Ethics : Tongue Tie Division

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Ethics

- Ethics in Medicine (University School of Medicine, Washington DC)
- Rights of parents
- Best Interest of Child
- Family Issues/values
- Challenge to parental decisions
Surgery

- Neonatal Surgery
- TEF
- Intestinal obstruction
- Diaphragmatic Hernia
- Fetal Surgery
3 different Scenarios

- Child with volvulus: Ischemic intestine, short bowel/transplant, quality of life
Child with NEC
Ondine Curse

- Central Hypoventilation syndrome
Neonatal Circumcision

- Between Prophylaxis and Child Abuse: The Ethics of Neonatal Male Circumcision (American Journal of Bioethics)
- Is Circumcision: mutilation (disfigurement or injury by removal or destruction of any conspicuous or essential part of the body)
- Breast reduction/liposuction/rhinoplasty
- Informed Consent/Best Interest of the child
- Cost/Benefit
Why

- Originally a hygiene measure
- A ritual, religious
- Enhance/decrease sexual performance
- Prevent masturbation (Brigman)
**Current position statements**

- **RACP/RACS 2010**
  - Not recommended routinely
- **American Academy of Pediatrics 2012**
  - Not recommended routinely
  - Justified for families that choose it
- **Canadian Pediatric Society 1989**
  - Not recommended

None recommend routine circumcision
Finland
- In February 2010, a Jewish couple were fined for causing bodily harm to their then infant son who was circumcised in 2008 by a mohel brought in from the UK. Normal procedure for persons of Jewish faith in Finland is to have a locally certified mohel who works in Finnish healthcare perform the operation. In the 2008 case, the infant was not anesthetized and developed complications that required immediate hospital care. The parents were ordered to pay 1500 euros in damages to their child.

Netherlands

Germany
- Dec 2012; law passed explicitly permitting non-therapeutic circumcision to be performed under certain conditions (religious)
Medical indications

- Recurrent UTIs – 1% children
  - Foreskin increases UTI risk 5 – 10 times
- Phimosis (pathological) – 1% children
- Recurrent balanitis – 1% children
Neonatal Circumcision

- Painful
- Complications: vary
- Circumcision offers 10-fold risk reduction in UTI’s (0.15% of circumcised and 1.5% of uncircumcised boys)
- Protection against STD/penile cancer
- May be some value
- Cultural Views/ personal preference
To clip, or not to clip.
That is the question!
Tongue Tie

- More Common in males (1.5–2.6:1)
- Most sporadic
- Mutations in T-box transcription factor TBX22 may cause a hereditable ankyloglossia with an association with cleft lip and palate
- Maternal cocaine abuse
Tongue Tie: Historical References

- Reported for >20 centuries
- Aristotle (3rd Century BC)
- 2000 yr old writings of Celsus (Rome, 646 AD)
- Moses (Exodus 4:10)
- Chinese
- Byzantine surgeon, Paul of Aegina (7th Century AD)
- Middle ages - French midwives’ nails
- 1729 Nurses’ guide
- 1750’s Complications
- Moss 1794 – re breastfeeding
- Western Medicine: Controversy re speech - mid 1900’s
Much Ado About Nothing: Two Millenia of Controversy on Tongue-Tie
M. Obladen, Neonatology 2010; 97:83–89

Historical only, not meta-analysis
Conclusion: Need consistent definition and more research

Fig. 2. Surgical instruments for frenotomy. From left to right: tongue-lifter of Scultetus [15] in 1666; tongue fork of Mauriceau [16] in 1880; sondé cannelée of Petit [20] in 1774; blunt curved scissors proposed by Schmitt [51] in 1804; lateral view of scissors.

Fig. 1. Woodcuts showing the operative techniques of Fabricius [14] in 1620 (a) ['the tongue is held with a handkerchief and the band loosened with a falciform knifelet'] and Scultetus [15] in 1666 (b) ['how the surgeon lifts the tongue with a silver instrument and dissects the attached band with a small sharp scissors']. c Ranula (grenouillette) with Petit’s spatula on frenulum [30].
Presenting Problems:

- Poor latch/suck (coming on & off breast)
- Nipple damage → breast & nipple pain → mastitis
- Slow, poor feeders → slow weight gain
- Decreased emptying of breasts → decreased milk supply
- Very prolonged feeding periods with little satisfaction by either infant or mother
- Maternal fatigue and frustration
**Type 1:** Tip of the tongue to in front of the alveolar ridge

**Type 2:** 2–4 mm behind the tongue tip, attaches on or just behind the alveolar ridge

**Type 3:** Attaches mid-tongue to the floor of the mouth

**Type 4:** Sits at the base of the tongue, is thick, shiny and very inelastic

Types 3 & 4 may require a digital exam
Tongue Tie: Clinical Significance

- Feeding
  - More problem with breastfeeding than bottle

- Speech
  - Still debated. Pronunciation, fluency, quality, especially when stressed and angry.

