Clinical Otolaryngology

WILEY

ORIGINAL ARTICLE OPEN ACCESS

No Difference in Pain or Febrile Episodes With the Use of Post-Operative Antibiotics in Paediatric Coblation Intracapsular Tonsillectomy for Sleep-Disordered Breathing or Recurrent Tonsillitis: A Prospective Randomised Trial

Netanel Eisenbach[1,2] | Igor Yakubovich[1,2] | Ahmad Bader[1,2] | Ephraim Rinot[1,2] | Abeer Dabbah Miari[2] | Samah Khalil[2] | Rania Faris[3] | Eyal Sela[1,2] | Maayan Gruber[1,2]

[1]Azrieli Faculty of Medicine, Bar-Ilan University, Safed, Israel | [2]Department of Otolaryngology—Head and Neck Surgery, Galilee Medical Center, Nahariya, Israel | [3]Statistical Analysis Division, Galilee Medical Center, Nahariya, Israel

Correspondence: Maayan Gruber (maayang@gmc.gov.il)

Received: 20 November 2024 | **Revised:** 20 January 2025 | **Accepted:** 19 February 2025

Funding: The authors received no specific funding for this work.

Keywords: antibiotic | coblation-intracapsular-tonsillectomy | fever | recovery

ABSTRACT

Objective: Coblation technology is gaining wide acceptance and use as a contemporary surgical technique for tonsil surgeries due to less post-operative morbidity compared to the more traditional total tonsillectomy. Previous articles examined the role of post-operative antibiotics for traditional total tonsillectomy; however, this is the first study which explores the role of post-operative prophylactic antibiotic treatment among children undergoing coblation intracapsular tonsillectomy.

Methods: A prospective randomised study included 100 children (aged 1–16) who were divided into two subgroups: with and without post-operative antibiotics. Post-operative follow-up of patients included assessment for 7 days of pain levels, fever, return to diet, bleeding and halitosis. In addition, the children's caregivers completed the Parents'-Postoperative-Pain-Measure (PPP-M) questionnaire on Days 1 and 7.

Results: The (+) antibiotic subgroup had substantially less halitosis on Days 2–6 after surgery. Prophylactic antibiotic treatment did not yield any differences between the two subgroups in the incidence of fever, return to regular diet or drinking, pain as measured by the Wong Baker Faces Pain scale, or pain as reported by the parents on the PPP-M questionnaire.

Conclusions: This prospective study highlights that routine prophylactic post-operative antibiotic use has a limited clinical benefit in paediatric intracapsular tonsillectomy. Improvement in halitosis was significant with antibiotic treatment; however, various other clinical parameters did not differ between the two subgroups, so the routine use of post-operative antibiotics in the above setting is discouraged.

1 | Introduction

Adenotonsillectomy is one of the most commonly performed surgical procedures worldwide. For many years, the traditional surgical approach was cold dissection; however, in the last decade, coblation technology (controlled ablation) has become increasingly popular as an alternative contemporary approach [1, 2].

Summary

- Post-operative fever is common among children following CIT.
- The use of post-operative antibiotics does not reduce the incidence of fever.
- The use of post-operative antibiotics does not impact pain levels following CIT.

Coblation tonsillectomy is a contemporary surgical technique that uses controlled ablation technology for tonsil removal. The procedure employs a specialised wand that creates a plasma field using radiofrequency energy combined with saline solution. This plasma field breaks down tissue at a relatively low temperature (40°C–70°C) compared to traditional electrocautery methods. Specifically in coblation intracapsular tonsillectomy (CIT), the surgeon removes approximately 90%–95% of the tonsil tissue while preserving the tonsillar capsule, which serves as a protective biological dressing over the pharyngeal muscles. This approach aims to reduce post-operative pain and bleeding risk compared to traditional total tonsillectomy techniques while potentially allowing for faster healing and recovery.

Despite the proven advantages of coblation surgery, data regarding possible infectious complications, including the incidence of fever, neck pain, nausea and halitosis, is lacking [3–5]. To the best of our knowledge, this is the first study that examines the role of antibiotics for the prevention of post-operative fever and infection following Coblation-Intracapsular-Tonsillectomy.

