

# Comparison of monopolar cautery and conventional surgery in treatment of ankyloglossia

Original  
Article

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## ABSTRACT

**Objective:** To compare the outcome of monopolar cautery and conventional surgery in the treatment of ankyloglossia. Intra-operative bleeding is the primary outcome, with operative time, post-operative maternal pain score, LATCH score, and complication being the secondary outcome.

**Patients and Methods:** The randomized, controlled trial recruited newborns diagnosed with ankyloglossia using the Hazelbaker Assessment Tool in the department of Otolaryngology, HRH Princess Maha Chakri Sirindhorn Medical Center (MSMC). The patients were randomized into either the conventional group or cautery group (monopolar cauterization). Pre-operative, intra-operative, and postoperative data were recorded.

**Results:** 32 infants diagnosed with ankyloglossia were randomized into two groups; conventional group (n=16) and cautery group (n=16). The result shows a statistically significant lower incidence of intra-operative bleeding in the cautery group (n=1) when compared to the conventional group (n=10) ( $p$ -value=0.003). The cautery group also has a significantly shorter mean operative time than the conventional group; three (2 to 6 minutes) compared to five (3 to 13) minutes respectively ( $p$ -value=0.001). There were no differences between postoperative maternal pain scores and LATCH scores between the two groups. No complications occurred after surgery.

**Conclusion:** The surgical treatment of ankyloglossia by monopolar cautery has a significantly lower incidence of intra-operative bleeding compared to conventional surgery, shorter operative time, and safety. There were no differences in postoperative maternal pain score and LATCH score between the two groups.

**Key Words:** Ankyloglossia, electrocautery, frenotomy, surgery, tongue tie.

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## INTRODUCTION

Breast milk is often regarded as the best source of nutrition for infants due to its nutritive values which promote good health and reduce illness<sup>[1]</sup>. The World Health Organization (WHO) recommends that children be exclusively breastfed for the first six months of life<sup>[2]</sup>. Breast milk contains the required nutrients paramount to the growth of infants, with breastfed infants shown to have better health and immunity towards diseases compared to non-breastfed infants<sup>[3,4]</sup>.

Ankyloglossia (tongue-tie) is a condition where abnormal lingual frenulum tethers the bottom of the tongue's tip to the floor of the mouth, restricting the tongue's range of motion and interfering with the child's ability to latch adequately during breast feeding<sup>[5,6]</sup>. The incidence ranges from 1.7% to 10.7% in infants<sup>[5,9]</sup>. Ankyloglossia was diagnosed using the Hazelbaker Assessment Tool when the appearance score total was less than eight and/or function score total was less than 11<sup>[10]</sup>, a highly reliable diagnostic tool<sup>[11]</sup>. Grading of the severity of the condition

is done using the Kotlow criteria, measuring the length from the tip of the tongue to the point where an abnormal frenulum exists between the bottoms of the tongue to the floor of the mouth<sup>[12]</sup>.

Ankyloglossia affects breastfeeding, instigating cracked areola, injury, and nipple pain, maternal nipple pain assessment is done using the Visual analog scale (VAS)<sup>[13,14]</sup>, which found that 36% to 89% of infants suffering from ankyloglossia were referred for treatment due to maternal complaint of pain<sup>[15,16]</sup>, with 44% to 95% of patients reporting improvement in pain post-surgery<sup>[15,17]</sup>. Ankyloglossia also reduces breastfeeding efficiency when quantified using the LATCH score<sup>[18]</sup>, and it was found that 64% to 84% of patients were referred for treatment due to inadequate breastfeeding<sup>[15,16]</sup>, with improvements seen post-surgery<sup>[2,6]</sup>. Studies have shown that surgical treatment for ankyloglossia results in immediate improvement in maternal breastfeeding when compared to a control group<sup>[20]</sup>, improved pain<sup>[15,17]</sup>, and better LATCH scores<sup>[2,6]</sup>.

