

Received: 2003.05.07
Accepted: 2003.07.09
Published: 2003.10.02

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

Office treatment of congenital ankyloglossia

Sody Abby Naimer^{1,2}, Amnon Biton², Daniel Vardy³, Alex Zvulunov^{3,4}

¹ Goosh Katif Health Center, Goosh Katif, Gaza, Israel

² Family Medicine Department, Clalit Health Services, SIAL Research Center for Family Medicine and Primary Care, Division of Community Health, Ben Gurion University of the Negev, Beer Sheva, Israel

³ Dermatology Institute, Clalit Health Services, Beer Sheva, Israel

⁴ Department of Pediatrics, Joseftal Hospital, Eilat, Israel

Source of support: none.

Summary

Background:

Congenital oral adhesions may pose both aesthetic and functional disturbing ailments to wary parents. Most of these as we have experienced, are benign, easily cured and may be treated as soon as possible in the office. A local survey elucidated that these youngsters are usually advised to wait until one year of age and then taken into the operating room and incision of the adhesion is performed under general anesthesia. We assessed the benign nature of this ailment and relative avascularity of the tissue involved and concluded that with minimal risk an office procedure under local anesthesia can replace current practice. We also found that most referrals with this condition present with the lowest grade of severity of ankyloglossia, amenable to a very brief intervention.

Material/Methods:

During the period 1998-2002 we diagnosed nineteen congenital lesions in thirteen patients. All children were treated in a community clinic setting using electrocautery under local anesthesia. Surgical success was defined as significant improvement in the ability to protrude the tongue outwards beyond the gums and teeth. Gingival adhesions were judged by release of soft tissue adhesions.

Results:

Tongue Surgical success was accomplished in all cases with minimal discomfort and without complications. In one single case the previous functional limitation was not relieved.

Conclusions:

Our experience indicates that office-based electrocautery dissection is an efficacious economical and safe treatment of mild congenital oral adhesions. We recommend this method as therapy of choice for such lesions.

key words:

ankyloglossia • office procedure • electrocautery • congenital adhesions

Full-text PDF:

http://www.MedSciMonit.com/pub/vol_9/no_10/3683.pdf

Word count:

1603

Tables:

3

Figures:

2

References:

10

Author's address:

Sody Abby Naimer MD, Goosh Katif Health Center, Neve Dekalim, POB Hof Gaza, Israel 79779,
email: sody@bgumail.bgu.ac.il

BACKGROUND

Although tongue-tie, or ankyloglossia, is a well known congenital oral anomaly since ancient times, there are still controversies about its incidence and clinical significance [1,2]. Advocated treatments of ankyloglossia range from conservative speech therapy, frenotomy (clipping) or frenuloplasty [1–4].

Confronting this condition with insufficient experience will inadvertently result in case referral and unwarranted intervention, despite the existence of a simple solution immediately available to the primary care pediatrician. The purpose of this report is to facilitate diagnosis and treatment of this congenital lesion by the primary care physician.

MATERIAL AND METHODS

Patients were either diagnosed at the community health center adjacent to a maternity clinic, or referred by physicians knowledgeable of this intervention at our clinic. The patients' parents initially received report of their offspring's 'tongue-tie' in the nursery after the infant's birth or noticed the problem themselves during the course of development.

To assess the extent of limitation of tongue movement, the mouth was carefully inspected under adequate illumination with a tongue depressor. Upon diagnosis, the patients' parents were informed of the nature of the lesion, its functional implications, and the variety of surgical approaches. After obtaining informed consent, by means of a metal dental syringe fitted with a 27G needle, local anesthesia with 0.5–1 cc of mepivacaine 1% (with or without adrenaline) was performed. As a rule, the incision was performed adjacent to the inferior tongue surface. Where gingiva was involved, avulsion was performed adjacent to the gingival surface.

After wiping away excess saliva by gauze pads, bipolar electrocautery diathermy was used for tissue incision. This phase was very short but demanded rigorous caution not to damage the buccal mucosa or lips. Parents were advised to administer paracetamol syrup if the child was irritable after the procedure. An additional successful tactic was to reward the elected patient cold confectionary such as ice cream or 'ice pop' always accepted with a smile immediately after the procedure (providing the child of toddler age or older). We chose to describe three separate representative cases for the sake of demonstrating the scope of dealing with these cases.