Post-operative fever and halitosis were selected as endpoints as they represent both clinically significant markers of infection and commonly reported concerns by caregivers. Fever serves as an objective measure of potential post-operative infection and inflammatory response, which can be reliably monitored by both healthcare providers and caregivers in the home setting. It often prompts urgent medical evaluation and may indicate the need for intervention. Halitosis, while more subjective, is a frequent post-operative complaint that can signal bacterial colonisation of the surgical site or poor wound healing. The presence of halitosis often causes significant distress to patients and families, frequently resulting in unscheduled post-operative visits and queries about the need for antibiotic therapy.

The American Academy of Otolaryngology—Head and Neck Surgery published a Clinical Practice Guideline for Tonsillectomy [6] in Children in 2011 and updated it in 2019. Based on a Cochrane review [7] they strongly recommended against administering or prescribing perioperative antibiotics to children undergoing tonsillectomy; however, these guidelines are applicable to the traditional total tonsillectomy and do not apply to partial or intracapsular tonsillectomy. In the current study, we aim to close this knowledge gap regarding the role of antibiotics in Coblation-Intracapsular-Tonsillectomy, which will hopefully allow better future clinical decision making.

2 | Materials and Methods

2.1 | Study Population

This study was approved by the medical center's Institutional Review Board (IRB) (NHR-0082-22).

The study group consisted of children aged 1–16 who were admitted electively for tonsil or adeno-tonsil surgery, between June-2022 and May-2023. Only children whom the surgeon and parents selected to undergo CIT were finally included in the study. The study did not influence the choice of operation method.

Inclusion criteria: Children aged 1–16 years who underwent CIT surgery and who provided informed consent to participate in the study.

Exclusion criteria: Children with a history of anaphylactic reaction to penicillin, children whose parents were not their legal guardians, and children who were lost to follow-up within 1 week.

2.2 | Study Design

The children were randomly divided into two subgroups: one subgroup in which all children received post-operative prophylactic antibiotics ((+) antibiotic subgroup) and a second subgroup in which children did not receive antibiotics at all ((−) antibiotic subgroup). (see Figure 1) The researchers had no influence on the process at any stage or in any way.

Randomization was performed by month: each calendar month in the study period was randomly assigned to be either an antibiotic (+) or non-antibiotic (−) month. All children who underwent surgery during a given month received treatment according to that month's designation.

The primary outcome was the effect of prophylactic antibiotic treatment on the incidence of fever after CIT; the secondary outcomes were the effect of such treatment on the incidence of pain, post-operative bleeding, halitosis, time taken to resume a normal diet and drinking, and adverse drug events.

The children in the (+) antibiotic subgroup were treated with amoxicillin 25 mg/kg twice a day starting from the operation day for 7 days. In case of mild penicillin allergy (rash), the children were treated with Cephalexin 25 mg/kg twice a day for 7 days. Children with anaphylaxis to penicillin were excluded from the study.

Pain control management: all patients were given paracetamol 15 mg/kg every 6 h and S.O.S. ibuprofen 10 mg/kg (maximum three times a day) as postoperative pain treatment. Parents were informed to continue this treatment as long as the child experiences pain. None of the patients in the (−) antibiotic subgroup needed to start antibiotic treatment in the follow-up postoperative period for any infectious indication.

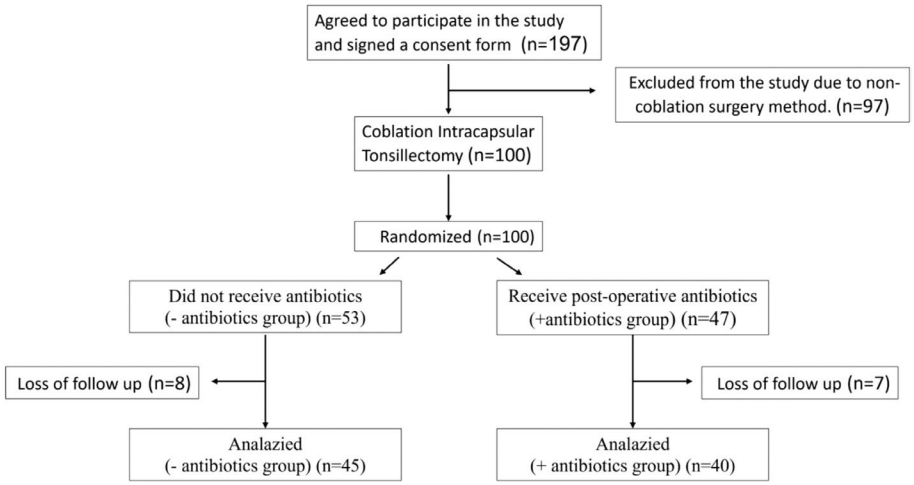

FIGURE 1 | CONSORT flow diagram of the study. CONSORT, consolidated standards of reporting trials.