Multiple treatment options exist for ankyloglossia, frenotomy; the surgical resection of the frenulum between the bottom of the tongue and the floor of the mouth<sup>[21]</sup> using a surgical clamp on the frenulum and surgically resecting it using scissors under local anesthesia without the need for general anesthesia<sup>[8,21,22]</sup>. On the other hand, frenuloplasty or frenulectomy involves the complete surgical resection of the frenulum between the bottom of the tongue and the floor of the mouth and suturing it post-resection. This is commonly done under general anesthesia and carries a higher risk of complication, making it frequently used in children older than a year in age<sup>[8,21,22]</sup>. In this study, only frenotomy will be addressed due to the simplicity of the procedure, low complication rates, the suitable use of local anesthesia, and the ability to safely perform it at the out-patient department<sup>[8,21-23]</sup>. Some studies have reported that severe complications from the surgical treatment of ankyloglossia using conventional surgery resulted in the death of one infant due to blood loss after surgery<sup>[24]</sup>. In different institutes, diverse instruments apart from scissors were used for surgery, including monopolar cautery and lasers. Apart from being a widely used instrument and availability in most hospitals, monopolar cautery also minimizes blood loss during and after surgery. Reports of using monopolar cautery for the surgical treatment of ankyloglossia show that it could be safely used without complications<sup>[25]</sup>.

Due to the lack of studies comparing the surgical treatment of ankyloglossia using conventional surgery and monopolar cautery, the researcher initiated the study to compare the treatment outcome of both methods.

### **Objectives:**

To compare the outcome of surgical treatment for ankyloglossia between conventional surgery and monopolar cautery, with the primary outcome comparing intraoperative blood loss and secondary outcome comparing operative time, maternal pain scores, LATCH scores, and complication rates.

### **PATIENTS AND METHODS:**

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This study is a randomized, controlled trial, involving patients diagnosed with ankyloglossia and treated at the department of Otolaryngology, HRH Princess Maha Chakri Sirindhorn Medical Center, between May until December 2018. This study is under the control of and approved by the human ethics research committee of the Srinakharinwirot University (SWUEC-167/58F). The inclusion criteria for patients include newborn patients to one month of age, diagnosis of ankyloglossia using the Hazelbaker Assessment Tool with an appearance score total of less than eight and/or function score total of less than eleven (Table 1). The exclusion criteria for patients includes preterm patients with a gestational age of less

than 37 weeks, low birth weight of less than 2,500 grams, abnormal anatomy of the oral cavity and tongue, presence of tumor within the oral cavity or tongue, a complication caused by an underlying medical condition which may be an obstacle to surgery, Down syndrome, craniofacial malformation and refusal to participate in the study or request to leave the study. The sample size was calculated using a study formula for two independent groups<sup>[26-28]</sup>.

After obtaining informed consent, enrolled patients were randomized in a 1:1 ratio to receive frenotomy either with conventional or electrocautery. Computer-generated block randomization was performed with a block size of four. The sequence was concealed with sequential-numbered sealed opaque envelopes. The participants were not aware of the allocated assignments except the surgeons.

Basic information regarding the patient and their corresponding mother, physical examination, diagnosis using the Hazelbaker Assessment Tool (Table 1), measurement of the length from the frenulum to the tip of the tongue to grade ankyloglossia severity as per Kotlow's criteria (Table 2), evaluating breastfeeding efficiency using LATCH scores before surgery (Table 3), and inquiring maternal pain during breastfeeding using the VAS was completed and recorded. Surgery was done by the same surgeon in all 32 patients, with the infants being separated from their mother, swaddled, and having 0.5 ml of 2% Lidocaine jelly applied topically below the tongue for five minutes before measuring the length of the frenulum using a groove director.

**Conventional surgery group;** an arterial clamp was used to clamp the frenulum for 30 seconds, which is then released and resected for around 16 mm using a supercut Metzenbaum. The pressure is applied using dry gauze if bleeding occurs. If bleeding continues, the pressure was applied using gauze drenched with 0.5 ml of a topical vasoconstrictor (0.025% Ephedrine hydrochloride). If bleeding persists, monopolar cauterization (LIARRE® Electrosurgeries HFS 50) was used to stop the bleeding. After bleeding is controlled, the patient was observed for at least 5 minute.

**Monopolar cautery group;** the patient was prepared with a ground probe applied at the popliteal fossa before being swaddled. The frenulum length was measured, and an arterial clamp was used to clamp the frenulum for 30 seconds (identical to the conventional group). The clamp was released and monopolar cauterization using coagulation mode (LIARRE® Electrosurgeries HFS 50) was used to resect around 16 mm of the frenulum. This was done using caution regarding other mucosal surfaces or tissue which may be injured from electrocauterization. If bleeding occurs, the same method as the conventional group was applied to stop the bleeding and the patient was observed for at least 5 minute.

