CASE REPORT

Untangle lip through Z-plasty

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SUMMARY

An aberrant frenum causes gingival recession either due to an interference in the plaque control or due to a muscle pull. It also presents an aesthetic problem and may compromise the orthodontic result in midline diastema cases, thus causing a recurrence after the treatment. The management of such an aberrant frenum is accomplished by performing a frenectomy. The present case report shows the removal of the abnormal maxillary labial frenum in a 26-year-old male patient and an 18-year-old female patient through the Z-plasty technique.

BACKGROUND

A frenum is a mucous membrane fold which contains muscle and connective tissue fibres that attach the lip and the cheek to the alveolar mucosa, the gingiva and the underlying periosteum.¹ An aberrant frenum creates a functional and aesthetic problem in certain patients. The aesthetic problem is the presence of a diastema between the maxillary central incisors, while gingival recession is the consequence of the functional problem. Abnormal or aberrant frena are detected visually by applying tension over them to see the movement of the papillary tip or blanching produced due to ischaemia of the region.²

Depending on the attachment level, a frenum has been classified as:

- A. Mucosal: when the frenal fibres are attached up to the mucogingival junction.
- B. Gingival: when the frenal fibres are inserted within the attached gingiva.
- C. Papillary: when the frenal fibres extend into the interdental papilla.
- D. Papillary penetrating: when the frenal fibres cross the alveolar process and extend up to the palatine papilla.

Hence, the management of such a problem can be accomplished by surgical procedures called 'frenectomy' and 'frenotomy'. Frenectomy is the complete removal of the frenum, including its attachment to the underlying bone, while frenotomy is the incision and the relocation of the frenal attachment. To date, various techniques have been employed for this procedure. In the present case, frenectomy was performed through Z-plasty. Z-plasty is a plastic surgery technique used to improve the functional and cosmetic appearance of scars. It involves a central incision and creation of two triangular flaps of equal dimension that are then transposed and sutured.³

CASE PRESENTATION
Case 1

A 26-year-old man reported to the Department of Periodontics of Career Postgraduate Institute of Dental Sciences and Hospital, Lucknow with

Figure 1 Preoperative photograph of case 1.

symptoms of midline diastema between the maxillary central incisors causing an aesthetic problem (figure 1). Labial frenectomy can be performed before, during or even after the orthodontic closure of the maxillary midline diastema, depending on the individual case. In this case, orthodontic closure was planned to be performed after frenectomy. A thorough family and medical history was taken to rule out any contraindications for the surgery. The required surgical procedure was explained to the patient and consent was taken. After oral prophylaxis, surgery was performed under aseptic conditions. Local anaesthesia (2% xylocaine with epinephrine) was administered and the frenum and the surrounding area were assessed. One central vertical incision was made over the frenum and two lateral horizontal incisions were placed at an angle of 60°, creating two triangular flaps of equal size and shape (figure 2).

Figure 2 Vertical and horizontal incision lines forming a Z pattern.

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Figure 3 Flaps transposed.

Schematic representation of incision lines for Z-plasty.

Adequate undermining of the surrounding tissues was performed to achieve proper mobilisation of the flaps and to minimise the distortion of the underlying structures. The two flaps were then transposed to the opposite side of the apex of each flap (figure 3). They were then sutured to the defect at the opposite side of the other flap base and secured in position by using an interrupted braided silk suture (figure 4). A periodontal dressing was placed and antibiotics and analgesics were administered along with the routine wound care instructions to the patient. The patient was recalled for suture removal after 7 days (figure 5).

Case 2

An 18-year-old female patient presented to the Department of Orthodontics of Career Postgraduate Institute of Dental Sciences and Hospital, Lucknow with a symptom of midline diastema causing an aesthetic problem (figure 6). She was referred to the department of periodontics for frenum removal. A thorough family and medical history was taken to rule out

Figure 4 Suture placed.

Figure 5 Sutures removed after 1 week.

any contraindications for the surgery. The required surgical procedure was explained to the patient and consent was taken. After oral prophylaxis, surgery was performed under a local anaesthesia (2% xylocaine with epinephrine). The frenum and the surrounding area were assessed and a similar procedure (figure 7) to case 1 was performed, that is, the Z-plasty. Both the patients were then referred to the department of orthodontics for further treatment. The frenal attachment was reassessed after a month (figures 8 and 9).

INVESTIGATIONS

All the blood parameters were within normal physiological limits in the routine blood investigation performed.

DIFFERENTIAL DIAGNOSIS

Plaque-induced gingival hyperplasia and idiopathic gingival enlargement were included in the differential diagnosis of the present case.

TREATMENT

Periodontal plastic surgery (Z-plasty) was performed for the removal of the maxillary labial frenum.

Figure 6 Preoperative photograph of case 2.

Figure 7 Flaps transposed.

OUTCOME AND FOLLOW-UP

Postoperative healing were uneventful with no hypertrophic scar formation.

DISCUSSION

A frenum can become a significant problem if tension from lip movement pulls the gingival margin away from the tooth, or if the tissue inhibits the closure of a diastema during orthodontic treatment.⁴ Various frenectomy procedures have been introduced so far. These include the classical technique, Millers technique, V-plasty, Y-plasty, Z-plasty, electrocautery and laser. The classical technique leaves a longitudinal surgical incision and scarring, which may lead to periodontal problems and an unaesthetic appearance, thereby necessitating the application of other procedures. Electrocautery and laser are mostly beneficial in patients with bleeding disorders and in patients who are apprehensive to blood.

The Z pattern is effective as it promotes the redistribution of tension on the skin and the wound and helps in healing along

Figure 8 One-month follow-up of case 1.

Figure 9 One-month follow-up of case 2.

the skin lines. It helps in minimising scar formation and has a camouflaging effect.⁵ Basic Z-plasty flaps are created using an angle of 60° on each side.⁶ Classic 60° Z-plasty lengthens scars by 75%, while 45° and 30° designs lengthen scars by 50% and 25%, respectively. Hence, 60° Z-plasty was performed here for better results.

In this case report, both the cases showed uneventful healing without scar formation, which was functionally and aesthetically satisfactory for both the surgeon and the patient.

Learning points

- To make the patients aware regarding the oral complication of high frenal attachment.
- To find out measures to improve the aesthetic and functional problems of the patients.
- To maintain oral hygiene by proper placement of brush and avoid gingival recession.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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