2.2.1 | Surgical Procedure

CIT was performed under general anaesthesia with the patient in the Rose position. Using a Boyle-Davis mouth gag for exposure, the surgeon begins by grasping the tonsil medially with forceps to provide gentle lateral traction. Using the Smith & Nephew Max Coblation wand, which creates a focused plasma field through radiofrequency energy in a saline medium using a standard setting of 7W, the surgeon systematically removes tonsillar tissue. The procedure involves a methodical reduction of the tonsil from medial to lateral, preserving the tonsillar capsule adjacent to the pharyngeal muscles. Approximately 90%–95% of the tonsillar tissue is removed while carefully maintaining the integrity of the capsule.

2.3 | Data Collection

After explaining to the parents and securing their agreement to participate in the study, both parents signed an informed consent document. The dataset encompassed variables including age, weight, height, sex and the indication for the surgical procedure. The data collection included factors such as the occurrence of fever during hospitalisation, specifics regarding the extent of administered pain relievers, and the pain evaluations conducted by nursing staff (for ages 1–3 used the Face, Legs, Activity, Cry, Consolability (FLACC) Behavioural Pain Scale to assess pain, from age 3–7, used the Wong-Baker Faces Pain Rating Scale, beyond that the numerical pain scale was used). We documented any unusual events after surgery, including bleeding or any other incidents.

In addition, parents completed daily reports from the first post-operation day through to the seventh post-operative day, detailing any instances of fever, halitosis, whether the child returned to normal drinking, and whether the child returned to a normal diet, as well as whether the parents had sought any medical assistance. Parents were asked to report whether they received a recommendation from any medical personnel during the follow-up period to begin a new medical treatment (including antibiotics in the (–) antibiotic subgroup) or change any given medical treatments. A temperature of 37.8°C (100°F) and above was considered a fever [8]. The parents assessed Pain levels with their child through the Wong-Baker Faces Pain Rating Scale, ranging from 0 to 10, for each day.

Parents were also requested to respond to the Parents' Post-Operative Pain Measure (PPPM) on the first and seventh post-operative days. The PPPM is a valid and reliable tool for assessing pain in children after various surgeries, including adenotonsillectomy [9].

TABLE 1 | Demographic characteristics.

	(+) Antibiotic group	(–) Antibiotic group	
	***n* = 40**	***n* = 45**	***p***
Age (mean ± SD)	4.52 (±2.34)	5.48 (±3.71)	0.163
Sex			
Male	27 (67.5%)	23 (51.1%)	0.185
Female	13 (32.5%)	22 (48.9%)	0.185
Avg. BMI distribution by age	54.5	59.3	0.574
Surgery indication			
Sleep disordered breathing	100%	96%	0.496
Chronic tonsillitis	20.0%	20.0%	1.0
Additional surgeries combined—			
Adenoidectomy	100.0%	95.6%	0.496
Ventilation tube	23%	24%	1.0

Note: Demographic characteristics of the two subgroups. No significant difference was found between the subgroups in the children's age, sex, average BMI distribution by Age, or in surgery indications. The BMI percentiles by age was calculated according to the WHO Body mass index-for-age, then the average of the percentile was calculated and a comparison was made between the two subgroups.

TABLE 2 | Fever, pain, diet and drinking.