Operational procedures and details, intraoperative bleeding, the methods used to control the bleeding, and time is taken for bleeding to stop (minutes), operative time (minutes), and complication from surgery was recorded. Post-operational assessment for ankyloglossia was done using the Hazelbaker Assessment Tool by the same physician that had done the pre-operative assessment. Breastfeeding efficiency using LATCH scores and maternal pain scores were recorded one day after the operation. Post operational assessment including complications wound healing and breastfeeding seven- and thirty-days post-operation were also followed up upon.

### 5-Statistical Analysis:

Data were summarized using mean and standard deviation, median and interquartile range for quantitative variables and frequencies (number of cases), and relative frequencies (percentages) for categorical variables. Comparisons of intraoperative bleeding between groups were done using the Chi-square test. For comparing operative time, LATCH scores, and maternal pain scores, the Mann-Whitney U test was performed. Wilcoxon signed-rank test was used for comparing maternal pain scores and LATCH scores before and after surgery. *P-values* less than 0.05 were considered statistically significant. All analyses were used with SPSS program version 22.

**Table 1:** Hazelbaker Assessment Tool<sup>[10]</sup>

APPEARANCE ITEMS	SCORE	FUNCTION ITEMS	SCORE
1. Appearance of tongue when lifted		1. Lateralization	
Round OR square	2	Complete	2
Slight cleft in tip apparent	1	Body of tongue but not tongue tip	1
Heart shaped	0	None	0
2. Elasticity of lingual frenulum		2. Lift of tongue	
Very elastic (excellent)	2	Tip to mid-mouth	2
Moderately elastic	1	Only edges to mid mouth	1
Little OR no elasticity	0	Tip stays at alveolar ridge OR tip rises only to mid-mouth with jaw closure AND/OR mid-tongue dimples	0
3. Length of lingual frenulum when tongue lifted		3. Extension of tongue	
More than 1 cm OR absent frenulum	2	Tip over lower lip	2
1 cm	1	Tip over lower gum only	1
Less than 1 cm	0	Neither of the above OR anterior or mid-tongue humps and/or dimples	0
4. Attachment of lingual frenulum to tongue		4. Spread of anterior tongue	
Posterior to tip	2	Complete	2
At tip	1	Moderate OR partial	1
Notched OR under the mucosa at tongue base	0	Little OR none	0
5. Attachment of lingual frenulum to inferior alveolar ridge		5. Cupping of tongue	
Attached to floor of mouth OR well below ridge	2	Entire edge, firm cup	2
Attached just below ridge	1	Side edges only, moderate cup	1
Attached to ridge	0	Poor OR no cup	0
TOTAL APPEARANCE SCORE	-----	6. Peristalsis (progressive contraction)	
		Complete anterior to posterior (originates at tip)	2
		Partial: originating posterior to tip	1
		None OR Anterior thrusting	0
		7. Snap back	
		None	2
		Periodic	1
		Frequent OR with each suck	0
		TOTAL FUNCTION SCORE	-----

Diagnosis of ankyloglossia using the Hazelbaker Assessment Tool with an appearance score total of less than eight and/or function score total of less than eleven.<sup>[10]</sup>

**Table 2:** Kotlow Classification<sup>[12]</sup>

Kotlow Classification	Length of the frenulum to the tip of tongue (mm.)
Mild	12-16
moderate	8-11
Severe	3-7
Complete	< 3

The ankyloglossia grade was measurement of the length from the frenulum to the tip of the tongue to grade ankyloglossia severity as per Kotlow's criteria.<sup>[12]</sup>

**Table 3:** LATCH Score<sup>[18]</sup>

LATCH	SCORE	ASSESSMENT
Latch	2	Mouth open wide, grasps breast, tongue over lower jaw, lips flanged, no clicking or smacking, rhythmic sucking, no indrawing or dimpling of cheeks
	1	Repeated attempts to hold nipple in mouth, stimulate to suck
	0	Too sleepy or reluctant, no latch achieved
Audible	2	Spontaneous intermittent <24 hours of age; spontaneous and frequent >24 hours of age
	1	A few with stimulation
	0	None / no attempt to open mouth
Type of nipples	2	Everted (after stimulation)
	1	Flat
	0	Inverted
Comfort	2	Soft, tender
	1	Filling, reddened, small blister, mild-moderate discomfort
	0	Engorged, cracked, bleeding, large blisters, severe discomfort
Hold	2	No assist from staff, infant's head and body supported at level of breast, infant on side with nose, chin, chest, abdomen and knees touch mother, mouth across from nipple
	1	Minimal assistance (I.e. elevate head of bed; place pillow for comfort); teach one side, mother does other; staff holds, then mother takes over
	0	Mother requires full assistance to position infant at breast

