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Case Report

Lip Repositioning Technique: Emergence of esthetic Era in periodontics- A Case Report

Dr. PranavPatil[1], Dr. M. L. Bhongade[2], Dr. PreetiCharde[3]
[1]P.G. Student,[2]Prof. and Head, [3]Ass.Prof.
Department of Periodontology &Implantology, SharadPawar Dental College and Hospital,Sawangi (M), Wardha, Maharashtra – 442005(INDIA)

***Corresponding author**
Dr. Pranav S Patil
Email:pranavpatil87@gmail.com

Abstract:A smile conveys a friendly nature, and reflects happiness and confidence. A smile is an important non-verbal method of communication and is an interaction between the teeth, the lip framework, and the gingival scaffold. Now a days Lip repositioning surgery is a known treatment modality for excessive gingival display. It involves precise resection of maxillary mucosal tissues with reattachment of the lip in a more coronal position. Gummy smile, secondary to altered passive eruption and tooth mal-positioning, can be predictably treated with Surgery and orthodontic therapy. This procedure is safe and predictable with minimal risk or side effects. These case reports demonstrate the emergence of lip esthetic era in periodontics.
Keywords: Gummy smile, Upper lip, levatorlabiisuperioris muscle, esthetic

INTRODUCTION

In the western world, a medium smile line with minimal gingival display (GD) is considered to be the most pleasing. When an excessive amount of gingiva is visible while smiling, this condition is commonly referred to as a ‘‘gummy smile’’ and it is found frequently in the general population. In a sample of over 450 adults, aged 20 to 30 years, 7% of men and 14% of women were found to have a gummy smile [1]. Excessive gingival display is associated with different etiologies, which must be identified before treatment. It is imperative, therefore, for the clinician to evaluate the essentials of the patient’s smile, and consider the dynamic relationship between the patient’s dentition, gingiva, and lips while smiling [2, 3]. A number of patients who exhibit Excessive gingival display (EGD) and have short clinical crown heights may be managed with anterior gingivectomy or crown lengthening only. These are individuals where the sole etiology is due to altered eruption—passive or active.

Excessive gingival display (EGD), which is commonly described as ‘gummy smile’ adversely affects smile aesthetics and therefore undesirable. 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 [4, 5].

In cases of vertical maxillary excess there is an enlarged vertical dimension of the cranial midface and results in “incompetent” lips and excessive gingival display. Orthognathic surgery is the treatment of choice to restore normal inter-jaw relationships and to reduce the gingival display [6]. This involves hospitalization and significant side effects for patients.

Delayed Passive Eruption, it’s another cause of excessive gingival display and its treatment by esthetic crown lengthening is well documented [7, 8]. Soft and hard tissue resection is an effective method to restore normal tooth dimensions and dentogingival relationships. In delayed eruption, the gingiva fails to complete the apical migration over the maxillary teeth to a position that is 1mm coronal to the cementoenamel junctions [9, 10]. In these cases, esthetic crown lengthening is the recommended-well documented treatment procedure to restore the normal dento-gingival relationships [11, 12]. The procedure involves moving the gingival margins apically through soft and possibly hard tissue resection.

Compensatory Eruption, Usually seen due to attrition 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 [13]. Respective surgery is

also possible but may expose the narrow root surface and necessitate a restoration.

Hypermobile Upper Lip (HUL) or Short Upper Lip, Excessive GD can also be seen in patients with a short upper lip (measured from the subnasale to the inferior border of the upper lip). The average length of the maxillary lip is 20 to 22 mm in young adult females and 22 to 24 mm in young adult males [14]. Hypermobility of the upper lip is caused by hyper function of the lip elevator muscles and often results in excessive GD [15]. HUL is considered the primary etiologic factor in excessive GD when the maxillary lip length is within a normal range and the lower third of the face is proportionate to the remaining thirds.

Treatment for most extra oral or intraoral causes of gummy smile, with the exception of a short or hypermobile lip has been well documented [16-20]. A handful of authors have discussed the surgical correction of HUL, or a short upper lip [21-23]. Most of these surgical techniques aim at reducing GD by re-establishing the depth of the vestibule. The earliest report describes a surgical procedure aimed at limiting the activity of the elevator muscles, and was recommended to be performed in the absence of dental alveolar abnormality [23]. Other authors recommended partial resection of the levatorlabiisuperioris muscle [22].

CASE REPORT

A 26-year-old female patient reported to the dept of periodontology and implantology at sharadpawar dental college and hospital (Wardha) with a chief complaint that she hated her smile because of excessive gingival appearance during smile, and undergoing orthodontic treatment, on intra-oral examination periodontal status was healthy, and having the adequate vestibular depth and a sufficient amount of attach gingiva. On extra-oral examination face was bilaterally symmetrical and having incompetent lips. Intra-orally, gingival display was 10mm during smiling and it was extended from premolar to premolar area. So the treatment plan was advised to the patient was lip repositioning surgery to minimize the excessive gingival display.