Frequency of fever (37.8°C (100°F) and above)				Average Wong-Baker faces pain rating scale			
Fever (2a)	**(+) Antibiotic group**	**(−) Antibiotic group**		**Pain (2b)**	**(+) Antibiotic group**	**(−) Antibiotic group**	
POD	***n* = 40**	***n* = 45**	***p***	**POD**	***n* = 40**	***n* = 45**	***p***
1 (by nurses)	17.5%	4.4%	0.077	1	$4.12_{(\pm 2.44)}$	$4.07_{(\pm 2.65)}$	0.843
2	12.5%	8.9%	0.729	2	$4.70_{(\pm 3.19)}$	$4.40_{(\pm 2.86)}$	0.629
3	17.5%	11.1%	0.535	3	$3.95_{(\pm 2.82)}$	$3.98_{(\pm 2.95)}$	0.977
4	10.0%	8.9%	1.0	4	$3.08_{(\pm 2.78)}$	$3.18_{(\pm 2.60)}$	0.843
5	5.0%	4.4%	1.0	5	$2.33_{(\pm 2.54)}$	$2.18_{(\pm 2.07)}$	0.998
6	5.0%	0.0%	0.218	6	$1.83_{(\pm 2.42)}$	$1.80_{(\pm 2.22)}$	0.834
7	0.0%	0.0%	1.0	7	$1.33_{(\pm 2.24)}$	$1.31_{(\pm 1.96)}$	0.455
Proportion of patients who had at least one episode of fever	27.5%	22.2%	0.621	The time that analgesia was needed. (Days)	$4.57_{(\pm 2.03)}$	$4.64_{(\pm 1.96)}$	0.876

Return to normal drinking				Return to normal diet			
Drinking (2c)	**(+) Antibiotic group**	**(−) Antibiotic group**		**Diet (2d)**	**(+) Antibiotic group**	**(−) Antibiotic group**	
POD	***n* = 40**	***n* = 45**	***p***	**POD**	***n* = 40**	***n* = 45**	***p***
1	62.5%	60.0%	0.828	1	25.0%	33.3%	1.0
2	55.0%	55.6%	1.0	2	25.0%	17.8%	0.439
3	70.0%	66.7%	0.818	3	28.9%	30.0%	1.0
4	80.0%	80.0%	1.0	4	35.0%	37.8%	0.825
5	85.0%	86.7%	1.0	5	42.5%	46.7%	0.827
6	80.0%	86.7%	0.560	6	52.5%	55.6%	0.830
7	82.5%	88.9%	0.535	7	60.0%	68.9%	0.496

The investigator who collected and recorded the information (I.Y) was blinded to the patient's antibiotic status.

2.4 | Statistical Analysis

2.4.1 | Descriptive Analysis

Categorical data were described using frequencies and percentages. Continuous variables with a normal distribution were presented as mean ± standard deviation. The median value and range were used in variables that did not meet the normal distribution assumption.

2.4.2 | Inferential Analysis

Categorical variables were compared between the groups using the chi-square test or Fisher's exact test (when the expected value < 5). Continuous variables were compared between the subgroups using the independent t-test or Mann–Whitney test, according to the distribution of the variable. If a normal distribution was found, the independent t-test was used. A histogram was used to determine the distribution shape. Spearman's rank correlation coefficient was used to measure the correlation between variables. P values < 0.05 were considered statistically significant. Data were analyzed using IBM-SPSS Statistics, version 27.0.

3 | Results

3.1 | Population Characteristics

A total of 100 children who underwent CIT were included in the study. All The demographic characteristics are detailed in Table 1.

No significant difference was found between the subgroups in the children's age, sex, average BMI distribution by Age, surgery indications, or in the combined surgeries (Table 1).

