

ABM Protocols

A central goal of **The Academy of Breastfeeding Medicine** is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.

Protocol # 11: Guidelines for the evaluation and management of neonatal ankyloglossia and its complications in the breastfeeding dyad

DEFINITION

Ankyloglossia, partial: The presence of a sublingual frenulum that changes the appearance or function of the infant's tongue because of its decreased length, lack of elasticity, or attachment too distal beneath the tongue or too close to or onto the gingival ridge. In this document we will refer to partial ankyloglossia as simply "ankyloglossia." "True" or "complete ankyloglossia," extensive fusion of the tongue to the floor of the mouth, is extremely rare and is not within the scope of this discussion.

BACKGROUND

At birth, the infant's tongue is normally able to extend over and past the mandibular gum pad. Significant ankyloglossia prevents an infant from anteriorly extending and elevating the tongue, and many breastfeeding experts believe that these limitations alter the normal peristaltic motion of the tongue during feeding, resulting in the potential for nipple trauma and problems with effective milk transfer and infant weight gain.

Ankyloglossia, commonly known as tongue-tie, occurs in approximately 3.2% to 4.8% of consecutive term infants at birth,^{1,2} and in 12.8% of infants with breastfeeding problems.² The condition has been associated with an increased incidence of breastfeeding difficulties: 25% in affected versus 3% in unaffected infants.¹

Various methods have been suggested to diagnose and evaluate the severity of ankyloglossia^{3,4} and to determine the criteria for intervention.^{5,6} Short- and long-term consequences of ankyloglossia may include feeding and speech difficulties,^{7,8} as well as orthodontic and mandibular abnormalities⁹⁻¹² and psychological problems.¹³

In the 1990s a number of case reports and observational studies were published that documented an association between ankyloglossia and breastfeeding problems.¹⁴⁻¹⁸ There is considerable controversy regarding the significance of ankyloglossia and its management, both within and among medical specialty groups.^{19,20} Both the diagnosis of ankyloglossia and the use of frenotomy, an incision or "snipping" of the frenulum, to treat ankyloglossia vary widely. The frenotomy procedure, carefully performed, has recently been shown to decrease maternal nipple pain to improve infant latch,² and to improve milk transfer (personal communication, J. Ballard, July 27, 2004). There is a growing tendency among breastfeeding medicine specialists to favor releasing the tongue of the infant to facilitate breastfeeding and to protect the breastfeeding experience. To date, no randomized trials exist to demonstrate frenotomy for ankyloglossia is effective in treating infant or maternal breastfeeding problems.

ASSESSMENT OF ANKYLOGLOSSIA

All newborn infants, whether healthy or ill, should have a thorough examination of the oral cavity that assesses function as well as anatomy. This examination should include palpation of the hard and soft palate, gingivae, and sublingual areas in addition to the movements of the tongue, and the length, elasticity, and points of insertion of the sublingual frenulum.

When breastfeeding difficulties are encountered and a short or tight sublingual frenulum is noted, the appearance and function of the tongue may be semi-quantified using a scoring system such as the Hazelbaker³ (Table P-3). The Hazelbaker scale has been tested for interrater reliability (personal communication, J Ballard, July 27, 2004) and validated in a sample of term neonates.² Hazelbaker scores consistent with significant ankyloglossia have been shown to be highly correlated with difficulty with latching the infant onto the breast and maternal complaints of sore nipples.² Alternatively, ankyloglossia may be qualified as mild, moderate, or severe by the appearance of the tongue and of the frenulum.

TABLE P-3 Hazelbaker assessment tool for lingual frenulum function*

Appearance Items

Appearance of tongue when lifted

- 2: Round or square
- 1: Slight cleft in tip apparent
- 0: Heart- or V-shaped

Elasticity of frenulum

- 2: Very elastic
- 1: Moderately elastic
- 0: Little or no elasticity

Length of lingual frenulum when tongue lifted

- 2: > 1 cm
- 1: 1 cm
- 0: <1 cm

Attachment of lingual frenulum to tongue

- 2: Posterior to tip
- 1: At tip
- 0: Notched tip

Attachment of lingual frenulum to inferior

- 2: Entire edge, firm cup
- 1: Side edges only, moderate cup
- 0: Poor or no cup

Peristalsis

- 2: Complete, anterior to posterior
- 1: Partial, originating posterior to tip
- 0: None or reverse motion

Snapback

- 2: None
- 1: Periodic
- 0: Frequent or with each suck

*The infant's tongue is assessed using the 5 appearance items and the 7 function items. Significant ankyloglossia is diagnosed when the appearance score total is 8 or less and/or the function score total is 11 or less. (2;3)

Adapted with permission from Hazelbaker AK: The assessment tool for lingual frenulum function (ATLFF): Use in a lactation consultant private practice Masters thesis, Pacific Oaks College, 1993.

