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FRENECTOMY BY ELECTROCAUTERY METHOD – A CASE REPORT

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Abstract:

The frenum connects the lip and cheek to the alveolar mucosa, gingiva, and the periosteum beneath it. If the frenum is adhered to the gingival margin too closely, it could hamper the health of the gingiva. Tissue tension caused by frenulum attached close to the gingival margin may aid in the development of gingival recessions. Moreover, mandibular labial frenum attachment causes aesthetic problems or obstructs the desired aesthetic outcome and can be removed by frenectomy. The present case study deals with the removal of mandibular labial frenum attachment by electrocautery.

Keywords: Electrocautery, Frenectomy, Abnormal Frenum Attachment, Gingival recessions

Introduction: A frenum is a mucous membrane fold containing muscle and connective tissue fibres, which attach the lip and the cheek to the alveolar mucosa, the gingiva and the underlying periosteum(1). The health of the gingiva may be impacted and gingival recession may develop when the frena are too closely attached to the gingival border due to issues with plaque clearance(2). Moreover, gingival recession between the mandibular central incisors in adults is regarded as an aesthetic issue, and one of the aetiological causes of this condition is the existence of a mandibular labial aberrant frenum attachment(3). Recessions typically take place labially. The etiology is typically complex. As a result, it is impossible to identify a single mechanism or contributing component. Nevertheless, traumatic tooth brushing, localized plaque-induced periodontal inflammation, and generalizedforms of destructive periodontal disease are potential predisposing factors(4).Anatomical causes (e.g., frenal pull), smoking, and orthodontic treatment - especially when teeth are relocated to places outside of the labial or lingual alveolar bone plates - are examples of potential secondary factors(5). Such movements may result in the development of lingual or labial bony defects or the loss of alveolar bone.Placek et al. (6)classified frenum based on the degree of fiber attachment as: (a) Mucosal - when the frenal fibres are attached up to the mucogingival junction, (b) Gingival - when the fibres are inserted within the attached gingiva, (c) Papillary - when the fibres are extending into the interdental papilla, (d) Papilla penetrating - when the frenal fibres cross the alveolar process and extend up to the palatine papilla.

Frenectomy or frenotomy are two possible treatments for the aberrant frenulum(7). The whole frenulum, including the fibrous connection that keeps it attached to the periosteum and alveolar bone, is removed during a frenectomy. Repositioning or superficially eliminating the frenal attachment without removing the firmly connected collagen fibers is known as a frenotomy.Frenectomy can be performed by electrocautery, standard scalpel method, or

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laser[3, 8].The drawbacks of conventional scalpel technique is that it includes risks of surgery (such as bleeding) and poor patient compliance [9].Because of the electrocautery probe's effectiveness, procedure safety, minimal bleeding, and lack of postoperative problems, researchers have recommended using it. The deliberate flow of high-frequency waveforms or currents into bodily tissues in order to produce a controlled surgical effect is known as electrosurgery or electrocautery [10]. An electrosurgery practitioner can utilize this kind of current to cut or coagulate soft tissues by adjusting how it is applied.

The present article describes a frenectomy case that was performed using electrocautery method to remove mandibular labial frenum attachment.

Case Presentation

A 36 years old male patient reported in the Department of Periodontology, Rama Dental College, Hospital and Research Centre, Kanpur, UP, with a complain of space in the lower front teeth and gingival recessionfortwo years. On clinical examination, mandibular labial papillary frenum attachment was found, as shown in Figure 1. Medical history was not significant. After obtaining informed consent, mandibular labial frenectomy was performedusing monopolar electrocautery (ART Electrosurge). An electrocautery unit with the loop electrode and a haemostat was used.Following local infiltration anesthesia with 2% lignocaine and 1:80000 adrenaline, the frenum was secured with a hemostatand by using a loop electrode tip, electrocautery was performed to separate the attached fibers, as shown in Figure 2.Continuous saline irrigation was given while using the electrocautery. Surgical area was covered with periodontal pack (Coe-pak) after electrocautery (Figure 3). The patient was checked one week (Figure 4) and three months after surgery (Figure 5).

