

A STUDY OF 112 CASES OF TONGUE-TIE AT THE KOMFO ANOKYE TEACHING HOSPITAL

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SUMMARY

One hundred and twelve consecutive patients, mostly children under six years of age, who presented at the Komfo Anokye Hospital for surgery to release a tongue-tie, were studied prospectively. The majority (75%) of the children seen were aged three months or less. The referrals were initiated mostly by grandmothers and parents of the children. Doctors and midwives were responsible for one third of the referrals. The parents were mainly concerned about the development of abnormal speech in their child if the condition was not treated. All the patients except two were treated under local anaesthesia. The main complications were haemorrhage and temporary cessation of breastfeeding possibly due to post-operative discomfort.

This latter complication has never been reported but is considered to be serious as it poses a risk of malnutrition especially in infants. It is recommended that surgery for tongue-tie should be carried out by trained personnel and where indicated it should be delayed until the child is no longer being exclusively breastfed.

There is an acute awareness among the laity of the condition of tongue-tie in the community, and this is linked to a strong belief among the populace that this condition causes impaired speech even though it is unproven. There is thus an abnormally high demand for lingual frenotomy.

There is also the need for community education about this condition. A multi-centre follow-up study into the long-term effects of untreated tongue-tie is required.

Keywords: Tongue-tie, ankyloglossia, lingual frenotomy, child, speech disorders, complications, Ghana.

The lingual frenum is a fold of tissue situated in the midline near the base of the tongue in the floor of the mouth and usually ends at the sublingual papilla. Rarely, it extends across the floor of the mouth and attaches on to the mandibular alveolus¹.

Tongue-tie or ankyloglossia is an abnormal condition affecting the lingual frenum. It is hereditary with a dominant mode of inheritance¹. A tongue-tie may be considered to be present when the lingual frenum is short, fibrous and thick. The frenum may be attached at or near the tip of the tongue and hold it close to the gingival margins of the lower incisor teeth². In some instances tongue-tie presents as a wide but thin vertical fold of mucosa joining the whole of the ventral surface of the anterior part of the tongue to the floor of the mouth and the mucogingival tissues. A tongue-tie may occur in isolation or it may be accompanied by other congenital anomalies such as a midline cleft of the lower lip, a cleft tongue, cleft lip and palate, a heart lesion and the absence of the hyoid bone³.

In ankyloglossia, tongue elevation is restricted and results in eversion of the lateral borders. There is also notching or clefting on protrusion and the tongue is unable to travel past the lower lip. Kotlow⁴ has proposed a system of classification of tongue-tie based on the length of free-tongue distal to the point of insertion of the lingual frenum into the ventral surface of the tongue. The study involved children who were eighteen months or older. Under this system of, the shorter the length of free-tongue the greater was the severity of ankyloglossia. While this measurement could be easily obtained in the older and co-operative child, it may not be so in infants. Furthermore, as some cases of tongue-tie are believed to resolve spontaneously with growth early frenotomy in the infant who qualifies for surgery according to this system may be unnecessary⁵.

Tongue-tie has been blamed for difficulties with sucking in infancy, poor speech development, and poor oral hygiene^{6,7}. Treatment for this condition is usually sought by parents with the hope of preventing these possible adverse effects in their children. In spite of its common occurrence there are no known follow-up studies in adults into the long-term effects of this condition on speech and other oral functions.

Where frenotomy is to be undertaken it is preferred that a formal surgical procedure be undertaken and the incised frenum repaired using an absorbable suture. This helps to promote uneventful healing and prevent any possible haemorrhage. While some insist on the need for general anaesthesia⁶, other use local anaesthesia⁴.

It has been the author's experience that requests for lingual frenotomy for babies are quite frequent; come from a variety of sources; and occur shortly after birth. Quite often, in our local community the refusal of the clinician to provide immediate or early surgery results in the parents "shopping around" for the services of anyone who will do it, including untrained traditional practitioners whose techniques may be unsafe and unhygienic.

The aims of this study were to identify

- the main sources of referral for the cases of tongue-tie seen;
- the reasons for the apparent high demand for frenotomy in the community; and
- the complications associated with treatment.

PATIENTS AND METHODS

This is a prospective study. All patients were seen by the author at the Komfo Anokye Teaching Hospital. Consecutive patients referred for a lingual frenotomy because of a tongue-tie during the 4-year period from May 1995 to April 1999 form the study sample. The relevant data including patient particulars, source of referral, reason for seeking treatment, family history of tongue-tie, and complications of treatment were collected on to special forms. Patients with other birth abnormalities or a significant medical history were excluded from the study.