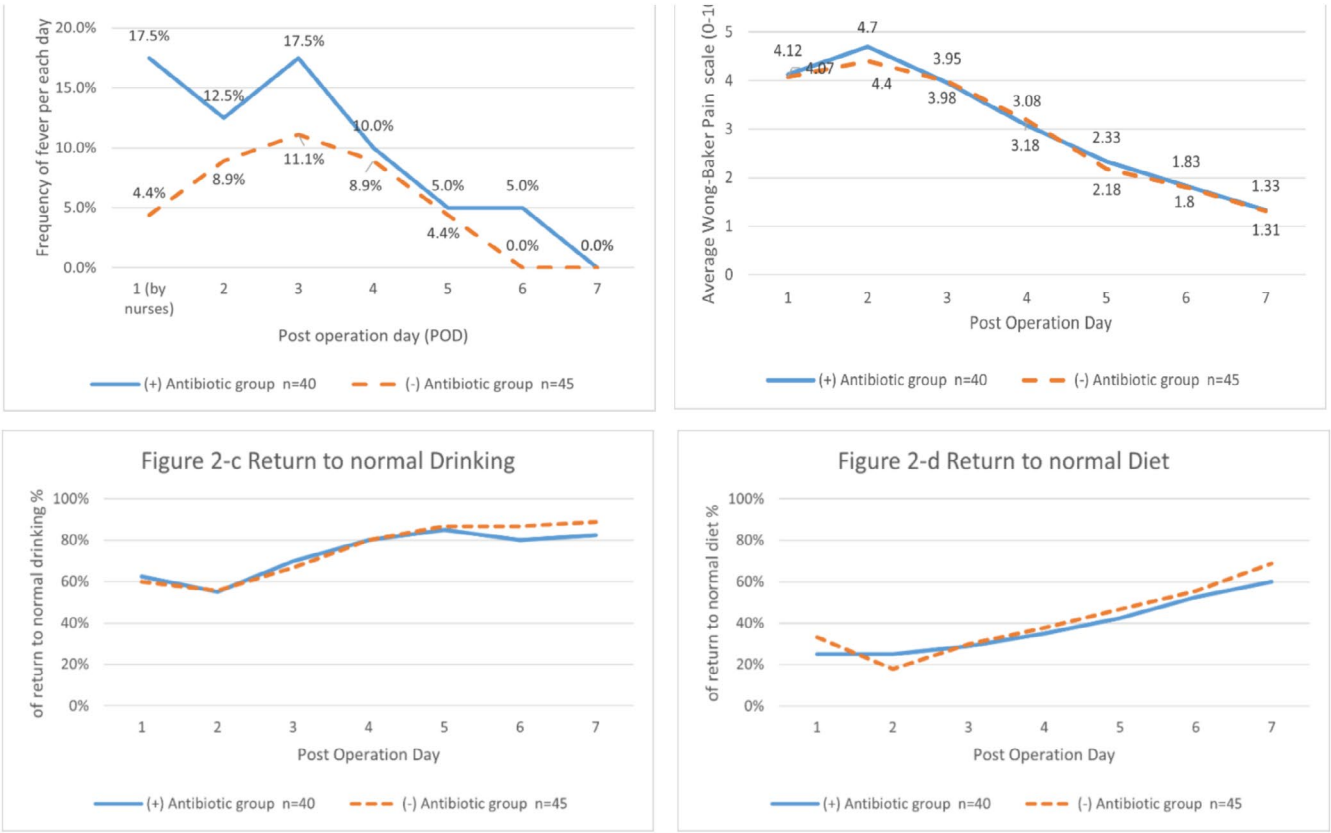

FIGURE 2 | (a) Fever: The frequency of fever (37.8°C (100°F) and above) as reported by nurses (POD1) and parents (POD2–7) for each day after discharge. The highest incidence of fever was on Days 1–3 for both subgroups. There was no effect of antibiotic administration on the frequency of fever, and no significant differences were found between the two subgroups on any day. (b) The parents recorded their child's pain on a Wong-Baker Faces Pain Rating Scale on Days 1–7 after the operation. The maximum pain was on postoperative Days 2–3. There were no significant differences in pain between the two subgroups. The time that analgesia was needed, as an indirect measure of pain duration, was also similar in both groups. (c, d) Drinking and Diet: Most children returned to their regular drinking habits within 2–3 days after surgery. However, the return to a regular diet was slower, taking most patients more than 6 days. There was no significant difference between the subgroups.

3.2 | Main Primary Outcomes

3.2.1 | Fever

Fever was measured for all patients during hospitalisation by the nursing staff (at least three times a day) and by the parents after discharge until the 7th post-operative day (POD). The frequency of fever is detailed in Table 2a and Figure 2a. The highest incidence of fever was on Days 1 and 3 for both groups. No significant differences were found between the two subgroups on any day. The proportion of patients with at least one febrile episode (from POD-1 to POD-7) was 27.5% in the (+) antibiotic subgroup and 22.2% in the (–) antibiotic subgroup ($p = 0.621$).

The addition of ventilation tube insertion during CIT did not significantly affect post-operative fever rates. Among patients who underwent CIT with concurrent ventilation tube placement, 21.1% experienced at least one febrile episode, compared to 25% of those who underwent CIT alone ($p = 0.493$). This difference was not statistically significant, suggesting that concurrent ventilation tube placement does not increase the risk of post-operative fever.

