

## Case Report

# The comparison of frenectomy using blade versus laser (Nd-YAG): A case report

Benso Sulijaya and Hari Sunarto

Department of Periodonsia; Faculty of Dentistry, Universitas Indonesia. Jakarta. Indonesia

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### Abstract

**Introduction:** Abnormalities of frenulum can initiate periodontal disease and orthodontic problems. **Objectives:** This case report aims to performing and comparing the procedure of frenectomy using blade and LASER (Nd-YAG). **Cases:** First case, boy 14 years, with abnormalities of labial frenulum that extended to the palate. The second case, a woman 19 years old comes with a severe malocclusion and recession on her lower incisor due to tension of the frenulum. **Case Management:** Conventional frenectomy with blade for the first case, whereas in the second case we do frenectomy with LASER (Nd-YAG). **Conclusion:** Both of two techniques show each strength, same patient safety, similar outcomes and also patient comfort. Further studies should be recommended by adding greater amount of sample.

**Keywords:** Frenectomy, blade, Nd-YAG, LASER.

## INTRODUCTION

Frenulum is characterized as a small band of fold of mucosal membrane which attaches the lips and cheeks to the alveolar process.<sup>1</sup> The abnormalities of frenulum can cause gingival recession, diastema and also food retention. Frena problems occur most often on the facial surface between the maxillary and mandibular central incisors and in the canine and premolar areas.<sup>2</sup> Abnormalities of frena are detected visually, by applying tension over it to see the movement of papillary tip or blanching produced due to ischemia of the region.<sup>3,4</sup> To correct this abnormality, some procedure might be performed such as Frenectomy and frenulotomy. Frenulotomy is defining as simple excisional release of the frenulum from the apex of its insertion to its base and down to the alveolar process. In contrast, frenectomy is the complete removal procedure of the frenulum, including its attachments to the underlying alveolar process.<sup>1,2</sup> Frenectomy could be performed using blade and LASER such as CO<sub>2</sub>, Er-YAG and also Nd-YAG

(Neodymium doped-Yttrium Aluminium Garnet).<sup>5</sup> Among those various lasers, CO<sub>2</sub> and Neodymium doped Yttrium Aluminum Garnet (Nd-YAG) have been quite efficient in soft tissue surgeries such as gingivectomy and frenectomy.<sup>6</sup> It is still debatable about which technique is effective, efficient and affordable.

### Objectives

The purpose of this case report is to performing the procedure of frenectomy using blade and LASER (Nd-YAG). This case report could also give a comparison technique, efficiency and result of frenectomy.

### Case Report

**Case 1:** Male, 14 years old, consult from orthodontic department to do some frenectomy procedure on his superior-anterior-frenulum. It causes spaces on the upper front teeth. Patient is planning to do some orthodontic treatment. From clinical finding, we can see the anterior palatal deep bite, anterior central diastema, and also frenal that reach the palate. Treatment plan of these



**Figure 1.** Central diastema is show on the maxilla. **Figure 2.** The frena is extended into marginal gingiva. **Figure 3.** The frena is hold and cut using blade No.15. **Figure 4.** The frenal is completely removed. **Figure 5.** The mocusa is suturing back with nylon 5.0 non-resorable. **Figure 6.** Two weeks post-operative.



**Figure 7.** Severe malocclusion in shown. **Figure 8.** The frena is causing gingival recession. **Figure 9-10.** The frena is hold and cut using Nd-YAG LASER. **Figure 11.** The frenal is completely removed, no suture is needed. **Figure 12.** Two weeks post-operat

patients begins with the initial phase such as scaling, dental health education. For periodontal surgery, frenectomy was indicated. Conventional frenectomy using blade no.15 is performed.

**Case 2:** Female, 19 years old, consult from orthodontic department. Patient is complaining of recession on her central lower incisor. From clinical examination, we found gingival recession up to 6 mm with a tension of the frena. This second patient was diagnosed as gingival recession on 42 caused by frena tension and accompanied with severe malocclusion. On this patient, we perform

frenectomy using Nd-YAG LASER (fiber optic – pulse – 300 µm) by fotona.