- Dental health
  - Orofacial development, dental caries.

- Social/aesthetic
  - Appearance, kissing, eating habits, self-esteem

- Sleep Apnea
"Oh, diagnosing tongue-tie is just a fad" or "This tongue-tie business is just something new that some people are doing".
Pre and Postoperative Appearance of the Usual Very Thin Frenulum Type 1

Postoperative Diamond Shape Defect of 3 mm Thick Frenulotomy
Position statements

- The Canadian Paediatric Society “based on available evidence. Fenotomy cannot be recommended”
- The Dutch have abandoned frenotomy
- The Japan Paediatric Society “Ankyglossia does not cause feeding difficulties and frenotomy is not necessary in infancy”
- The National Institute for Health and Care Excellence supports the use of frenulotomy, stating that there are no major safety concerns about the division of ankyglossia and limited evidence that the procedure can improve breast feeding
- The American Academy of Paediatrics “when tongue-tie is symptomatic, it should be treated as early as possible to minimise breast feeding problems”
n=323
Response rate 80.8%
73% practised tongue tie release
46% Oral/max surgeons
37% plastic surgeons
17% paediatric surgeons
## Indications

### Table 2  Surgical specialty and indications for releasing a tongue-tie (TT)

<table>
<thead>
<tr>
<th>Surgical specialty</th>
<th>No response</th>
<th>Reduced tongue mobility</th>
<th>Poor speech/artic.</th>
<th>Poor oral hygiene</th>
<th>Cosmetic</th>
<th>Poor swallowing ability</th>
<th>TT rarely requires releasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatric general surgery</td>
<td>–</td>
<td>32 (78.0)</td>
<td>24 (58.5)</td>
<td>14 (34.1)</td>
<td>19 (46.3)</td>
<td>5 (12.2)</td>
<td>7 (17.1)</td>
</tr>
<tr>
<td>Plastic surgery</td>
<td>–</td>
<td>70 (80.5)</td>
<td>54 (62.1)</td>
<td>16 (18.4)</td>
<td>20 (23.0)</td>
<td>14 (16.1)</td>
<td>9 (10.3)</td>
</tr>
<tr>
<td>Oral and maxillofacial surgery</td>
<td>1 (0.9)</td>
<td>88 (81.5)</td>
<td>76 (70.4)</td>
<td>42 (38.9)</td>
<td>14 (13.0)</td>
<td>15 (13.9)</td>
<td>8 (7.4)</td>
</tr>
<tr>
<td>Total n (%)</td>
<td>1 (0.4)</td>
<td>190 (80.5)</td>
<td>154 (65.3)</td>
<td>72 (30.5)</td>
<td>53 (22.5)</td>
<td>34 (14.4)</td>
<td>24 (10.2)</td>
</tr>
</tbody>
</table>
A Double-Blind, Randomized, Controlled Trial of Tongue-Tie

Enrollment
Assessed for eligibility (n=100)

Excluded (n=40)
- Inclusion criteria not met (n=14) (bottle fed)
- Declined to participate (n=17)
- Other reasons (n=9) (infant would not feed)

Randomized (n=60)

Allocation
Allocated to Group A Division (n=30)
- Received allocated intervention (n=30)
- Did not receive allocated intervention (n=0)

Allocated to Group B Non-division (n=30)
- Received allocated intervention (n=30)
- Did not receive allocated intervention (n=0)

Analysis
Effect of intervention analysed (n=27)
Excluded from analysis (n=3) Blinding failed

Effect of intervention analysed (n=30)
Excluded from analysis (n=0)
The lactation nurse actually spotted his tongue-tie and, oh gosh! So... basically, she got us an appointment straight away and we went down and got it done and he has been a different kid... and just latching on, which has been fantastic.
1500 health professions
90% paediatricians/70% ENT: Tongue -tie never or rarely a problem
Most lactation consultants believed that frenotomy works
Belief in spontaneous cure
Reduction in tonsillectomies, grommets for otitis media
# Level of evidence