Evaluating breastfeeding efficiency using LATCH scores.<sup>[18]</sup>

**RESULTS:**

Children diagnosed with ankyloglossia were examined and treated within the department of Otolaryngology, HRH Princess Maha Chakri Sirindhorn Medical Center, between the first of May 2016 until the 31<sup>st</sup> of October 2016 which fits the inclusion criteria includes 32 children, randomized via the block method into the conventional surgery group consisting of 16 patients and the monopolar cauterization group consisting of 16 patients.

The basic information of the sample population in the study is shown in (Table 4). The patient information was not statistically different in the following categories; sex, labor type, birth order, Age of infants at the time of frenotomy, birth weight, length of the frenulum to the tip of the tongue, severity grading of ankyloglossia, and Hazelbaker score. The maternal information was not statistically different in the following categories; maternal age, maternal comorbidities, maternal nipple pain score before surgery, LATCH scores before surgery, with one of the mothers in the monopolar cauterization group being diagnosed with hypertension.

With the primary outcome being intraoperative bleeding, study results have shown a statistically significant lower incidence of bleeding during surgery (*p-value = 0.003*) in the monopolar cauterization group (1/16) compared to the conventional surgery group (10/16) as shown in (Table 5).

With the secondary outcome being operative time, post-operative maternal pain score, and post-operative LATCH score, the study results show a statically significant shorter operative time (*p-value = 0.001*) for the monopolar cauterization group compared to the conventional surgery group, with a mean time of three (two to six) minutes and five (three to thirteen) minutes respectively. There was no difference between maternal pain scores and LATCH scores post-operation as shown in (Table 5).

Out of 11 patients which had intraoperative bleeding, 10 (90.9%) were from the conventional surgery group while one (9.1%) was from the monopolar cauterization group. Bleeding was controlled in all patients with a mean time

of four (one to nine) minutes. The following techniques were employed to control bleeding: direct pressure with gauze in six patients (54%), topical vasoconstrictor in three patients (27.3%), and electrocauterization was used in two (18.2%). After surgery, all patients had a normal Hazelbaker Assessment Tool score, being greater than or equal to 8 for appearance score total and/or greater than or equal to 11 for function score total.

Comparison of maternal pain and LATCH scores before and after surgery showed a statistically significant reduction in that maternal pain score post-operation in both comparison groups. In the conventional group, the median pain score reduced from 6 (5.00 to 7.00) to 2 (1.25 to 3.00) ( $p$ -value<0.001). In the monopolar cauterization group, the median pain score reduced from

6 (5.00 to 8.00) to 3 (2.00 to 3.75) ( $p$ -value<0.001). The LATCH scores indicated better latching post-surgery in both the comparison groups, with the conventional group having a median LATCH score of 4.50 (4.00 to 5.50) before surgery and 8.00 (5.50 to 9.00) post-surgery ( $p$ -value = 0.042) as shown in (Table 6).

No complication during surgery and there were no incidences of post-operational bleeding or infection seven and thirty days after surgery with complete wound recovery. Follow-up results regarding breastfeeding show that after one month, all 32 mothers (100%) were still breastfeeding their infants, with six (18.75%) using additional infant formula milk due to inadequate breast milk. Out of the six, three were from the conventional group (3/16) and the other three from the cauterization group (3/16).

