LASER ASSISTED VERSUS CONVENTIONAL FRENECTOMY IN ORTHODONTIC PATIENTS

I. Luchian¹, Silvia Martu¹, Monica Tatarchiuc², Ioana Martu², Irina Zetu³
University of Medicine and Pharmacy “Grigore T. Popa” Iasi
Faculty of Dental Medicine
1. Department of Periodontology
2. Department of Dental Technology
3. Department of Orthodontics

LASER ASSISTED VERSUS CONVENTIONAL FRENECTOMY IN ORTHO-DONTIC PATIENTS (Abstract): Aim: The aim of this study was to evaluate the laser assisted frenectomies versus conventional ones from the technique and the post-op recovery point of view. Material and methods. We selected a sample population of 20 patients with thick, low inserted maxillary midline frenum and midline diastema. We randomly divided the sample population into two groups named A and B with an equal number of patients. Patients included in group A were treated with conventional technique while patients included in group B were benefited of laser assisted frenectomy. Results and discussion. Our findings showed that laser assisted procedure was much faster to perform than the conventional one due to the easier protocol, absence of sutures and better cooperation from the patient side. In the same time it provided a better comfort degree to the patient and an accelerated healing. Conclusions. Laser assisted technique for maxillary midline frenectomy in conjunction with orthodontic treatment proved to be superior to the conventional one because it saves time; it’s minimally invasive and provides a better cooperation with the child. Keywords: MAXILLARY MIDLINE FRENUM, DIASTEMA, FRENECTOMIES, DIODE LASER.

After Carranza et al a frenum is a fold of mucous membrane, usually with enclosed muscle fibers that attach the lips and cheeks to the alveolar mucosa and/or gingiva and underlying periosteum.

The same authors say that it becomes a problem if the attachment is too close to the marginal gingiva. Carranza at al claim that this anatomic situation may be a genetic condition of the individual or the result of recession of the gingival margin reaching the area of the frenum. Tension on the frenum may pull the gingival margin away from the tooth creating a periodontal problem. (1)

After Edwards the pretreatment relationship between a thick and low inserted maxillary midline frenum and a midline diastema showed a strong, but not absolute, correlation. (2)

The aim of this study was to evaluate the laser assisted frenectomies versus conventional ones from the technique and the post-op recovery point of view.

MATERIAL AND METHODS
We selected a sample population of 20 patients with thick, low inserted maxillary
midline frenum and midline diastema.

The average age of the sample population was 10.4 years while 55% were females and 45% males.

All patients included in the current research needed frenectomy as an adjuvant therapy to the orthodontic treatment (Fig. 1).

We randomly divided the sample population into two groups named A and B with an equal number of patients.

Patients included in group A were surgically treated through the conventional frenectomy technique using a scalpel and 4.0 silk for suture.

Patients included in group B received laser assisted surgical removal of the frenum using a diode laser with the wavelength of 940 nm and a optical fiber with the diameter of 400 μm (Fig. 2).

In order to increase the cutting effect of the laser the fiber was previously activated (Fig. 3a-3b).

The laser was set at 1.5 W energy in CP2 and throughout the procedure the tissue was irrigated with a saline solution in order to avoid the overheating (Fig. 7).
Laser assisted versus conventional frenectomy in orthodontic patients

All surgical procedures were done under infiltration anesthesia with articaine and by the same team.

RESULTS AND DISCUSSION
Suter at al. claim that closure of the maxillary midline diastema with a prominent frenum is more predictable with frenectomy and concomitant orthodontic treatment than with frenectomy alone. (3) This is why an efficient and minimally invasive management of maxillary midline frenectomy is desirable especially in children.

Our results showed that during laser assisted surgery the bleeding was nearly absent and the young patient had a better degree of comfort (Fig. 4). In the same time patients included in group B didn’t need suture in order to prevent the reattachment of frenum.

Healing process was faster in the group that benefited from laser assisted surgery compared to conventional technique. (fig. 5) This fact is in accordance with fundamental research results from literature that emphasized the morphological differences identified at the gingival epithelium level and subjacent lamina propria support the value of laser therapy, stimulating an improved healing of the damaged tissues. The patients included in group B presented as well significantly diminished post operative pain and absence of edema (Fig. 6).
Fig. 5. Three days follow-up

Fig. 6. Facial aspect at 3 days follow-up

Fig. 7. Laser settings
Laser assisted *versus* conventional frenectomy in orthodontic patients

Other studies proved that the overall perception of young patients towards laser assisted periodontal surgery was very high and this is a means of reducing operating time and anxiety caused by the surgery itself. (5)

Our findings showed that laser assisted procedure was much faster to perform than the conventional one due to the easier protocol, absence of sutures and better cooperation from the patient side.

Due to the vaporization effect of the laser at the cellular level the reattachment rate of the frenum is significantly reduced and will provide a faster orthodontic tooth movement for closing the diastema.

The ideal approach for successfully treating this kind of cases is the interdisciplinary one with a tight cooperation between orthodontist, periodontist, oral surgeon and general practitioner.

**CONCLUSIONS**

Laser assisted technique for maxillary midline frenectomy in conjunction with orthodontic treatment proved to be superior to the conventional one because it saves time; it’s minimally invasive and provides a better cooperation with the child.

The laser assisted frenectomies proved that the reinsertion rate of the midline frenum was minimal (Fig. 8-9).

![Fig 8. Initial status](image1)

![Fig. 9. One month follow up status](image2)

**REFERENCES**