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Using selective lip repositioning surgery to correct gummy smile and improve facial asymmetry

KEYWORDS
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Aesthetics of smiles are constructed by the teeth, gums, and lips. It's commonly believed that an attractive smile occurs when the upper lip aligns with the gingival line, or a small amount of gum is slightly visible. If more than 4 mm of gum is exposed while smiling, it is typically considered unattractive. This condition is referred to as an excessive gingival display (EGD), or commonly known as a "gummy smile."[1] EGD is a clinical finding with various etiologies, categorized into skeletal, dental & soft tissue factors. Regarding skeletal factors, besides vertical maxillary excess, skeletal asymmetry/canting is the other factor for EGD. In the case of skeletal factors, orthognathic surgery (OGS) is often required.[2] Although now the OGS procedure can provide faster healing times and more stable results,[3] it still requires hospitalization, and postoperative complications can be significant. Lip repositioning surgery (LRS) is less traumatic but effective in treating EGD,[4] which is an alternative way to OGS.

Here, we presented a case using LRS combined with an esthetic crown lengthening procedure to successfully reduce EGD and improve smile aesthetics without the need of OGS. This 24-year-old female patient with EGD was under orthodontic treatment. Clinical examination revealed 5 mm of EGD when maximum smile. The skeletal canting, hypermobile upper lip and altered passive eruption also exaggerate the asymmetry (Fig. 1A, B). Because of the shallow overbite, orthodontic intrusion of upper anterior teeth was not suitable for her and she didn't accept OGS for correcting skeletal asymmetry, we performed the LRS with an esthetic crown lengthening to correct the EGD. On operation day, after administering local anesthesia, a 1–2 mm submarginal incision was made to expose the cementoenamel junction (Fig. 1C). The coronal incision then followed a rectangular outline at the mucogingival junction, extending from the labial frenum to the distal aspect of the upper canine. By the "twice the amount of gingival display rule", the apical incision was placed 5mm at right side and 7 mm at left side apical to the coronal incision parallelly and connected by two vertical incisions (Fig. 1D, E). The selective incision height was designed to camouflage the curved facial midline. A partial-thickness dissection was performed by removing the mucosal tissue strip, exposing the underlying connective tissue. The mucosa was sutured to the mucogingival junction using 5-0 Vicryl sutures (Fig. 1F). The sutures were removed at the two-week follow-up. The healing of wounds was uneventful, and the patient was satisfied with the results (Fig. 1G, H).

When a patient presents EGD, it's essential to first distinguish the etiology. The condition may be due to one single factor or combination of multiple factors.[5] With an accurate diagnosis, an appropriate treatment plan can be formulated for the patient. The LRS is relatively quick, less invasive, but has fewer postoperative complications compared to OGS. This technique is usually suitable for cases involving minor vertical maxillary excess with

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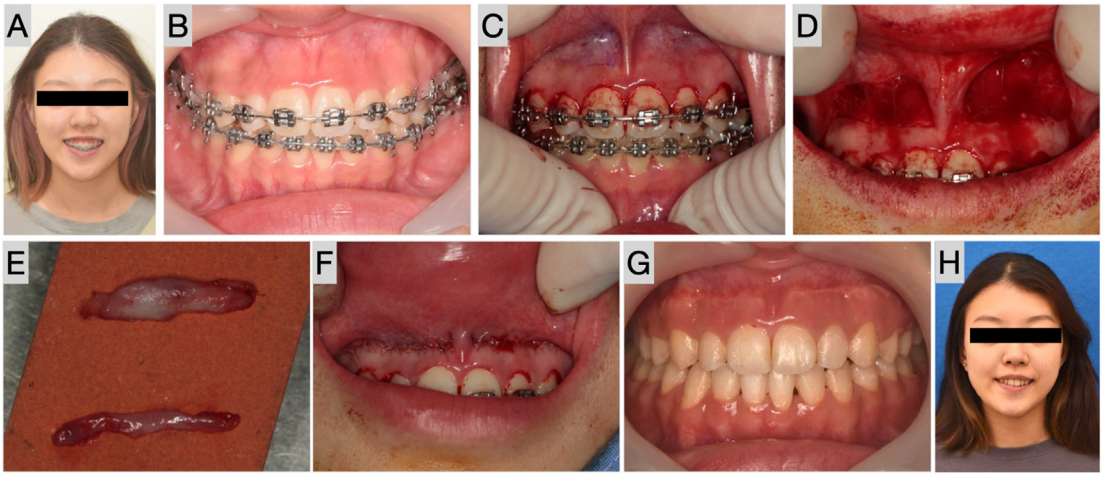

Figure 1 Clinical photographs of this case: (A) Frontal view of the patient showed 5 mm of excessive gingival display and hypermobile upper lip when smiling, facial midline asymmetry shifted to right. (B) Altered passive eruption of upper anterior teeth. (C) Esthetic crown lengthening procedure by gingivectomy to improve teeth display. (D) Two different rectangular outlines of lip repositioning surgery in order to camouflage the asymmetric facial midline. (E) Two strips of excised mucosa with different widths. (F) Wound closure with 5-0 Vicryl sutures. (G, H) One-year post-op follow up.

hypermobile upper lip. In this case, by selective limiting upper lip vertical movement, we successfully treated the EGD and improved the smile asymmetry. This procedure can be an alternative approach to reduce EGD rather than OGS after comprehensive assessment.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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