Use of the Erbium Laser to Treat Abnormal Frenum Attachments in Infants

author_Fred S. Margolis, USA

Fig. 1_Mark V., Age 3 months with severe ankyloglossia.
Fig. 2_Mark V., Age 3 months lingual frenectomy immediate post-surgery.
Fig. 3_Mark V., Age 3 ½ mos. 10 days post-surgery.
Fig. 4a_Mark V., Four years post lingual frenectomy exhibiting range of tongue.
Fig. 4b_Mark V., Four years post-frenectomy with normal lingual frenum.
Fig. 5a-b_Mark V., Seven years post-frenectomy.

_Case 1


Fig. 5b

_Abstract

Ankyloglossia (tongue-tie) is a relatively common condition in newborns. Affected infants have difficulty latching onto the breast nipple and thus have inadequate milk transfer, and subsequent maternal nipple pain, resulting in untimely weaning. An abnormal maxillary labial frenum may prevent proper latching onto the breast nipple, also preventing the infant to obtain adequate breast milk. The author will illustrate using case reports how the frenectomy procedure can be performed utilizing an Erbium laser.

_Introduction

Ankyloglossia is a developmental anomaly of the tongue characterized by a short, thick, lingual frenum resulting in limitation of tongue movement. The severity of the short frenum is variable and ranges from a light degree without clinical importance to a complete ankyloglossia with the tongue fixed to the floor of the mouth.[1] Ankyloglossia can lead to breast-feeding problems, atypical swallowing habit, speech problems, as well as preventing mouth cleaning of the buccal vestibule. The tongue-tie can also favor orthodontic and orthopedic anomalies.[1] Ankyloglossia can "be diagnosed when the length of the free-tongue (length of the tongue from the insertion of the lingual frenum into the base of the tongue to the tip of the tongue) is 16 mm or less."[1] Wallace and Clark concluded that the "benefits of breast feeding are well know and lactation consultants are becoming more aware of tongue-tie as a treatable cause of breast feeding difficulty."[2] Dollberg, et al., stated: "Ankyloglossia occurs


Fig. 1


Fig. 2


Fig. 3


Fig. 4a


Fig. 4b


Fig. 5a

in nearly 5 % of neonates..." They further state that there was a significant decrease in nipple pain after frenotomy in breast-fed infants with ankyloglossia.[3] They concluded that "frenotomy is an effective therapy for these difficulties."[3] Ballard et al., described the Hazelbaker assessment tool for lingual frenum function. They state: "in children older than four months, anesthesia is usually required because of the infant's strength and awareness. In early infancy, however, the procedure may be accomplished without anesthesia and with minimal discomfort to the infant."[1] Gontijo, et al., described a case of a labial frenum in an infant necessitating the frenectomy procedure.[4] The purpose of this article is to present two cases where infants exhibited frenums that were abnormal which resulted in difficult nursing. Surgical treatment with an Erbium laser was utilized to incise the frenum to release the tongue.

_Case 1

Mark V., age 3 months, a white healthy male, had difficulty in breastfeeding due to ankyloglossia (Fig. 1). Mark's twin sister had no difficulties in breastfeeding and was not tongue tied. The patient's mother reported that the baby was losing weight due to inability to obtain adequate breast milk. Informed consent was obtained. The patient's and parent's eyes were protected in addition to the operator and assistant. The patient was placed on the mother's lap with the patient's head on the mother's shoulder. A topical anesthetic (20 % benzocaine) was applied for 30 seconds prior to the injection of 0.6 cc. of 2 % lidocaine 1:100,000 Epinephrine which was placed on the floor of the mouth and the tip of the tongue. Utilizing an Erbium:YAG laser at 50 mJ, 30 Hz, no water and no air, high speed evacuation, and a hemostat to elevate the tongue, the lingual frenum was excised (Fig. 2). The remaining tissue was coagulated utilizing the Erbium laser at 10 mJ, 30 Hz, 0 % air, 0 % water. The procedure took five minutes. The patient returned in ten days for post-surgical examination (Fig. 3). Mother reported patient was feeding better and had gained weight. The patient returned in one month and every six months for recall examination. The patients' photos at four years and seven years post-surgery are shown in Figures 4a, 4b, 5a, 5b .

_Case 2

Hannah's mother informed the author that her infant was two weeks old and could not latch onto the breast nor bottle nipple due to an abnormally heavy frenum. Hannah was losing weight and the pediatrician had referred the patient to an otorhinolaryngologist (ENT) for a frenectomy procedure. The mother informed me that the ENT suggested a treatment plan involving a general anesthetic, scalpel and sutures to excise the frenum. A pacifier was used to illustrate the problem the infant had in latching onto the nipple

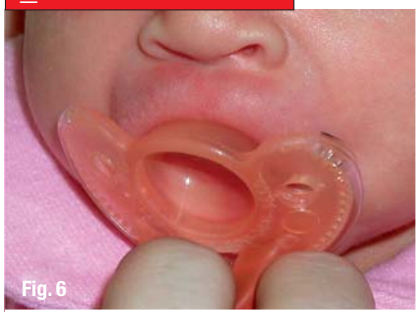
Fig. 6


Fig. 7


Fig. 8

(Fig. 6). After informed consent was obtained, a topical anesthetic (20 % benzocaine) was placed on the maxillary labial frenum (Fig. 7). Appropriate laser specific eye patches were placed over the infants' eyes. The mother's, operator's and assistant's eyes were also protected with appropriate wavelength safety glasses. An Er,Cr:YSGG laser (2,980 nm) (Biolase Technology™) was utilitzed with a MZ-6 tip at 2.0 W, 35 Hz, 0 % air, 0 % water. Excision of the frenum was performed. The procedure took 5 minutes. The tissue was coagulated to stop the bleeding with the laser at 0.5 W, 35 Hz, 0 % air, 0 % water. The patient's mother called me four days after surgery to report the infant had gained four ounces in the previous four days. The patient was seen for follow-up examination in one week (Fig. 8). The patient was seen again at one month with normal healing observed. _

Fig. 6_Hannah N., Two weeks showing poor sucking ability due to heavy labial frenum.
Fig. 7_Hannah N., Two weeks exhibiting heavy labial frenum.
Fig. 8_Hannah N., One week post-surgery.

References

[1] Ballard JL, Auer, CE, Khoury, JC. Ankyloglossia:Assessment, Incidence, and Effect of Frenuloplasty on the Breastfeeding Dyad. Pediatrics Nov.;110(5):63,2002.

[2] Wallace H, Clarke S. Tongue tie division in infants with breast feeding difficulties. Int J Pediatr Otorhinolaryngol. Jul;70(7):1257–61, 2006.

[3] Dollberg S,Botzer E,Gunis F, Mimouni FB. Immediate nipple pain relief after frenotomy in breast-fed infants with ankyloglossia: a randomized, prospective study. J Pediatr Surg. Sep;41(9):1598–600,2006.

[4] Gontijo I, Navarro RS, Haypek P, Ciamponi AL, Haddad AE. The applications of diode and Er:YAG lasers in labial frenectomy in infant patients. J Dent Child. Jan–Apr;72(1):10–15,2005.

_contact | laser

Fred S. Margolis,
DDS, Pediatric Dentist
195 Arlington Hts. Rd. #150
Buffalo Grove, IL 60089
Phone: +1-847-537-7695
Fax: +1-847-537-6758