Function Items

Lateralization

- 2: Complete
- 1: Body of tongue but not tongue tip
- 0: None

Lift of tongue

- 2: Tip to mid-mouth
- 1: Only edges to mid-mouth
- 0: Tip stays at lower alveolar ridge or rises to mid-mouth only with jaw closure

Extension of tongue

- 2: Tip over lower lip
- 1: Tip over lower gum only
- 0: Neither of the above, or anterior or mid-tongue humps

Spread of anterior tongue

- 2: Complete
- 1: Moderate or partial
- 0: Little or none

Cupping alveolar ridge

- 2: Attached to floor of mouth or well below ridge
- 1: Attached just below ridge
- 0: Attached at ridge

ASSESSMENT OF THE BREASTFEEDING DYAD

Breastfeeding complications caused by ankyloglossia can generally be placed into broad categories of those caused by maternal nipple trauma or failure of the infant to breastfeed effectively. Specific complaints include difficulty latching or sustaining a latch, infant becoming frustrated or falling asleep at breast, prolonged feedings, a dissatisfied baby, gumming or chewing at the breast, poor weight gain, or failure to thrive. Maternal complaints include traumatized nipples, severe unrelenting pain with feeding, inability to let down because of pain, incomplete breast drainage, breast infections, and plugged ducts.

The physician should interview the mother to ascertain her degree of confidence and comfort while breastfeeding. This can be done semi-quantitatively by using a scoring system such as the LATCH score or a similar tool.²¹ The LATCH score has been shown to correlate with breastfeeding duration but only due to subscores for breast comfort.²²

If the mother describes nipple pain, the physician may wish to use a pain scale in order to semiquantify her perception of the degree of her pain. This serves to follow trends in the severity of pain, which may help in determining the effectiveness of an intervention.

The infant should be weighed, and the rate of weight gain since birth should be assessed. The physician should observe the mother and infant while breastfeeding to assess the effectiveness of the feeding and provide assistance as appropriate. Problems including an inadequate or nonsustained latch and ineffective feedings should be noted. Test weights may be useful in assessing milk transfer. The infant should be weighed prior to and after breastfeeding without a change in clothing or diaper; the difference between the weights in grams indicates the amount of breast milk consumed in milliliters.

The mother's nipples should be examined carefully for creases, bruises, blisters, cracks, or bleeding. Areolar edema and erythema should be noted as possible signs of nipple infection. A family history of bleeding diatheses should be elicited.

RECOMMENDATIONS

Conservative management of tongue-tie may be sufficient, requiring no intervention beyond breastfeeding assistance, parental education, and reassurance.¹⁹ For partial ankyloglossia, if a tongue-tie release is deemed appropriate, the procedure should be performed by a physician or pedodontist experienced with the procedure; otherwise a referral should be made to an ear, nose, and throat specialist or oral surgeon. Release of the tongue-tie appears to be a minor procedure, but it may be ineffective in solving the immediate clinical problem and may cause complications such as infant pain and distress and postoperative bleeding, infection, or injury to Wharton's duct.¹⁹ Complications are rare, however.^{1,2,5,9}

Frenotomy, or simple incision or "snipping," of a tongue-tie is the most common procedure performed for partial ankyloglossia. It should be recognized that postoperative scarring may further limit tongue movement.¹⁹ Excision with lengthening of the ventral surface of the tongue or a z-plasty release is a procedure with less postoperative scarring, but it carries the additional risks of general anesthesia.¹⁹

THE FRENOTOMY PROCEDURE

Instruments: Iris scissors and grooved retractor

Supplies: Clean gloves and gauze; gelatin foam.

Method: Parents should be counseled about risks, benefits, and alternatives of the procedure and informed consent should be obtained. This counseling should include a discussion of the possibility that the clinical breastfeeding problem will not improve.