## Size of Treatment Effect

<table>
<thead>
<tr>
<th>CLASS I</th>
<th>Benefit &gt;&gt; Risk</th>
</tr>
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<tbody>
<tr>
<td>Procedure/Treatment SHOULD be performed/administered</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>CLASS IIa</th>
<th>Benefit &gt;&gt; Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional studies with focused objectives needed</td>
<td></td>
</tr>
<tr>
<td>IT IS REASONABLE to perform procedure/administer treatment</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CLASS IIb</th>
<th>Benefit &gt; Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional studies with broad objectives needed; additional registry data would be helpful</td>
<td></td>
</tr>
<tr>
<td>Procedure/Treatment MAY BE CONSIDERED</td>
<td></td>
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</table>

<table>
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<tr>
<th>CLASS III</th>
<th>No Benefit</th>
</tr>
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<tbody>
<tr>
<td>Procedure/Treatment MAY NOT BE PERFORMED</td>
<td></td>
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</table>

### Level A
- Multiple populations evaluated
- Data derived from multiple randomized clinical trials or meta-analyses

### Level B
- Limited populations evaluated
- Data derived from a single randomized trial or non-randomized studies

### Level C
- Very limited populations evaluated
- Only consensus opinions of experts, case studies, or standard of care

#### Comparative effectiveness phrases
- Treatment strategy A is recommended/indicated in preference to treatment B |
- Treatment strategy A is probably recommended/indicated in preference to treatment B |
- It is reasonable to choose treatment A over treatment B |
- It is not recommended/indicated to perform treatment B |
- It is not reasonable to recommend treatment A over treatment B |
- Treatment strategy A is probably not recommended/indicated |
Immediate nipple pain relief after frenotomy in breast-fed infants with ankyloglossia: a randomized, prospective study

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Index words: Tongue-tie; Breast-feeding difficulties; Nipple pain

Abstract
Purpose: Ankyloglossia ("tongue-tie") occurs in nearly 5% of neonates, but its clinical significance relating to breast-feeding difficulties is controversial. We tested the hypothesis that in infants with ankyloglossia referred because of breast-feeding difficulties, frenotomy alleviates the symptoms.

Methods: Twenty-five mothers of healthy infants with ankyloglossia were recruited because of sore nipples. Infants were randomized to either of 2 sequences: (1) frenotomy, breast-feeding, sham, breast-feeding (n = 14) or (2) sham, breast-feeding, frenotomy, breast-feeding (n = 11). The mothers as well as all personnel taking care of the child after each sham or frenotomy procedure were masked as to the study sequence. In every sequence, and after each sham or frenotomy procedure, a standardized latch score and pain score were obtained from the mother.

Results: There was a significant decrease in pain score after frenotomy than after sham (p = .001). There was also a nearly significant improvement in latch after the frenotomy in these mothers (p = .06).

Conclusion: Frenotomy appears to alleviate nipple pain immediately after frenotomy. We speculate that ankyloglossia plays a significant role in early breast-feeding difficulties, and that frenotomy is an effective therapy for these difficulties.

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Less compression of the nipple, better attachment, increased milk transfer, less maternal pain post-frenotomy.

**Frenulotomy for Breastfeeding Infants With Ankyloglossia: Effect on Milk Removal and Sucking Mechanism as Imaged by Ultrasound**
Donna T. Geddes, Diana B. Langton, Ian Gillow, Lorli A. Jacobs, Peter E. Hartmann and Karen Simmer
*Pediatrics* 2008;122:e188-e194; originally published online Jun 23, 2008; DOI: 10.1542/peds.2007-2553
Ankyloglossia in Breastfeeding Infants: The Effect of Frenotomy on Maternal Nipple Pain and Latch