**Table 4:** Demographics Data.

	Conventional surgery	Monopolar cautery	<i>p</i> -value
Sex			
Male (%)	10 (52.60)	9 (47.40)	1.000 <sup>a</sup>
Female (%)	6 (46.20)	7 (53.80)	
Labor type			
Normal labor (%)	8 (57.10)	6 (42.90)	0.722 <sup>a</sup>
Caesarean section (%)	8 (44.40)	10 (55.60)	
Birth order			
1 (%)	8 (53.30)	7 (46.70)	0.667 <sup>a</sup>
2 (%)	6 (54.50)	5 (45.50)	
3 (%)	2 (66.70)	1 (33.30)	
4 (%)	0 (0)	3 (100.00)	
Age of infants at time of frenotomy †	2 (1.75 - 4.50)	3 (1.75 - 3.75)	0.156 <sup>b</sup>
Birth weight ‡	3006 ± 346	2925 ± 316	0.518 <sup>c</sup>
Length of frenulum to the tip of tongue ‡	5 ± 1.75	4.6 ± 1.71	0.544 <sup>c</sup>
Kotlow Tongue Classification			
Moderate (%)	1 (50.00)	1 (50.00)	1.000 <sup>a</sup>
Severe (%)	11 (47.80)	12 (52.20)	
Complete (%)	4 (57.10)	3 (42.90)	
Hazelbaker Assessment score†			
Total Appearance Score	6 (5.75-7.00)	7 (6.00-7.00)	0.936 <sup>b</sup>
Total Function Score	9 (8.75-10.00)	9 (7.75-10.00)	0.304 <sup>b</sup>
Maternal Age ‡	23.50 ± 5.59	26.80 ± 4.75	0.076 <sup>c</sup>
maternal comorbidities			
No (%)	16 (51.60)	15 (48.40)	1.000 <sup>a</sup>
Yes (%)	0 (0)	1 (100.00)	
Maternal nipple pain score (Before surgery)†	6 (4.75-7.00)	6 (5.75-8.00)	0.439 <sup>b</sup>
LATCH Score (Before surgery)†	4.5 (4.00-5.50)	6 (4.00-7.25)	0.333 <sup>b</sup>

a Chi-square test    b Mann-Whitney U test    c Independent t-test  
 † Median (Interquartile range)    ‡ Mean ± SD

**Table 5:** Surgical outcome.

Surgical outcome	Conventional surgery	Monopolar cautery	<i>p-value</i>
Intraoperative bleeding (%)	10 (90.90)	1 (9.10)	0.003†
Operative time <sup>a</sup>	5 (3.00-13.00)	3 (2.00-6.00)	0.001††
Maternal pain scores <sup>b</sup>	2 (2.00-3.00)	2.5 (2.00-4.00)	0.223††
LATCH scores <sup>b</sup>	8 (5.50-9.00)	8 (7.75-9.25)	0.542††

†Chi-square test †† Mann-Whitney U test, <sup>a</sup>Median (min-max), <sup>b</sup>Median (Interquartile range)

**Table 6:** Comparison of maternal pain scores and LATCH scores before and after surgery.

Surgical outcome	Before surgery	After surgery	<i>p-value</i> †
Maternal pain scores <sup>a</sup>			
Conventional surgery	6 (5.00-7.00)	2 (1.25-3.00)	<0.001
Monopolar cautery	6 (5.00-8.00)	3 (2.00-3.75)	<0.001
LATCH scores <sup>a</sup>			
Conventional surgery	4.5 (4.00-5.50)	8 (5.50-9.00)	0.011
Monopolar cautery	6 (4.00-7.25)	8 (7.75-9.25)	0.042

† Wilcoxon signed ranks test, <sup>a</sup>Median (Interquartile range)

## DISCUSSION

Ankyloglossia is a common problem in newborns that affects breastfeeding<sup>[2,7,29]</sup>, regarded as the best source of nutrients for infants apart from promoting good health and reducing illness<sup>[1]</sup>. WHO recommends exclusive breastfeeding for at least six months<sup>[2,30]</sup>, with study results in Thailand showing a comparatively low exclusive breastfeeding percentage of 14.5 for the first six months, with ankyloglossia being one of the main reasons. From previous studies, it was shown that surgical treatment immediately improved maternal breastfeeding compared to those without surgical treatment<sup>[10]</sup>, improved maternal pain scores<sup>[15,17]</sup>, improved LATCH scores<sup>[2,6]</sup>, and lead to a higher rate of exclusive breastfeeding for six months compared to normal infants<sup>[32]</sup>.