Any of the following criteria for the diagnosis of a tongue-tie were used:

- Lingual frenum attached to the tip of the tongue or very close to the tip; (Figure 1a)
- Notching of the tip on protrusion of the tongue (Figure 1b)
- Inability to protrude the tongue past the lower lip
- Fixity of the tongue to the floor of the mouth in the absence of any known pathology resulting in very limited tongue movement.

Surgical Technique

All cases except two were treated using local anaesthesia following the infiltration of approximately 0.25-1.0ml of 2% lignocaine with 1:100,000 adrenaline, into the tongue. This is

within the maximum dose allowed for a 3 kilogram body weight child. Information derived from child welfare records suggested that none of the children weighed less than 3 kilograms. The quantity of local anaesthetic used was estimated and was not calculated exactly using the weight of the patient. In general the younger the patient the smaller the amount of anaesthetic used. A short period of time (up to 10 minutes) was allowed for the anaesthetic to take effect. After testing for anaesthesia, 3/0 catgut was passed through the tip of the tongue for traction. A transverse incision was then made using a pair of curved dissecting scissors and staying close to the ventral surface of the tongue. The tongue was then pulled upward and forward to check for improved mobility. Vertical closure using interrupted 3/0 chromic catgut sutures was then carried out. (Figures 2a and 2b). In most cases the surgical procedure took less than five minutes. Postoperatively a mild analgesic, usually paracetamol in appropriate dosage was prescribed to be taken regularly for 2-3 days. All patients were reviewed one week after surgery.

RESULTS

A total of 112 patients were seen comprising 70 males and 42 females giving a male to female ratio of 5:3. The youngest patient was one week old and the oldest was 25 years old. Seventy-five percent (75%) of those treated were aged 3 months or less. (Figure 3)



Figure 1a Short lingual frenum in a case of tongue-tie



Figure 1b Notching of tip of tongue on protrusion



Figure 2a Incised lingual frenum

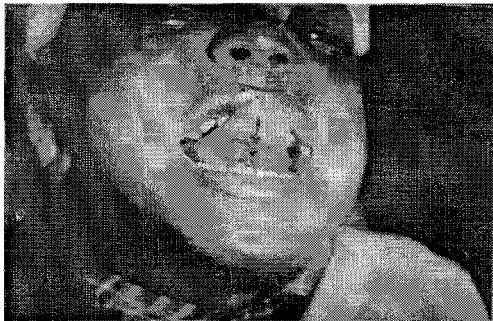


Figure 2b Vertical closure with simple interrupted absorbable sutures

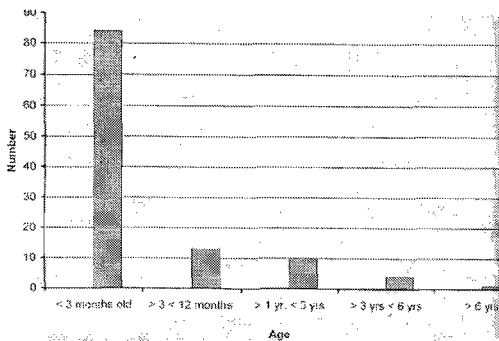


Figure 3 Age distribution of patients

Relatives including grandmothers and parents diagnosed and referred the largest number of cases, i.e. nearly two-thirds of all cases seen (Table 1).

Table 1 Source of referral

Referral source	Number (%)
Grandmother	33(29.5)
Parent	27(24.1)
Nurse/midwife	20(18)
Doctor	14(12.5)
Neighbour	9(8)
Other relative	6(5.4)
Self	1(0.9)

The major reason given by parents for presentation was either the presence of poor speech in the case of older children or the fear of mutism in the case of infants (Table 2).

Table 2 Reasons for presenting

Reasons for seeking treatment	Number (%)
Speech-related	104(93)
Not sure	5(4.5)
Previous failed frenotomy	2(1.8)
Social	1(0.9)

Two of the cases treated followed previous unsuccessful surgery. One adult female wanted a frenotomy because of her inability to lick the lips. Fifteen (13.4%) cases had an older sibling with tongue-tie who had a frenotomy.

In the vast majority of cases surgery was uncomplicated, with only one case of post-operative haemorrhage. (Figure 4)



Figure 4 Postoperative sublingual haematoma after frenotomy

Twenty-three (20.5%) of the children stopped breastfeeding for between 2-5 days after the operation.