Surgical procedure:

Local anesthesia (2% lidocaine, epinephrine 1:100,000) was administered in the vestibular mucosa and lip from maxillary right to left first molar. A partial-thickness incision was made at the mucogingival junction from the mesial line angle of the right first molar to the mesial line angle of the left first molar. A second partial- thickness incision, parallel to the first, was made in the labial mucosa, 10 to 12 mm apical to the mucogingival junction. The incisions were connected at each first molar, creating an elliptical outline. The epithelium was removed within the outline of the incisions, leaving the underlying connective tissue exposed. Care was taken to avoid damage to any minor salivary glands in the submucosa. The parallel incision lines were approximated with interrupted stabilization sutures at the midline and other locations along the borders of the incision to ensure proper alignment of the lip midline with the midline of the teeth. Then, a continuous interlocking suture was used to approximate both flap ends.

Post-operative care:

After surgery, a non-steroidal anti-inflammatory, IBUGESIC- Ibuprofen + Paracetamol, and antibiotic coverage consisting of Amoxicillin 500 mg three times a day were prescribed for 5 days. Patients were instructed not to brush the teeth in the treated area. All patients were placed on 0.12% chlorhexidinegluconate (Hexidine – ICPA) twice daily, for one minute, for one weeks. They were instructed not to disturb the pack and to avoid undue trauma to the treated site.

One week following surgery, periodontal pack and sutures were removed. At this time the healing was observed and a second periodontal pack was placed, if necessary. After irrigation with saline, polishing was done with the help of polishing paste and rubber-cup, taking care that it did not traumatized the treated site. Patients were instructed to clean the treated site with cotton pellet saturated with 0.12% chlorhexidinegluconate for additional 4-5 weeks in an apico-coronal direction. No mechanical oral hygiene procedures or chewing was allowed for 6 weeks in the treated area. After this period, patients were reinstructed to resume mechanical oral hygiene measures, including careful brushing with soft toothbrush, interdental cleaning with an interdental brush and to discontinue chlorhexidine.

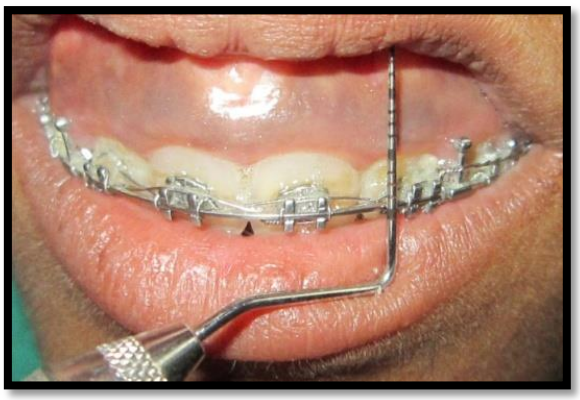

Fig 1: Pre- clinical view

Fig 2: Incision and reflection

Fig 3: Excised tissue

Fig 4: Sutures given

Fig5: Post-operative measurement after 6 months

RESULTS

Gingival display at baseline was 12mm which changed drastically at 3 and 6 months postoperatively. At 3 month and at 6 months gingival display was 2 mm. There was no difference in gingival display between 3 and 6 months. However, the lip reverted back to its original position with almost complete relapse after 1 year

DISCUSSION:

This clinical report describes the use of lip repositioning for the reduction of excessive gingival display. The procedure originated as a plastic surgical treatment but has rarely been described in the dental literature. The original techniquedid not include severing of the muscle attachment after flap reflection. Other authors advocated performing myectomies to detach the smile muscle attachment. The rationale for using myectomies was to allow for tension-free suturing and to prevent relapse.

Another method to prevent reattachment of the smile muscles is to use an alloplastic or autogenous separator. This spacer is placed with a nasal approach between the elevator muscles of the lip and the anterior nasal spine and thus prevents superior displacement of the repositioned lip. Lip repositioning has also been performed in conjunction with rhinoplasty.The nasal approach allows both surgical procedures to be combined; the surgical site is extended only minimally. This should be done only if rhinoplasty is to be performedandif the patient desires a remedy for excessive gingival display. Using a nonsurgical approach, Polo reported successful temporary management of patients with a hyper functional upper lip using botulinum toxin type A [24]. Thirty patients with EGD were injected, with effects projected to last up to 32 weeks. He recommended only treating patients with > 4 mm of gingival display, based on patients' reported postoperative satisfaction with the new lip level. Contraindications for lip repositioning surgery include inadequate width of attached gingiva in maxillary anterior sextent. Insufficient amount of tissue poses difficulty in flap reflection, stabilization and suturing. Patients with severe vertical maxillary excess cases are also not the ideal candidates for lip repositioning and should be treated with orthognathic surgery. Drawbacks of this procedure are initially discomfort and pain while biting, smiling, and speaking. Also the formation of the mucocele due to the resection of the minor salivary glands in the upper lip. If the sutures are not given proper there might be chances of pus formation in upper area region. For patients and dental professionals who desire a more conservative technique, surgical lip repositioning is a viable alternative. In technique selection, the procedure shown in this case report could be the first choice because it is less invasive and presents good stability during the 6-month follow-up but relapse seen in 1 year of follow-up.

CONCLUSION:

This case report described the successful management of gummy smile. The treatment results in reduced gingival display and an esthetically pleasing smile. Lip repositioning surgery is a promising technique to improve esthetics in the maxillary anterior sextant via a minimally invasive, less time consuming, and simple procedure. Therefore, lip repositioning technique may prove to be a valuable asset for periodontal surgeon to treat patients with esthetic concern.

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