3.2.2 | Pain

The parents recorded their child's pain on a Wong-Baker-Faces-Pain-Rating-Scale on days 1–7 after the operation (Table 2b, Figure 2b). The maximum pain was on postoperative Days 1–3, with an average scale of 4.5–4.7. There were no significant differences in pain between the two subgroups on any day. Children in both subgroups required pain medications for about 4.5 days on average, with no significant difference between the subgroups. The parents completed the PPPM questionnaire on the first and seventh days after surgery. The results are summarised in Table 3. There were no significant differences in any of the questions 1–15 or the overall score of the questionnaire between the patients who took antibiotics and those who did not.

3.2.3 | Return to Regular Diet and Hydration

Parents were asked to report each day after surgery whether their child had returned to their usual drinking and diet. Table 2c,d and Figure 2c/d show that the return to normal drinking in most patients took two to 3 days, while the recovery to a normal diet was slower, taking more than 6 days for most patients. No

TABLE 3 | Parents' post-operative pain measure (PPPM).

		POD-1			POD-7		
		(+) Antibiotic group	(−) Antibiotic group		(+) Antibiotic group	(−) Antibiotic group	
Item		***n*** **= 40**	***n*** **= 42**	***p***	***n*** **= 40**	***n*** **= 42**	***p***
1	Whine or complain more than usual?	42.5%	33.3%	0.495	15.0%	11.6%	0.751
2	Cry more easily than usual?	0.0%	0.0%	1.0	17.5%	20.9%	0.8
3	Play less than usual?	52.5%	47.6%	0.825	32.5%	27.9%	0.811
4	Not do the things s/he normally does?	31.0%	31.0%	0.3	30.0%	18.6%	0.3
5	Act more worried than usual?	37.5%	23.8%	0.232	10.0%	20.9%	0.231
6	Act more quiet than usual?	47.5%	47.6%	1.0	32.5%	30.2%	1.0
7	Have less energy than usual?	60.0%	52.4%	0.513	32.5%	44.2%	0.367
8	Refuse to eat?	50.0%	55.0%	0.7	12.5%	18.6%	0.6
9	Eat less than usual?	72.5%	59.5%	0.250	50.0%	58.1%	0.513
10	Hold the sore part of his/her body?	50.0%	45.2%	0.8	20.0%	16.3%	0.8
11	Try not to bump the sore part of his/her body?	17.5%	21.4%	0.783	5.0%	7.0%	1.000
12	Groan or moan more than usual?	42.5%	26.2%	0.2	12.5%	4.7%	0.3
13	Look more flushed than usual?	4.8%	15.0%	0.150	5.0%	11.6%	0.435
14	Want to be close to you more than usual?	62.5%	47.6%	0.2	47.5%	34.9%	0.3
15	Take medication when s/he normally refuses?	20.0%	23.8%	0.792	17.5%	7.0%	0.185
Overall score		$5.44_{(\pm 3.4)}$	$6.20_{(\pm 4.02)}$	0.3	$3.33_{(\pm 2.94)}$	$3.40_{(\pm 3.74)}$	0.6

Note: The Parents' Post-Operative Pain Measure (PPPM) was completed by parents on the first and seventh days after surgery. The percentage of parents who answered "yes" to each question is shown for each day. There were no significant differences in any of the questions 1–15 or in the overall score of the questionnaire between patients who received antibiotics and those who did not. This means that antibiotic administration did not affect post-operative pain as measured by the PPPM.

significant difference existed between the (+) antibiotic and (−) antibiotic subgroups.

3.2.4 | Halitosis

The frequency of halitosis (bad breath) was reported by parents for each day (from Day-1 to Day-7). (See Table 4 and Figure 3) The highest frequency of halitosis was on Days 2–4 for both subgroups. However, there was a significant difference in halitosis between the two subgroups on Days 2–6, with patients who received antibiotics suffering less from halitosis than those who did not.

3.2.5 | Parents' Requests for Medical Attention After Surgery

Parents were asked to report daily if they sought any medical consultation by visiting the attending physician, going to

the emergency room, or talking to a doctor over the phone. In the week after surgery, 12.5% of parents in the (+) antibiotic subgroup and 13.3% of parents in the (–) antibiotic subgroup sought medical help. There was no significant difference between the two subgroups ($p = 1.0$), meaning that antibiotic administration did not reduce the referral rate for medical help after surgery.