The frenulum may be transilluminated to check for translucency and lack of vasculature. The frenulum is usually a thin, translucent hypovascular membrane, where a simple frenotomy results in an almost bloodless procedure. Rarely, it may be thick and fibrous or muscular and relatively vascular. Thicker frenula are best incised by an otolaryngologist or oral surgeon under controlled conditions.

The frenulum is almost devoid of sensory innervation. Infants under 4 months of age can usually tolerate the frenotomy very well without any local anesthesia. Alternatively, topical anesthetic (e.g., benzocaine gel or paste) may be applied with cotton applicators to both sides of the frenulum in the area to be incised. This, however, may have the undesirable effect of numbing the mouth, such that the baby may not be able to suck effectively after the frenotomy is completed.

The infant is placed supine on the examining table or mother's lap. An assistant holds the baby's elbows firmly against the ears and stabilizes the chin with one index finger. Alternatively, the infant may be swaddled with a receiving blanket to immobilize the arms while the assistant stabilizes the head. Slight extension of the infant's neck allows better visualization of the tongue and frenulum. Using the grooved retractor or physician's fingers, the physician lifts the tongue to expose the frenulum. With the tips of the iris scissors an incision is made in the thinnest portion of the frenulum, close to the retractor and parallel to the tongue. Care is taken not to incise the tongue, the genioglossus muscle, or the gingival tissue. The incision should extend into the sulcus between the tongue and the genioglossus muscle, just beyond the level of the muscle, carefully avoiding the floor of the mouth. This ensures complete detachment of the tongue from the gingiva, without causing damage to the sublingual mucosa or to the salivary duct (Figure P-1).

The site beneath the tongue is blotted with gauze until little or no blood is seen. In the event of unexpected bleeding beyond 2 to 3 minutes, a strip of gelatin foam may be used to achieve rapid hemostasis. The infant may be returned to the mother immediately to be breastfed. Infant latch and

maternal nipple pain should be reassessed at this time. There is no specific aftercare required except for breastfeeding. A small white patch or eschar is seen in some infants for 1 or 2 weeks during the healing process. Infection of the site is exceedingly rare if clean technique is used as described.

Figure P-1 Using a Lorenz tongue elevator, the lingual frenum is exposed. Pulling upward on the tongue stretches and allows visualization of the frenum and the floor of the mouth. In this infant an 8mm incision was needed to allow sufficient movement of the tongue for effective breastfeeding to occur. (Picture courtesy of Dr. Larry Kotlow.)

Medical equipment used in this procedure should be sterilized or disinfected in accordance with the guidelines of the Centers for Disease Control.²³

MANAGEMENT OF MATERNAL AND INFANT COMPLICATIONS OF ANKYLOGLOSSIA

If nipple damage or infection is present, a problem-specific treatment program should be instituted. Mastitis and yeast infections should be treated according to established guidelines.²⁴

Some mothers may need nipple rest for one to several days to allow healing to occur before reinstating feedings at the breast. These mothers should be encouraged to express their breast milk in order to maintain their milk supply and to feed their milk to the baby by an alternate method.

Suppressed lactation should be addressed and every attempt made to reestablish the mother's milk supply. Infants who have been gaining weight slowly or failing to thrive may need to receive supplements of expressed breast milk or formula temporarily.

Follow-up for resolution of maternal and infant complications of ankyloglossia should take place by the mother's or infant's primary health care provider within 3 or 4 days of the frenotomy.

FURTHER RESEARCH

This protocol was developed by the Academy of Breastfeeding Medicine to provide clinicians with guidance about the assessment and treatment of ankyloglossia and associated breastfeeding problems. More definitive recommendations await future research in this area. The Academy of Breastfeeding Medicine urges that more research be undertaken so that the benefits and risks of frenotomy for ankyloglossia and its effectiveness in treating breastfeeding concerns can be better understood. We specifically recognize that the Hazelbaker and LATCH instruments cited in this document require further interrater and intrarater reliability and validity testing. We recognize that a critical need exists for clinical tools to assess breastfeeding performance as well as the degree of ankyloglossia and function of the tongue. In addition, a randomized investigator-blinded clinical trial is needed to assess the effectiveness of frenotomy in treating infant and maternal breastfeeding problems associated with ankyloglossia.

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