## DISCUSSION

The first and the second cases are an example of a frenectomy procedure. The first frenectomy was performed using blade no.15, whereas second frenectomy used Nd-YAG LASER. Our conventional frenectomy is adopted classical design, because Gopu *et.al* (2014) reveals that the esthetic and functional discomfort

**Table 1:** Clinical Comparison between Frenectomy Using Blade and Nd-YAG LASER

Criteria	Conventional Frenectomy with Blade no.15	Frenectomy with Nd-YAG LASER
Anesthesia	Local anesthesia	Local anesthesia
Bleeding	Bleeding	Less bleeding
Operator Skills	General operator	Trained operator
Time Management	Much time	Less time
Outcomes	Good	Good
Patient Comfort (Scale 1-10) 1 – “Comfortable” 10 – “Extremely discomfort”	Scale 5	Scale 3
Cost	Less cost	Greater cost

were experienced relatively higher in patients who underwent “Z” plasty method compared to “classic” method.<sup>4</sup>

Both of them were under local anesthesia. Seyyed A *et al* (2012) list some application of LASER Nd-YAG in periodontology field such as soft tissue incision, ablation, sub-gingival curettage, bacterial elimination, sulcular debridement, melanin pigment removal and also treatment of dentine hypersensitivity.<sup>5</sup> If we compare those two procedures, then we can evaluate each of their beneficial things (Table 1).

In our findings (Table 1), Nd-YAG LASER shows a lot of strength such as less bleeding, good visibility, antimicrobial effect and also time efficiency. Akpinar *et al* (2015) report that Nd-YAG provides a safe, bloodless, painless surgery and also an impressive alternative technique for frenectomy.<sup>9</sup>

Bleeding in conventional frenectomy is greater than with Nd-YAG LASER. This is because LASER has a coagulation effect to the area which makes less bleeding. Coagulation of protein that formed over the wound is act as biological dressing and seals the end of sensory nerves.<sup>6</sup> Moreover, it has an antibacterial influence so the possibility of infection is minimized. Operator could easily handle the frena when it is visible and less of blood. Besides bleeding aspect, to manipulate frenectomy with LASER, it is need an advance skill. The tip of Nd-YAG LASER should not contact directly with the dental root and the alveolar bone. Moreover, the mucosa should always be moist when the tip is contacted. The over-time contact of the tip can cause a necrotize tissue. Potential bone damage always is a concern in using LASER.<sup>5</sup> Therefore, working with LASER needs a trained operator. Using LASER is saving time than using blade. Frenectomy using blade occasionally comes with massive bleeding during the procedure. This will makes the operation become more complicated to be controlled. Lele *et al* (2014) found that the conventional method generally requires more than 15 minutes that necessarily includes hemostasis and suturing. Whereas, the LASER indigenously possesses the property of cauterization that heals well by secondary intention.<sup>7</sup> Finally, LASER earned this strength.

The outcome of both techniques is good. The healing process of the mucosa using blade and LASER is shown almost the same result. Even though, we knew that less bleeding in LASER procedure but in fact the blood supply is good enough to vascularize.

Patient comfort is scale from one to ten. One is for “Comfortable” and ten is for “Extremely discomfort”. Both of them report almost same range of moderate discomfort (scale 3-5). Therefore, it is a not guarantee by using LASER or blade will give a pleasure feels. Kalakonda *et al* (2014) analyze VAS scores of discomfort between frenectomy using blade and using LASER, he reports that one week after frenectomy the differences between VAS score of discomfort with blade (21.00±2.91) and with LASER (7.40±2.40) was significant (p=0.001).<sup>6</sup> Akpinar *et al* (2015) report the using of Nd-YAG LASER gives an adequate post operative comfort in chewing and speaking than conventional up to seventh days post operative.<sup>9</sup>

Viewing from the cost of those two procedures, Nd-YAG LASER are beneficial in reducing bleeding, give a good vision, no needs of suturing and also eliminates bacteremia. Nd-YAG are also known as soft tissue laser because its deep penetration makes it ideal for applications such as frenectomy, frenulotomy, gingival curettage and depigmentation.<sup>5,6</sup> In contrast, LASER is cost abundantly than blade. Devishree *et al* (2014) reveals that the LASER procedure offered the advantage of minimal time consumption and a bloodless field during the surgical procedure, with no requirement of sutures. Whereas, the conventional techniques like fail to provide satisfactory aesthetic results.<sup>8</sup> However, the use of LASER gave the same result as blade but with a greater cost.

## CONCLUSION

Regarding of each strengths of those two techniques, the use of blade is still preferable than Nd-YAG LASER. Besides the ability of coagulation and antibacterial influenced by LASER, the cost of it is not effectively worth. In conclusion, both of two techniques show each

strength, same patient safety, similar outcomes and also patient comfort.

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