

Surgical methods of managing the upper lip frenulum – a literature review

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ABSTRACT

The upper lip frenulum with an overgrown structure or improper attachment is a common cause of hygienic, orthodontic, or prosthetic issues that prompt surgical intervention. The following article presents the surgical methods for the elimination of the overgrown frenulum, discussing and comparing them. Commonly used and described in the literature methods for surgical correction of the upper lip frenulum include frenulectomy, frenuloplasty, and laser excision of the frenulum. The article presents, discusses, and compares the methods of surgical correction of the upper lip frenulum, highlighting the advantages and disadvantages of each procedure. According to researchers, when comparing methods using a scalpel, Z-frenuloplasty is characterized by the lowest recurrence rate and consequently the highest effectiveness in eliminating the problem of an overgrown frenulum. The article also outlines several advantages of using laser methods (diode laser, CO₂ laser), such as the elimination of bleeding, reduced postoperative pain reported by patients, and the lack of need for suturing the postoperative wound. Each case depends on a thorough clinical examination of the patient, identifying the specific problem, making an accurate diagnosis, and ultimately adjusting the choice of one of the methods to the individual conditions and medical issue of the patient.

KEY WORDS: frenulum, upper-lip, frenulectomy

INTRODUCTION

The upper lip frenulum is a thin, vertical band of soft tissue located on the vestibular side of the maxilla. It runs from the inner surface of the upper lip to the area between the central incisors of the maxilla. It is composed of oral mucosa, connective tissue, and muscle fibers [1]. Due to its structure and the variability of its attachment within the process, the upper lip frenulum is often the cause of complications in orthodontic or prosthetic aspects, necessitating its surgical correction. Depending on the location of the attachment, four types of frenulum attachments are distinguished [2, 3]:

- mucosal,
- gingival,
- papillary,
- penetrating the papilla.

Clinically, the last two (papillary and penetrating the papilla) are considered abnormal [9], causing orthodontic, functional, prosthetic, or periodontological complications and are indications for surgical treatment to increase the mobility of the upper lip, avoid displacement of prosthetic supplements, prevent food retention, or eliminate diastema. An intraoral examination of the patient should also include pulling the upper lip to diag-

nose “pull syndrome,” which manifests as blanching of the free and attached mucosa. This condition carries the risk of developing gingival recession in the future [4]. Treatment can include:

- frenulectomy – complete removal of the upper lip frenulum,
- frenuloplasty – removal of fibers with the movement of the resulting flaps and suturing of the wound
- laser frenulum removal [1, 3].

AIM

The purpose of the study was to present and debate the methods of surgical correction of the upper lip frenulum presented in the literature. Based on the literature, surgical methods of dealing with the upper lip frenulum were identified and presented [1].

REVIEW AND DISCUSSION

FRENULECTOMY

A simple, radical removal of the upper lip frenulum by making a lens-shaped incision in the mucous membrane, connective tissue, and muscle attachments,

leaving only the periosteum to limit wound healing complications [1]. This method can be used in conjunction with healing by secondary intention – when no sutures are used to close it, as well as with wound suturing. Both procedures require the patient to perform logopedic exercises of the lip and its massage to achieve the desired therapeutic effect. The method of frenulectomy, especially assuming omission of wound suturing, carries disadvantages in the form of increased risk of bleeding and increased postoperative pain [5].

Z-FRENULOPLASTY

A plastic surgery involving the making of two oblique, 60-degree angle cuts relative to the median line after the removal of the frenulum and moving them to achieve primary wound closure, described as a technique limiting the risk of scarring along the main axis of the frenulum [1]. Changing the tension from vertical to almost horizontal has shown in clinical studies a relatively long-lasting therapeutic effect and low risk of recurrence [6]. This technique is particularly indicated when hypertrophy of the frenulum with a low attachment is observed, and when the eruption of lateral incisors did not reduce the diastema [7].

V-FRENULOPLASTY

Removal of the upper lip frenulum along with the displacement of its attachments apically, allowing at the same time, a significant deepening of the vestibule of the oral cavity. The procedure in this case involves a “V” shaped incision followed by detachment and movement of the lower apex of the triangle into the floor of the vestibule by suturing it to the periosteum. Indications for this technique include overgrowth of the frenulum with a massive attachment on the lip side and is described as more predictable than simple frenulum

removal [1]. The disadvantage of V-frenuloplasty is wound healing by granulation, which is associated with pain and discomfort for the patient, the risk of increased intraoperative or postoperative bleeding, and scarring.

LASER FRENULUM REMOVAL

Lasers used in frenulectomy techniques reduce intraoperative bleeding, allow for the use of less anesthetic and usually heal with minimal discomfort [1, 9]. Compared to classic methods, the use of a diode or CO₂ laser practically eliminates intraoperative bleeding, which is associated with tissue coagulation. This leads specialists to consider the laser technique in patients with coagulation disorders. There is also reduced need for surgical suturing of tissues [8, 9] which usually shortens the procedure. Studies have shown that patients who underwent frenulum surgery using a laser took fewer painkillers in the postoperative period [9].

CONCLUSIONS

Diagnosing an abnormal attachment of the upper lip frenulum always requires a thorough analysis of the clinical situation and a general patient interview to accurately tailor the surgical method to the individual. Research shows that among methods using a scalpel, Z-frenuloplasty is characterized by the greatest effectiveness, the lowest recurrence rate, and a minimal potential for scarring. Compared to all classical methods, laser frenulum removal reduces the risk of bleeding, eliminates the need for suturing the wound, and improves the patient's subjective postoperative feelings. Each qualification for a frenulectomy procedure should be preceded by a thorough clinical analysis, and the choice of method should be tailored to the individual needs of the patient.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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RECEIVED: 06.03.2024

ACCEPTED: 15.05.2024