CASE REPORTS

Patient #3

A mother, concerned about the aesthetic effect of a sublingual skin web limiting ability to elevate the tongue, brought her four-month-old female baby to our clinic. Although, no functional disturbance was apparent at the time, a pediatrician recommended surgery by a pediatric surgeon. Seeking a second opinion, the baby was



Figure 1. Presenting sublingual web limiting tongue motion.



Figure 2. Full release of constricting tissue immediately following electrocautery.

brought to our clinic. Close inspection revealed anatomical grade I–II ankyloglossia, two additional lateral adhesions between inner cheeks and the free gingival border, and one other web between the anterior upper teeth and posterior upper lip.

Both parents were informed regarding the benign nature of the condition and offered hyfrecation treatment under local anaesthetic. The therapeutic intervention was carried out immediately and concisely without any untoward sequelae (Figures 1,2).

Patient #4

A six-year-old child was referred to our clinic for the treatment of congenital oral adhesions. On examination, a lateral soft tissue adhesion was found between the left lateral vestibular tissue of the inner cheek, while on the right side the adhesion reached the inferior edge of the gingiva of the upper right teeth. On this side the tension pulled the gingiva away from the tooth necks and caused exposure of the tooth's neck. Following infiltration of anesthesia of the involved region, the adhesions were released down to the base of the gums sufficient to relieve tension of the restricted tissue.

Table 1. Clinical characteristics of the patients.

| Patient number | Age | Number of adhesion | Clinical features |
|----------------|-----------|--------------------|---|
| 1 | 5 months | 1 | Right lateral upper adhesion between gingiva and lateral surface of vestibulum |
| 2 | 7 years | 1 | Sublingual short frenulum |
| 3 | 4 months | 4 | Sublingual short frenulum. Bilateral upper adhesions between gingiva and lateral vestibular mucosal surface. Adhesion between gingiva of anterior incisors and posterior surface of upper lip |
| 4 | 6 years | 2 | Bilateral upper adhesions between gingiva and lateral vestibular mucosal surface. Notable recession of the gingiva away from teeth necks on right side |
| 5 | 8 months | 1 | Lower anterior adhesion between gingiva and posterior lower lip |
| 6 | 5 months | 2 | Bilateral upper adhesions between gingiva and lateral vestibular mucosal surface |
| 7 | 6 months | 1 | Sublingual short frenulum |
| 8 | 12 years | 1 | Sublingual short frenulum with bifid distal tongue |
| 9 | 8 months | 2 | Sublingual web and web between anterior lower lip and gingiva of anterior mandible |
| 10 | 18 months | 1 | Sublingual web with significant limitation of tongue elevation or protrusion |
| 11 | 11 months | 2 | Sublingual web with significant limitation and bifid anterior tip of tongue- released. A smaller adhesion between lower lip and gingiva surface was left untreated since it seemed asymptomatic |
| 12 | 15 months | 1 | Sublingual web and soft tissue limitation with full protrusion as a sign of content immediately after procedure completion |
| 13 | 6 years | 1 | Significant tongue limitation by sublingual adhesion |

Table 2. Clinical criteria for normal range of motion of the tongue. (Modified from Kotlow. [2]).

1. The tip of the tongue can be protruded outside without clefting
2. The tip of the tongue can easily sweep upper and lower lips
3. Retraction of the tongue should not cause blanching of the lingual tissue (at the insertion of the frenulum)
4. There is no traction of anterior mandibular teeth by the lingual frenulum
5. There is no protrusion of the lingual frenulum between mandibular incisors
6. There is no abrasion of the underside of the tongue
7. The frenulum does not cause poor attachment during breastfeeding in infants
8. There is no speech difficulty attributed to the limitation of motion of the tongue

Table 3. Severity grade of ankyloglossia (Modified from Kotlow 1999).

| Class | Severity | Normal range of free tongue |
|-------|----------|-----------------------------|
| I | Mild | 12–16 mm |
| II | Moderate | 8–11 mm |
| III | Severe | 3–7 mm |
| IV | Complete | <3 mm |

Normal range of free-tongue (defined as the length from the base of the insertion of lingual frenulum to the tip of the tongue) > 16 mm

Patient #8

A routine checkup of a twelve-year-old boy revealed a bifid shape of the anterior tip of the tongue upon attempted extension. This was known to the parents already aware of the presence of an elongated web of tissue stemming from the inferior surface of the tongue and approaching the tongue tip. Although no speech problems existed, the boy could not lick his lips.

