

Lip Repositioning Surgery for the Reduction of Excessive Gingival Display: A Case Series

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ABSTRACT

Objective: The objective of this case series was to examine the outcome of lip repositioning surgery for correction of excessive gingival display.

Methods: Ten patients presented to our clinic complaining of gummy-smile, there was no skeletal component related to the etiology of the complaint. The patients were treated by a surgical procedure for repositioning of upper lip. The procedure was done by one surgeon and the technique involved excising a strip of mucosa from maxillary buccal vestibule followed by coronal repositioning of the mucosal edges. The patients were recalled at 6, 12 and 18 months and the gingival display was measured and compared to baseline reading, and then the patient completed a form to evaluate their satisfaction with the result.

Results: At the final recall, three patients were satisfied with the result, one patient was indecisive, and three patients were unsatisfied. The other three patients did not show up for examination.

Conclusion: lip repositioning surgery can reduce gummy smile without postoperative complications. Long term satisfaction with the result needs further investigation.

Keywords: Excessive gingival display, Gummy smile, lips repositioning.

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Introduction

Excessive gingival display (EGD) is a condition where the amount of gingiva that showed on smiling is excessive and it is commonly known as Gummy smile.⁽¹⁾ It is considered as an esthetic problem that affects patients' confidence and their interaction with their society.⁽²⁾ This gingival exposure is variable and was more dominant in females 14% while reported in 7% percent of males.⁽³⁾ When gingival exposure reaches 4mm or more it is regarded as esthetically unacceptable;⁽³⁾ However, the most attractive smile was reported to be associated with 2 to 4 mm gingival exposure.⁽⁴⁾

There are many etiologies contributing to this complaint that could be acquired, hereditary or skeletal in nature or it can be classified as extra or intra-oral causes^(6,7)

There are many treatment options to consider as crown lengthening, lip repositioning, orthodontic leveling and/or intrusion of maxillary teeth, Le Fort I procedure for three-dimensional repositioning of the dentoalveolar complex and injection of botulinumtoxin A.⁽⁸⁻¹²⁾

Methods

In this caseseries 10 female patients presented to periodontal clinic in prince Rashid military hospital in Irbid with the chief complaints of "Gummy smile". The age range was 22-28 years with no significant medical history and there was no contraindication for surgical treatment. This case series was approved by the ethical committee of the Jordanian Royal Medical Services

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Diagnosis

On Extraoral examination, the measurement of upper lip length from the subnasale to the inferior border of the lip found to be within the normal range for females (20.46 – 21.57).⁽¹³⁾ Intraorally the gingival exposure was measured from mid-facial free gingival margin to lower border of upper lip and recorded on patients' charts, all patients showed a gingival display range of 6 – 8 mm with adequate attached gingiva. After discussing the benefits and possible complications with patients consent formed was obtained.

Surgical protocol:

One surgical protocol was carried on by the same surgeon for all patients. Each patient rinsed with 0.2% chlorhexidine mouthwash for one minute, the gingiva and vestibular mucosa were dried with gauze. A marking pencil was used to outline the incisions area on dried tissues that extended from the distal line angle of the upper right second premolar to its counterpart on the upper left side followed by administration of local anesthetic (Xylocaine 2% with epinephrine 1:100.000) in the vestibular mucosa.

A partial- thickness incision was made at the mucogingival junction extending from distal line angle of the maxillary right second premolar to the distal line angle of maxillary left second premolar. Followed by a second partial- thickness incision which was made 12mm apical to the mucogingival junction and parallel to first incision and connected at distal line angle of the second premolar with the first incision in a way creating elliptical outline.

The underlying connective tissues were exposed by excising epithelial strip then examined to ensure no damaged minor salivary gland or epithelial tags. The incisions lines were approximated starting by one interrupted suture to ensure proper alignment of lip midline followed by a continuous interlocking suture to approximate both flaps with Vicryl 4.0. (Figure1).