Three patients returned to the hospital within the first week after surgery due to suspected bleeding. Two children were discharged after observation, and one child required bleeding control in the operating theater. There was no statistically significant difference between the two subgroups in terms of postoperative bleeding.

One patient in the antibiotic subgroup developed a groin rash during hospitalisation. A paediatrician examined the patient and treated the rash with local antihistamines, which were adequate. No connection was found between the antibiotic treatment and the rash, so the patient continued the antibiotic treatment as planned without further events.

TABLE 4 | Frequency of halitosis.

Frequency of halitosis			
Halitosis	**(+) Antibiotic group**	**(–) Antibiotic group**	
POD	***n* = 40**	***n* = 45**	***p***
1	45.0%	57.8%	0.281
2	62.5%	86.7%	**0.012**
3	67.5%	91.1%	**0.013**
4	60.0%	86.7%	**0.007**
5	52.5%	82.2%	**0.005**
6	47.5%	71.1%	**0.045**
7	40.0%	50.0%	0.388

Note: The frequency of halitosis (bad breath) was reported by parents for each day after discharge (from Day 1 to Day 7). The highest frequency of halitosis was on Days 2–4 for both subgroups. There was a significant difference in halitosis between the two subgroups on Days 2–6, with patients who received antibiotics suffering less from halitosis than those who did not.

4 | Discussion

In this study, we examined prospectively the potential benefit of routine antibiotic administration on postoperative recovery following paediatric coblation-intracapsular tonsillectomy (CIT).

In general, post-operative fever (as defined by a temperature of 37.8°C (100°F) and above) was common following CIT, with at least one febrile episode among 27% of children. Febrile episodes were recorded in these cases regardless of the routine post-operative use of anti-febrile medications such as paracetamol and ibuprofen. Post-operative fever may be a final common pathway of a systemic inflammatory process after surgery and, as such, should not always warrant antibiotic use. Among our cohort of surgical patients, the incidence of fever in the week after surgery did not significantly differ between the two subgroups (Table 2a). The highest incidence of fever was on the third day after surgery, and by this time, most patients had been discharged from the hospital, and the responsibility for administering medication had shifted to their parents. This highlights the importance of instructing parents on frequently administering pain relievers and antipyretics to their children after surgery. Parents should be advised that fever is common in children healing from tonsil surgery and should be treated accordingly.

The use of antibiotics to prevent fever after total tonsillectomy has been the subject of previous research, including some meta-analyzes. One meta-analysis [10] did find an effect of antibiotics on reducing the incidence of fever after total tonsillectomy. Still, two other meta-analyzes [7, 11] did not find clear evidence that antibiotics significantly reduce the incidence of fever after total tonsillectomy. Based on this evidence, the American Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS) [6] recommends against the administration or prescription of perioperative antibiotics to children undergoing total tonsillectomy. There is minimal published data regarding the role of antibiotics after CIT surgery, and

Halitosis			P-value
POD	n=40	n=45	
1	45.0%	57.8%	0.281
2	62.5%	86.7%	**0.012**
3	67.5%	91.1%	**0.013**
4	60.0%	86.7%	**0.007**
5	52.5%	82.2%	**0.005**
6	47.5%	71.1%	**0.045**
7	40.0%	50.0%	0.388

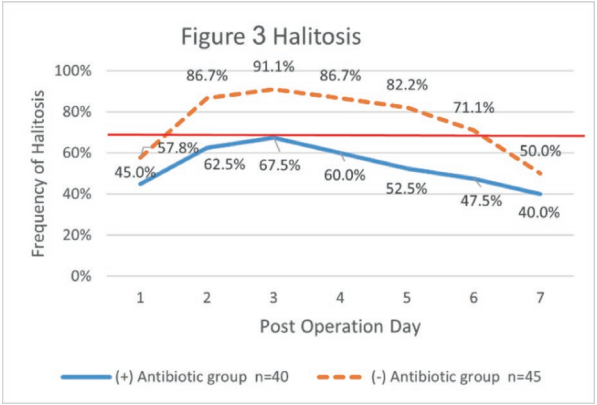

FIGURE 3 | Frequency of halitosis.

the current study aims to address this knowledge gap in order to improve future decision making and promote data-driven discussions and recommendations.