Following informed consent, electrocautery was performed right down to the vascular muscular thick frenulum. Disappointingly, after the procedure there was no notable improvement of mobility of the tongue.

RESULTS

The clinical findings of the patients are summarized in the Table 1. Nineteen adhesions in thirteen patients were treated. In all but one patient (case 8), the adhesions appeared thin and mildly vascular upon initial examination. There were no incidents of major or minor hemorrhage from the hyfrecation site. The only sites of bleeding were those of the needle puncture sites resulting from the anesthesia needle stick. These were treated by local pressure. The favorable outcome of the procedure was apparent immediately and the extent of release could be assessed during the intervention itself.

There were no reports of unexpected irritability after the procedure. Few resorted to analgesics. In general, all subjects and/or respective families were content with the procedure. In patient #8, the adhesion was released without any ensuing clinical advantage as far as function is concerned. The congenital defect of his short tongue base was unnoticed until the skin web no longer hindered tongue protrusion. Thus freedom of motion was not improved by the procedure in this case.

DISCUSSION

The incidence of ankyloglossia in various reports ranges from 0.02% to as high as 4.8% of term newborns [5].

The clinical significance as well as modes of therapy vary according to subjective perception of the treating physician [5]. There is also a wide range of opinions regarding the frequency and significance of associated clinical features, such as feeding problems, speech disorder, and various mechanical and social problems [2,6]. In contrast to 30% of otolaryngologists who believe that it is associated with feeding problems, only 10% of pediatricians agree with this [2]. Conversely, while about 80% of pediatricians state that tongue-tie rarely, if ever, causes speech problems, only 50% of speech therapists and 40% of otolaryngologists agree with this statement [2]. The therapeutic approach is usually derived from subjective perceptions of the associated problems by treating physicians. Among otolaryngologists, 53–74% advise surgical treatment for feeding, mechanical, social or speech problems, whereas only 19–29% of pediatricians refer their patients to surgery for the same reasons [2]. There are also differences in preferences for surgical settings by various physicians: pediatric surgeons advocate general anesthesia for frenulotomy [6], about half of otolaryngologists perform frenulotomy under either general or local anesthesia [2], while pediatric dentist promote local anesthesia only [3].

The controversies stem, partly, from great variations in the subjective definition of ankyloglossia. Recently, Kotlow et al., defined clinical criteria for normal range of motion of the tongue (Table 2) and proposed classification of ankyloglossia based on anatomical measurements (Table 3) [4]. The clinical examination should always assess the functional aspects as described in Table 3. All the patients in this series were graded between grades I and II according to Kotlow's classification. We did not confront any cases of greater severity despite the lack of any case selection whatsoever. This leads us to believe that the overwhelming incidence of ankyloglossia in the general population is of the lower grade, as a rule. Knowledgeable of this fact, a valid argument raised should question why bother with these minor defects altogether? In our view, despite the fact that speech impediment is rare, nevertheless for the mere purpose of dental toilette, oral and buccal hygiene, gesture and even future intimacy functions every child deserves the privilege to be able to protrude his/her tongue. Furthermore even adversaries will admit that for the selected few determined to correct this condition, the most simplistic approach should be preferred.

Although amongst our patients there were no thick, highly vascular frenula, such subtypes do exist and may necessitate suturing for homeostasis immediately after incision is performed. If our series is representative, such cases must also appear less often.

Patient #4 presented with the potentially detrimental traction of the gums away from the surface of the teeth and consequent exposure of the teeth necks. Other reasons for) treating these membranous adhesions are potential speech impediment in extreme cases, limitation of oral toilette or general discomfort while eating. Early intervention is psychologically less traumatic and saves the child from unnecessary general anesthesia in the future.

