(e) ISSN Online: 2321-9599
(p) ISSN Print: 2348-6805

CASE REPORT

EVALUATION OF ANXIETY AND POST-OPERATIONAL DISCOMFORT IN FRENECTOMY PAEDIATRIC PATIENTS BY COMPARING CONVENTIONAL METHOD AND LASER APPLICATION - A CASE REPORT

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ABSTRACT:
Removal of lingual frenum has been a matter of controversy for a long time. Ankyloglossia causes problems in eating, dyspnoea and speech disturbances. Hence, it is necessary to perform a lingual frenectomy in such cases. Treatment options such as observation, speech therapy, frenectomy without anaesthesia and frenectomy under local anaesthesia are available. Laser-assisted surgery is common nowadays and most of the oral soft tissue surgical procedures are done with lasers. Among the commonly available lasers today, the diode laser is the one frequently used in dentistry. The purpose of this report was to compare management of ankyloglossia and assess the dentists' experience of performing the surgery using diode laser vs conventional approach. Patients were diagnosed with class III ankyloglossia and were treated with frenectomy. Both surgeries were performed by the same operator, and the level of fear, pain and post-operational discomfort in patients were assessed. The application of laser resulted in less stress and fear in patient during procedure, also leading to more conservative non-invasive method with minimal discomfort and bleeding, thus this treatment can be considered as a boon for the paediatric dentistry.
Keywords: Anxiety; Paediatrics; Lingual frenum; Laser

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This article may be cited as: Kendre S, Shaikh A, Kaur M, Gupta P, DM Sandeep, Soma PS. Evaluation of anxiety and post-operational discomfort in frenectomy paediatric patients by comparing conventional method and laser application - A case report. J Adv Med Dent Scie Res 2016;4(2):56-59.

INTRODUCTION

The lingual Frenum has been a topic of controversy for a long time. Its prevalence is around 4.4% to 4.8% in newborns, with a male to female ratio of 3:1.[1] Clinically, the term has been used to describe different situations, such as a tongue that is fused to the floor of the mouth as well as a tongue with impaired mobility due to a short and thick lingual frenulum. There is continuing controversy over the diagnostic criteria and treatment of ankyloglossia. Several studies establish diagnostic criteria based on the length of the lingual frenulum, amplitude of tongue movement, heart-shaped look when the tongue is protruded and thickness of the fibrous membrane. [2]

Frenectomy can be accomplished either by the routine scalpel technique, electrosurgery or by using lasers. The conventional technique involves excision of the frenum by using a scalpel. However, it carries the routine risks of surgery like bleeding and patient compliance. The use of electro surgery and lasers has also been proposed for frenectomy.[3]

The laser is a relatively modern technology which was developed in 1960 by Maiman. Though, it was first successfully used in the oral cavity in 1977 with consequent improvements and innovations over time.[4] The purpose of this report was to compare management of ankyloglossia and assess the patient and dentists' experience of performing

the surgery using diode laser vs conventional approach.

CASE REPORT

Two similar cases of high lingual Frenum attachment were selected from the routine OPD of Department of Paediatric and Preventive Dentistry, Maharaja Ganga Singh Dental College. Both the cases were diagnosed with class III ankyloglossia according to morphological classification given by Kotlow [1999]. Both the selected patients presented the definitely positive behaviour pattern based on Frankl behaviour rating scale. The surgery was planned with two different treatment modalities i.e. conventional approach and diode laser. Post operative findings were recorded after one week of surgery.

These patients were assessed for level of fear and anxiety by modifying dental anxiety scale (MDAS),[5] according to treatment procedure. Both surgeries were performed by the same operator, and the level of fear, pain, and discomfort were assessed during and after treatment.

CASE 1:

A 5 year old male child reported with chief complaint of difficulty in speech and restricted tongue movement. Clinically, the patient presented a thick and short lingual frenulum with anterior insertion (Figure 1). Patient was scheduled for surgery with conventional approach, after following asepsis, bilateral lingual nerve block with local infiltration in the anterior area was administered with 2% lidocaine and 1:100,000 epinephrine. A 3-0 silk suture on the tip of the tongue was used for traction.

Figure 1a: Clinical picture of the patient showing thick and short lingual frenulum with anterior insertion

The first incision was made with a #15c blade cutting through the upper aspect of the frenum **(Figure 1b).** The second incision was made at the lower aspect of the frenum, fairly close to the floor of the mouth (**Figure 1c).** The frenum was then excised, leaving a diamond-shaped wound. The wound margins were undermined with the tips of blunt-ended dissecting scissors**.** Tension free closure was checked through the insertion of non-absorbable suture at the middle of the wound **(Figure 1d).**

Patient was slightly anxious when he was on the dental chair and showed mild anxiousness during administration of local anaesthesia. During surgery patient was severely anxious and showed uncooperative nature. Patient was in discomfort after procedure and he did not allowed to remove the suture after 7 days as he was under psychological trauma.