Apart from surgical scissors, instruments used in the surgical treatment of ankyloglossia vary according to different institutions, to reduce intraoperative bleeding electrocautery (monopolar and bipolar cautery) and laser. Studies involving the use of electrocautery for ankyloglossia found that it could be done safely and without complication<sup>[25,33]</sup>. Studies involving laser have also shown the same safety<sup>[35,35]</sup>. This study aims to compare conventional surgical techniques (using surgical scissors) and surgery using electrocautery as previous studies have found that the use of electrocautery (monopolar cautery) aids in the reduction of incidence of intraoperative bleeding and is safe<sup>[25]</sup>. No study comparing conventional surgery and electrocauterization exist, with this study choosing monopolar cauterization due to its widespread use,

availability in most hospitals as an alternative for physicians to consider to reduce intraoperative bleeding.

Study results have shown that the patient and their mother's basic information in both the conventional and monopolar cauterization group are not significantly different, with a majority of the patients being diagnosed with severe ankyloglossia in both groups. With the primary outcome being the incidence of intraoperative bleeding, it was found that there was a statistically significantly lower incidence of intraoperative bleeding in the monopolar cauterization group when compared to the conventional group (*p-value* = 0.003). With 10 out of 16 of the patients from the conventional group bleeding during surgery while only 1 out of 16 of the patients from the monopolar cauterization group had intraoperative bleeding, hence taking a long time for surgery due to having to control the bleed. From results on operative time, it was found that the monopolar cauterization group has a statistically significant shorter operative time (*p-value* = 0.001), with the median operative time being 3 (2 to 6) minutes compared to 5 (3 to 13) minutes in the conventional group, which agrees with the previous study that found that conventional surgery takes around five minutes<sup>[14]</sup>. From the result showing that surgical treatment using monopolar cauterization has a lower incidence of intraoperative bleeding and shorter operative time, the researcher reasons that it is more convenient and faster has minimal blood loss and a shorter operative time, thus favored by the surgeon. Based on the study, it was found that intraoperative bleeding occurred in 11 patients, with

10 (90.9%) from the conventional group and only one (9.1%) from the monopolar cauterization group, with bleeding controlled in all cases. There was a median time to control bleeding of 4 (1-9) minutes, hence showing that bleeding would lengthen the operative time by around 4 minutes, with bleeding controlled in the majority of the cases via direct pressure with gauze and topical vasoconstrictors. As previously shown, bleeding was controlled in six patients (54.5%) via direct pressure with gauze while three (27.3%) required topical vasoconstrictor and two (18.2%) requiring electrocauterization with only one patient from the monopolar cauterization group bleeding and was controlled via direct pressure with gauze.

Based on study results, the safety of electrocauterization in surgery is supported by the lack of complication in all 16 patients, in agreement with previous studies finding no complication from the use of electrocauterization<sup>[25,33-35]</sup>. Study results regarding maternal pain score post-surgery showed no difference with the median pain score in the convention group being 2 (2 to 3) and 2.5 (2 to 4) in the monopolar cauterization group, showing no difference in postoperative pain score in both groups. Post-operative LATCH scores showed no difference between the two groups with a median score of 8 (5.5 to 9) in the conventional group and 8 (7.75 to 9.25) in the monopolar cauterization group, showing no difference in the efficiency of maternal breastfeeding after surgery in both groups.

The comparison of maternal nipple pain score before and after surgery found a statistically significant reduction in pain in both groups, which coincides with an earlier study that shows that surgical intervention for ankyloglossia improves maternal pain<sup>[15,17,32]</sup>. The efficacy of breastfeeding as quantified by LATCH scores before and after surgery showed an improvement in LATCH scores in both groups which also concurs with an earlier study which shows an improved LATCH score after surgical treatment of ankyloglossia<sup>[15,17,32]</sup>.

Study results from continuous breastfeeding indicate that after one month of follow up, all 32 patients (100%) were still breastfed by their mothers, with six (18.75%) using supplementary baby formula due to inadequate breast milk, with 3/16 from the conventional group and 3/16 from the monopolar cauterization group. The researcher justifies that in this study, no mothers would stop breastfeeding, possibly due to the surgical intervention which reduces obstacle to breastfeeding and the researcher thinks that further follow up study should be done to observe results for at least six months as to abide by WHO's recommendations<sup>[2,30]</sup>.

## CONCLUSION

The surgical treatment of ankyloglossia using monopolar cauterization can reduce the incidence of intraoperative bleeding, reduces operative time, and is considered a safe procedure. Post operational maternal pain and efficiency in breastfeeding were not different when compared with conventional surgery.

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## CONFLICT OF INTEREST

There are no conflicts of interest.

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