The coexistence of a number of congenital membranes in the same subject as in the patients #3, 6 and 9 (see Table 1) suggests a developmental disorder of embryonal differentiation [7]. Therefore when a single adhesion is detected, it is recommended to thoroughly examine the oral cavity and search for similar findings all along the buccal mucosa. Failure to achieve free tongue mobility in patient #8, may have been predicted with close investigation of the tongue tip, by disclosing a minor bifid tongue that is not amenable to full release by this technique. We were originally denied full assessment of tongue mobility simply because the distal soft tissue adhesion itself completely restricted any forward protrusion of the tongue. Thus, the recruitment criteria should exclude a congenitally short tongue. Though, since the length of the tongue cannot be fully assessed with coexistence of tissue restriction, parents should be warned that success cannot be promised in absolutely all cases. We firmly oppose cutting with scissors or scalpel even under local anesthetic because of fear of unnecessary bleeding in a conscious incompletely cooperative subject.

The bipolar electrocautery needle appears as an ideal tool for performing adhesiolysis of superficial tissue. Affording for a very brief and accurate procedure. This is widely established in other forms of minor surgery [8,9]. Additional advantage of bipolar equipment is its extensive use in primary care offices. Expenses are greatly reduced in comparison to unipolar diathermy with its added demand of a disposable pad. Furthermore, this approach saves referrals to a specialist and, consequently, reduces the cost of the procedure [10].

CONCLUSIONS

Our experience indicates that office-based electrocautery dissection is an efficacious, economical and safe treatment for mild congenital oral adhesions. We recommend this method as the therapy of choice for such lesions.

REFERENCES:

1. Warden PJ: Ankyloglossia: a review of the literature. *Gen Dent*, 1991; 39: 252-3
2. Messner AH, Lalakea ML: Ankyloglossia: controversies in management. *Int J Pediatr Otorhinolaryngol*, 2000; 54: 123-131
3. Velanovich V: The transverse-vertical frenuloplasty for ankyloglossia. *Mil Med*, 1994; 159: 714-5
4. Kotlow LA: Ankyloglossia (tongue-tie): a diagnostic and treatment quandary. *Quintessence Int*, 1999; 30: 259-262
5. Messner AH, Lalakea L, Aby J et al: Ankyloglossia. *Arch Otolaryngol Head Neck Surg*, 2000; 126: 36-39
6. Wright JE: Tongue-tie. *J Paediatr Child Health*, 1995; 31: 276-278
7. Itoh M, Takato T, Park S et al: Congenital alveolar adhesions. *Ann Plast Surg*, 1992; 29: 89-91
8. Peters KM, Kass EJ: Electrosurgery for routine pediatric penile procedures. *J Urol*, 1997; 157: 1453-5
9. Smith TL, Smith JM: Electrosurgery in otolaryngology-head and neck surgery: principles, advances, and complications. *Laryngoscope*, 2001; 111: 769-80
10. Ankyloglossia – to snip or not to snip: is that the question. *J Hum Lact*, 1990; 6: 101-2

Index Copernicus

Global Scientific Information Systems
for Scientists by Scientists

www.IndexCopernicus.com



TM

INDEX
COPERNICUS
INTERNATIONAL



EVALUATION & BENCHMARKING

PROFILED INFORMATION

NETWORKING & COOPERATION

VIRTUAL RESEARCH GROUPS

GRANTS

PATENTS

CLINICAL TRIALS

JOBS

STRATEGIC & FINANCIAL DECISIONS

Index Copernicus integrates

IC Scientists

Effective search tool for collaborators worldwide. Provides easy global networking for scientists. C.V.'s and dossiers on selected scientists available. Increase your professional visibility.

IC Virtual Research Groups [VRG]

Web-based complete research environment which enables researchers to work on one project from distant locations. VRG provides:

- ⊗ customizable and individually self-tailored electronic research protocols and data capture tools,
- ⊗ statistical analysis and report creation tools,
- ⊗ profiled information on literature, publications, grants and patents related to the research project,
- ⊗ administration tools.

IC Journal Master List

Scientific literature database, including abstracts, full text, and journal ranking. Instructions for authors available from selected journals.

IC Patents

Provides information on patent registration process, patent offices and other legal issues. Provides links to companies that may want to license or purchase a patent.

IC Conferences

Effective search tool for worldwide medical conferences and local meetings.

IC Grant Awareness

Need grant assistance? Step-by-step information on how to apply for a grant. Provides a list of grant institutions and their requirements.

IC Lab & Clinical Trial Register

Provides list of on-going laboratory or clinical trials, including research summaries and calls for co-investigators.