Figure 1: Pre-operative view of mandibular labial frenum with papillary attachment wrt.31-41

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Figure 2: Frenectomy procedure performed using electrocautery

Figure 3: Periodontal dressing (Coe-pak) placed

Figure 4: Post-operative view after 7 days

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Figure 5: Post-operative view after 3 months

Discussion

Gingival recessions are believed to be mostly caused by traumatizing tooth brushing and plaque-induced inflammation in many cases. A frenulum that is attached close to the gingival margin, particularly in the mandibular anterior region, may interfere with good hygiene practices and increase the risk of plaque-induced inflammation[(11)]. The gingival marginbecomes more susceptible to fibrous pull and unfavorable sulcus opening because of a very thin zone of keratinized attached gingiva coronal to the frenulum attachment. In order to lower the chance of a patient with a thin gingival phenotype developing a plaque-induced labial recession, a frenectomy is typically performed to remove the fibrous pull from the marginal gingiva.

In many situations, traumatizing teeth brushing, and inflammation caused by plaque are thought to be the primary factors in the development of gingival recessions. Especially in the mandibular anterior region a frenulum attached near the gingival margin is liable to interfere with optimal hygiene measures, thus increasing the risk of plaque-induced inflammation[(11)].A very narrow zone of keratinized attached gingiva coronal to the frenulum attachment makes the gingival margin particularly vulnerable to fibrous pull and unfavourable opening of the sulcus. In this case, a frenectomy was made to remove the fibrous pull from the marginal gingiva, thus reducing the risk of developing a plaque-induced labial recession on a patient with a thin gingival phenotype.

Numerous methods, including lasers, electrocautery, and conventional scalpel technique, can be used to perform a frenectomy. More precise and conservative methods have been employed recently to produce more aesthetically pleasing and functional outcomes. The conventional scalpel technique involves the routine risks of surgery like bleeding and poor patient compliance[(3)].Though lasers have marked the beginning of their use in soft tissue management, electrocautery units are less expensive than the least expensive diode lasers[(12)] Thus, treatment using electrocautery method is cheaper than laser. When Liboon et al. [(13)]evaluated mucosal incisions produced with a scalpel, CO_2 laser, and electrocautery, they found that constant-voltage electrosurgery scored highest ($p < 0.05$) on a subjective rating of

ease of use on a scale from 0 to 4, followed by the CO_2 laser. In addition, the speed of incisions and excisions (in seconds) was also faster for electrosurgery unit than CO_2 laser. In comparison to the laser group, the electrocautery group also saw reduced collateral tissue injury.Furthermore, its rapid tissue removal capabilities and lack of need for safety glasses provide electrocautery further advantages over lasers[12].The major advantage of electrosurgery today is the coagulation to reduce bleeding and resulting in a clean field with better visibility during the surgery.Overall, the use of electrocautery in the current study is justified over laser treatment.

In dentistry, electrosurgical units come in two primary varieties, namely monopolar and bipolar [14].A monopolar device has just one electrode, and the current flows from the unit to the surgical site via a single wire. A pad positioned behind the patient's back is required for grounding the patient. When the electrode makes contact with tissue, heat is created. This causes discomfort, which is why anesthesia is needed. When two electrodes are positioned extremely close to one another, the condition is called bipolar. Bipolar units cost more than diode lasers since there is no need for a grounding pad because the electrical current travels from one electrode to the other. Compared to monopolar or diode lasers, bipolar devices produce a less precise cut because of their two wires.

The electrocautery technique used in the current case study has the benefit of requiring no sutures and requiring less time to complete the surgical surgery in a bloodless field. The result is in agreement with Devishree et al.[15]. The healing was also comparable with the conventional scalpel technique, without any delay.This is in contrast to research that suggests using electrocautery may cause a delay in healing[16]. Using electrocautery to treat the patient minimized the need for suturing and decreased the chance of infection after surgery.

Conclusion

A relatively common issue in the general population is high frenum attachment. Although different techniques can be used to remove aberrant frenum, a functional and an aesthetic outcome can be achieved by a proper technique selection. In general, electrocautery has several advantages over other techniques. In the current case study, mandibular labial frenum attachment was present and successful outcome was achieved using electrocautery technique.

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