositioning surgery is considered safer, with low morbidity and designed to have fewer complications compared with muscle dissection and repositioning as well as orthognathic surgery. However, complications from lip repositioning surgery can still occur and include discomfort, ecchymosis, swelling of the upper lip, relapse, and an asymmetric smile.

In the present case, as there was adequate gingiva but crown length was inadequate, Hence crown lengthening was also performed.

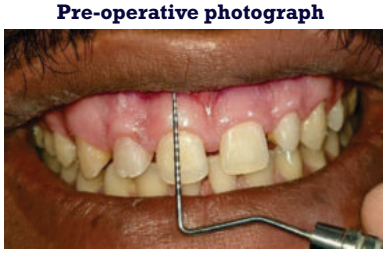
CONCLUSION:

Lip repositioning is an innovative and effective way to improve the gummy smile of the patient. This technique is an easy, least invasive and cost-effective technique to produce a satisfactory result for the patient.

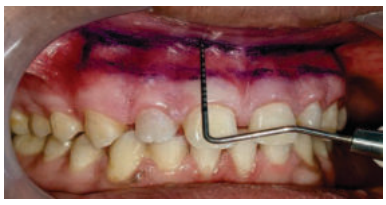
First stage by lip repositioning:



Pre-operative photograph

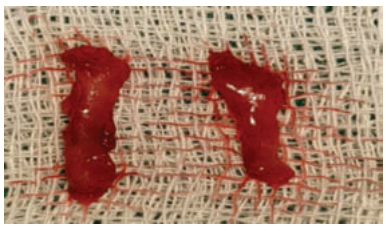


Width of attached gingiva is 5-6 mm

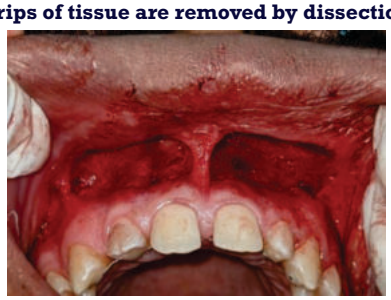


2 lines were marked by indelible pencil

Incision is given by 15 c blade

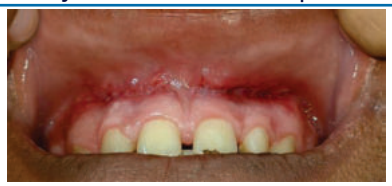


Strips of tissue are removed by dissection

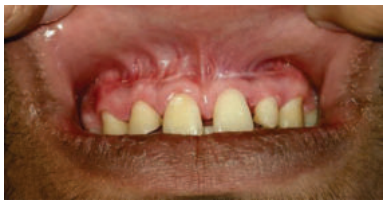


After removal of strips from incision line

Continuous interlocking suture



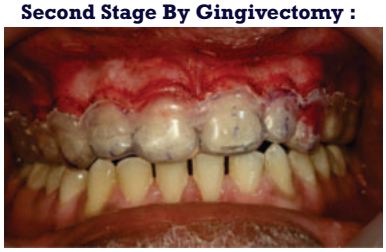
After 10 days Post operative



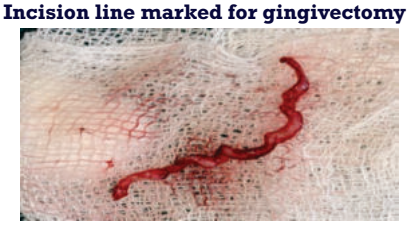
After 1 month follow up

Post operative smile line

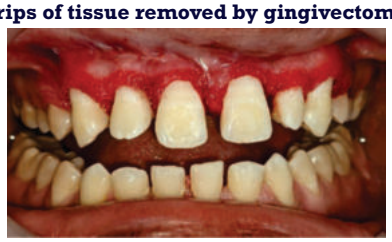
Second Stage By Gingivectomy :



Incision line marked for gingivectomy

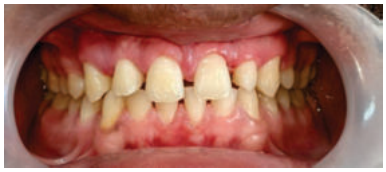


Strips of tissue removed by gingivectomy

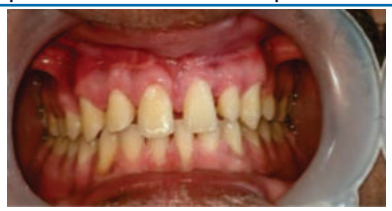


Immediate post operative

Periodontal pack is given



Post operative after 1 month



Post operative after 3 months

Pre-operative:

Post-operative:

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