LATCH SCORES

Pain Rating Index (PRI)
Present Pain Intensity (PPI)
Level of evidence

- Systematic Reviews / RCT’s
- Webb et al: 20 studies with level 4 evidence: improvement in feeding and maternal pain scores
- Systematic Review (Ito et al): 4 RCTs and 12 observational studies: improvement in latching and nipple pain
- Finigan (Systematic review of 5 RCTs and 8 case series): Frenotomy appears to offer long-term breast feeding improvement in 50% cases
<table>
<thead>
<tr>
<th>Citation</th>
<th>Study group</th>
<th>Study type</th>
<th>Primary outcome</th>
<th>Key result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hogan et al</td>
<td>57 babies randomised: 28 immediate division, 29 controls (lactation support)</td>
<td>RCT</td>
<td>Improvement in feeding</td>
<td>Division improved feeding (maternal gauge) in 96.42% (27/28) babies compared with lactation support alone (p&lt;0.001)</td>
<td>All 28 of control group requested division at 48 h. Lack of objective measure of improvement</td>
</tr>
<tr>
<td>Dollberg et al</td>
<td>25 mother/baby dyads Two sequences: 1. frenotomy, breast feeding, sham, breast feeding (n=14) 2. sham, breast feeding, frenotomy, breast feeding (n=11)</td>
<td>Randomised prospective cohort</td>
<td>Standardised LATCH score Standardised pain score</td>
<td>Non-significant improvement in LATCH score (p=0.06) Significant reduction in pain score (p=0.001)</td>
<td>All babies had frenotomy procedure as part of sequence</td>
</tr>
<tr>
<td>Buryk et al</td>
<td>58 mother/infant dyads with maternal nipple pain or difficulty breastfeeding with significant ankyloglossia as judged by HATLFF: 30 frenotomy 28 sham</td>
<td>Single-blind RCT</td>
<td>SF-MPQ score IBFAT score</td>
<td>SF-MPQ scores reduced from 16.77 (SD 1.88) before, to 4.9 (SD 1.46) after intervention in frenotomy group. (p&lt;0.001) IBFAT scores improved in the frenotomy group and were unchanged in sham group (p=0.29)</td>
<td>All but one parent in the sham group elected to have frenotomy at or before 2-week follow-up</td>
</tr>
<tr>
<td>Berry et al</td>
<td>60 breastfed babies: 27 division group 30 non-division group</td>
<td>Double-blind RCT</td>
<td>Maternal improvement in feeding Observer improvement in feeding</td>
<td>Significant immediate improvement in maternal gauge in 21 (78%) of division group compared with 14 (47%) of comparison group (p&lt;0.02; 95% CI 6% to 51%) The results were reported in the study as follows: 78% (21 of 27) of mothers in Group A reported an immediate improvement in feeding following the intervention, compared with 47% (14 of 30) in Group B (two-tailed χ² p&lt;0.02; 95% confidence interval, 6%–51%).</td>
<td>Only objective observed change was better latch After the intervention, those infants allocated to non-division had their tongue-tie divided</td>
</tr>
<tr>
<td>Emond et al</td>
<td>107 infants with mild to moderate tongue-tie diagnosed by HATLFF-short form tool: 55 intervention group 52 comparison group</td>
<td>Randomised parallel group single-centre feasibility trial</td>
<td>LATCH score at 5 days</td>
<td>No difference in primary outcome (ie, LATCH score) between intervention and control groups at 5 days (0.52)</td>
<td>Severe tongue-tie was not included. Long-term follow-up not possible as only 8 (15%) of comparison group had not had a frenotomy at 8 weeks</td>
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</tbody>
</table>

HATLFF, Hazelbaker Assessment Tool for Lingual Frenulum Function; IBFAT, Infant Breastfeeding Assessment Tool; RCT, randomised controlled trial; SF-MPQ, short-form McGill Pain Questionnaire.
1. Surgeons make tiny incision in the side of the neck.

2. Small anchors are then implanted into the base of the tongue and the jaw.

3. The anchors are connected by a wire. Tightening this pulls the tongue forward so that it no longer blocks the airway.
Procedural analgesia

- Under 3 months in rooms
- Sucrose/paracetamol
- No analgesia (200 infants: 18% cried during and 60% after the procedure) Crying time 15s
- RCT of topical benzocaine: no difference
- Average crying time 21.6s (benzocaine and 13.1s in control group)
Complications

- Uncommon
- Bleeding stops with pressure/feeding
- Haematoma (Lingual vein)
- Damage to salivary ducts
- 2–3% repeat procedure
Assessment by lactation consultant
Oral and systemic examination to exclude other causes of poor feeding
Vit K
No bleeding disorder in family
Informed consent
Appropriately trained professional
Follow-up of the infant; if there is no improvement there may be another medical cause for the feeding problem
Ankyloglossia & Frenotomy: Conclusions

- Ankyloglossia can adversely affect breastfeeding
- Proper evaluation, diagnosis and treatment increases success
- Greater awareness needed in the medical community re problem and treatment options
- More research necessary using objective assessment tools