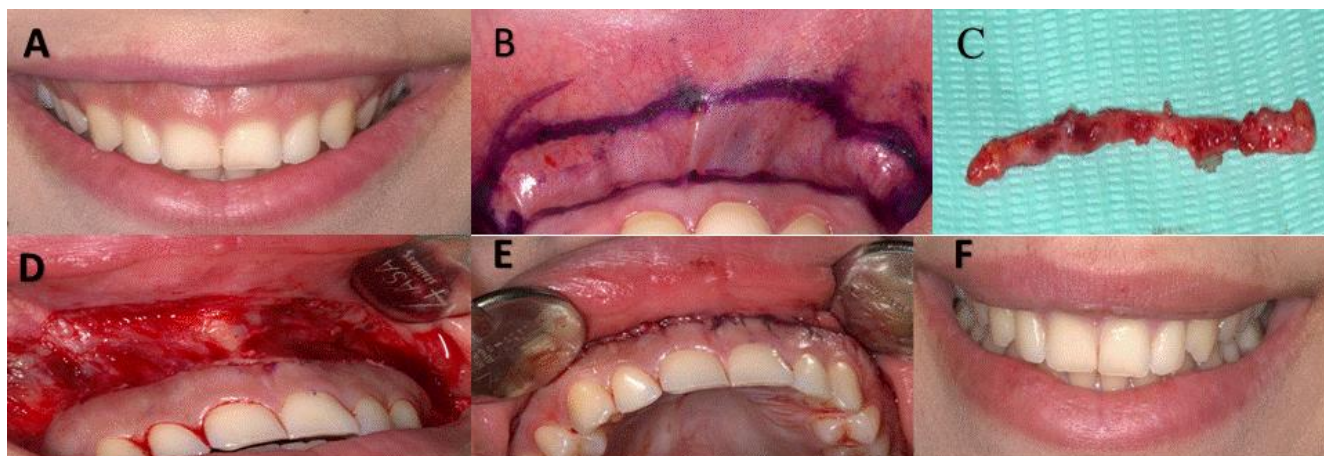


Fig 1: A) Preoperative smile.
B) Retracted view showing incision outline.
C) The excised soft tissue strip.
D) Exposed submucosa.
E) Continuous interlocking suturing.
F) Postoperative smile.

A prescription of non-steroidal anti-inflammatory ibuprofen 400mg two times daily for 48 hours was given to the patients with written instructions for the application of ice packs at 20 minutes intervals for 24 hours and to minimize lip movement when smiling and talking for one week postoperatively.

Follow up:

All patients were re-called every six months until the final examination. At the final recall (18 months postoperatively) three patients didn't show up, a new set of frontal and lateral photos were taken, and the amount of gingival display was measured for comparison with baseline reading for every patient. Patients answered a question regarding their satisfaction with the result by marking one of the following as an answer: satisfied, indecisive or unsatisfied. (Table I).

Table I: Patients response to the result satisfaction questionnaire

Follow up	Satisfied	Indecisive	Unsatisfied
6 Months	10	0	0
12 Months	8	1	1

Discussion

Patients showing excessive gingival display can be treated using different modalities, In order to plan the treatment, a correct diagnosis should be established first and it has to be based on identification of the etiological factors as well as understanding of normal eruption, gingival architecture, maxillary development and the craniofacial morphologic feature in the patients and facial esthetics.⁽¹⁴⁻¹⁶⁾ This case series describes the use of lip repositioning for the reduction of excessive gingival display in patients with no skeletal component related to this gingival display.

The procedure has been originated as a plastic surgical procedure but now it is reported in dental literature as an easy and less time-consuming cost-effective way for correction of excessive gingival display.⁽¹⁷⁻¹⁹⁾ This procedure minimizes gingival display by placing the upper lip in a more coronal position.

Conclusion

Lip repositioning is simple, less invasive surgical procedure that can be considered when planning the treatment of excessive gingival display; it is also a versatile technique that can be used along with prosthetic, orthodontic and restorative modalities.

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