DISCUSSION

The population of Ghana is mostly rural⁸ and grandmothers function as the traditional birth attendants or traditional midwives in such areas. They thus routinely examine for birth abnormalities including tongue-tie in the new-born. It is therefore not surprising that grandmothers and parents were responsible for nearly two-thirds of the referrals for frenotomy.

Ninety-three percent of the mothers wanted a lingual frenotomy for their child because of their de-

sire to ensure that their children developed a normal speech. Some mothers blamed the presence of tongue-tie for their child's inability to cry out loud. In some instances parents wanted a frenotomy for their child because either a close relative or a neighbour had suggested so. Some parents (4.5%), even though were not sure as to why their child needed a frenotomy still insisted on having it done. Only 15% of cases had a family history of treated tongue-tie in an older sibling. These findings suggest that the fear of the development of an abnormal speech or mutism if tongue-tie goes untreated is quite prevalent in this community even though there is no scientific evidence to support it.

Midwives and paediatricians referred 30% of the cases for frenotomy. These cases were either considered to require surgery by the referring health professionals or were referred as a result of pressure from the children's relative. In some cases the stated reason for the referral was the non-availability of instrumentation for the procedure.

The procedure of frenotomy, which seems to be considered as being trivial in this community is performed by a wide variety of practitioners, including medical and dental practitioners; nurses; midwives; lay persons; and traditional circumcision practitioners ("wanzam"), etc. under varying conditions of sterility. The usual practice among some of these practitioners is for the tongue-tie to be incised in the crying child without any anaesthetic using various unsterile devices including razors, knives and scissors. No suturing is usually done and there is an increased risk of haemorrhage, infection and damage to adjacent structures. The use of local anaesthesia permits proper control of the operative site. The surgeon is also reassured that the child though frightened, does not feel pain. It is a cheaper alternative to general anaesthesia.

Two frenotomies were done under general anaesthesia. One was a case of tethering of the tongue to the floor of the mouth following an attempted frenotomy by a midwife. This had made suckling difficult. The other was a case of damage to the submandibular duct orifice during an attempted frenotomy by a "wanzam" causing obstruction to saliva drainage and resulting in a painful swelling of the involved submandibular gland. Both were successfully treated.

Even when the procedure is carefully carried out it is not completely risk-free. One patient in this study developed a sublingual haematoma and prolonged post-operative bleeding which required

admission and re-suturing to control it. This patient was subsequently diagnosed as having idiopathic thrombocytopenia. There was no need for platelet transfusion, but this case further highlights the need for a cautious approach to tongue-tie surgery.

Approximately twenty percent (20.5%) of the patients were reported to have stopped breast feeding for periods ranging from 2-5 days following the frenotomy. This was thought to be due to oral discomfort experienced by the children after the surgery as a result of pain or swelling in the tongue and /or the floor of the mouth causing a restriction of tongue movement. It is therefore important that frenotomy patients are reviewed after the operation to check for complications. The role of regular analgesia during the first few days post-operation is to help reduce the level of discomfort in such young patients.

The abnormally high demand for lingual frenotomy as well as the involvement of untrained persons in the treatment of tongue-tie in this community exerts undue pressure on the surgeon to treat all cases seen, as early as possible, even in the absence of convincing evidence about the value of the procedure. This reflected in the finding that 84% of the treated patients were aged three months or less. While frenotomy may be performed early by the surgeon to obviate the risks posed by treatment by untrained operators it is not evidence-based. Furthermore the procedure is not entirely risk-free.

There is the need for a community-wide programme of education about the non-urgent nature of surgery to release ankyloglossia. Potential complications of the procedure must also be emphasized. Multi-centre follow-up studies into the association between tongue-tie and the problems believed to arise from it are needed.

CONCLUSION

There is a high demand for lingual frenotomy for release of tongue-tie and grandmothers are responsible for most requests for treatment. The major reason given by parents seeking frenotomy for their children is the fear of abnormal speech development even though there is no published evidence in support of this.

Surgery for tongue-tie caused temporary cessation of breastfeeding in a significant proportion of children and may also cause haemorrhage. The major complication associated with premature cessation

of breastfeeding is malnutrition especially in the infant. To avoid this, it is recommended that surgery for tongue-tie, when indicated should be delayed until the child is no longer being exclusively breastfed i.e. from six (6) months of age onwards.

There is a need for further studies into the long-term effects of tongue-tie.

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