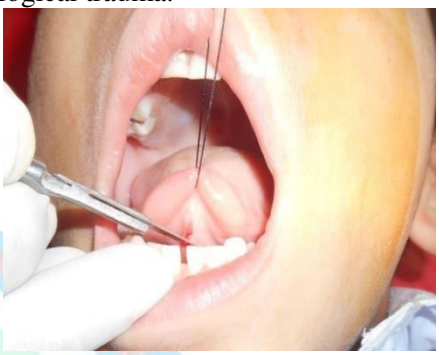

Figure 1b: First incision through the upper aspect of the frenum

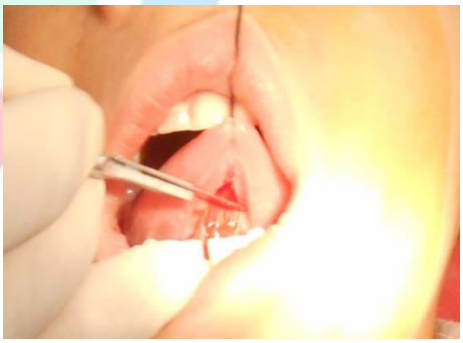

Figure 1c: Second incision at the lower aspect of the frenum

Figure 1d: Non-absorbable suture at the middle of the wound

CASE 2:

Another 5 year old male patient with definitely positively behaviour with restricted movement of tongue (Figure 2a) was reported in department of paediatric and preventive dentistry was scheduled for treatment of ankyloglossia with diode laser. Prior to surgery, following aseptic protocol local anaesthesia was infiltrated. Frenum was excised using diode laser (Biolase) (Figure 2b). And patient was recalled after 7 days.

Patient was slightly anxious during treatment. Post treatment pain and level of discomfort were less as compare to surgical excision of ankyloglossia.

Figure 2a: Pre-operative clinical photograph

Figure 2 b: During laser treatment

Figure 2c: Post operative after a week.

DISCUSSION:

Patients who undergo conventional frenectomy procedures using a scalpel often experience postsurgical pain and discomfort, which is further aggravated when sutures come in contact with food. One feasible alternative that can be considered is a laser, as it offers various advantages, that is, relatively bloodless surgery, sterilization of wound, no suturing required in most cases, less surgical time, periodontal dressing not required, less postsurgical pain and discomfort and increased patient acceptance.[6]

In present study, procedure induced anxiety pre-operatively and post-operational discomfort were assessed with two different treatment modalities for management of ankyloglossia. The higher anxiety level and more discomfort were observed with conventional treatment approach as compare to laser treatment approach. Butchibabu K. et al[6] evaluated the effects of diode laser and scalpel technique on degree of post-operative pain and discomfort experienced by patients on the 1st, 3rd and the 7th post-operative days after frenectomy and supported the use of diode lasers in soft tissue procedures like frenectomy. Diode lasers provide better patient perception in terms of reduced operative time, pain, and discomfort than that obtained by the scalpel technique.

Reports of pain relief mechanisms appear to originate in stimulating oxidative phosphorylation in mitochondria and through modulating inflammatory responses.[7]

Gargari M et al[8] assessed the advantages of the use of diode laser to removal inferior labial frenum in 32 years old female patient and reported that laser application resulted in a wound healing without scar. The patient didn't have pain and bleeding during the healing and she didn't report complications. It was not necessary to use antibiotic and anti-inflammatory.

Kaur P et al[3] compared the degree of postoperative pain, discomfort and functional complications (eating and speech), experienced by patients after two frenectomy operation techniques and results indicated that patients treated with the diode laser had less postoperative pain and fewer functional complications as well as required fewer analgesics compared to patients treated with the conventional scalpel technique. Krustev S et al[9] performed frenectomy using diode laser and reported that use of lasers to remove short, high attached maxillary labial frenum offers benefit of inducing less stress in children.

Thus, laser technology can be considered as an alternative to the conventional techniques,

presenting several advantages such as shorter operative time, tissue cauterization and sterilization, hemostasis, less local anesthetic requirement and less postoperative complications. Laser also enhances access and visualization due to the lack of interposed instruments and bleeding at the operative field. Additionally, the need for suture is eliminated and a uniform depth in the surgical site is maintained, reducing unnecessary damage to tongue muscle. Because of all these features, laser is well tolerated by children.[2]

CONCLUSION

The application of laser resulted in less stress and fear in patients during procedure, also leading to more conservative non-invasive method with minimal discomfort and bleeding, therefore making it a boon for the paediatric dentistry.

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Source of support: Nil

Conflict of interest: None declared