The administration of antibiotics after CIT did not affect the intensity, timing, or duration of pain, as shown in Table 2b and its corresponding figure. Our findings are consistent with those of previous systematic reviews [7, 10, 11] on total tonsillectomy, which did not find clear evidence to support the use of postoperative antibiotics to reduce postoperative pain. Results of the current study are the first to address the issue of antibiotics and pain control in CIT.

Referring to the PPPM questionnaire, on POD-1, more than half of the parents reported that their children had difficulty eating or swallowing (questions 8 and 9). This is not surprising, as children after tonsillectomy often have problems with swallowing. No significant differences were found between the two study subgroups in any of the questions or the overall score of the questionnaire, either on the first day after surgery or on the seventh day (Table 3). This is consistent with our findings that the administration of postoperative antibiotics does not affect children's pain after CIT surgery, as reported by their parents.

Parents reported daily for the first week whether their child could drink easily and whether they had returned to their regular diet. There was no significant difference between the subgroups that received antibiotics and those that did not, indicating that antibiotic administration did not affect the child's return to regular drinking and diet after CIT.

Halitosis is a common side effect of tonsillectomy that can bother children and their parents. It is thought to be caused by bacteria that can contaminate the surgical site [10]. In this study, parents were asked to report daily whether their child had bad breath during the first 7 days after surgery. Halitosis was reported to begin on the day of the operation and peaked on the third post-operative day (see Table 4). Antibiotic treatment significantly reduced the incidence of halitosis on Days 2–6 after CIT. This suggests that the decrease in halitosis following antibiotic treatment is likely due to a reduction in the number of bacteria in the tonsillar fossa area and thus causes the reduction of halitosis.

5 | Limitations

This prospective randomised study is limited by its relatively small sample size and single-centre design. Additionally, the study was indeed randomised although not blinded, which may have introduced bias into the results. Future studies with larger sample sizes, longer follow-up periods and multicentre designs may further confirm the findings of this study.

6 | Conclusions

This prospective study shows that a routine practice of prophylactic post-operative antibiotic use after CIT has minimal clinical benefits. Post-operative fever is common among children healing from CIT; however, the use of antibiotics does not reduce the number or severity of febrile episodes, which are probably not infectious-related. Improvement in halitosis was indeed significant during antibiotic treatment; however, according to these results, the routine use of antibiotics in the above setting is probably not clinically justified.

Author Contributions

Netanel Eisenbach: data collection, analysis, design, writing. **Igor Yakubovich:** data collection, analysis, writing. **Ahmad Bader:** data collection, analysis. **Ephraim Rinot:** data collection, analysis. **Abeer Dabbah Miari:** data collection, analysis, statistics. **Samah Khalil:** data collection, analysis. **Rania Faris:** analysis, design, statistics. **Eyal Sela:** analysis, writing. **Maayan Gruber:** conception, design, analysis, supervision, critical review, writing.

Ethics Statement

This study was approved by the Galilee medical center's (Israel) Institutional Review Board (IRB) (NHR-0082-22). Medical and personal information was collected anonymously through a directed questionnaire and medical records. Both participants' parents were asked to sign an informed consent form before their child could participate in the study. The researchers took steps to maximise the benefits to participants' parents by allowing them to learn more about adenotonsillectomy procedures, coblation technology and antibiotics.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Peer Review

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/coa.14296.

References

1. M. U. Ahmad, A. N. Wardak, T. Hampton, M. R. S. Siddiqui, and I. Street, "Coblation Versus Cold Dissection in Paediatric Tonsillectomy: A Systematic Review and Meta-Analysis," *Journal of Laryngology and Otology* 134 (2020): 197–204, https://doi.org/10.1017/S0022215120000377.

2. M. El-Taher and Z. Aref, "Coblation Versus Conventional Tonsillectomy: A Double Blind Randomized Controlled Trial," *Indian Journal of Otolaryngology and Head & Neck Surgery* 71 (2019): 172–175, https://doi.org/10.1007/s12070-017-1189-z.

3. T. Liu, C. Ji, Y. Sun, and W. Bai, "Adverse Events of Coblation or Microdebrider in Pediatric Adenoidectomy: A Retrospective Analysis in 468 Patients," *Laryngoscope Investigative Otolaryngology* 7 (2022): 2154–2160, https://doi.org/10.1002/lio2.949.

4. Y. He, Z. Cai, and J. Yang, "Revisit Rates Following Pediatric Coblation Tonsillectomy," *International Journal of Pediatric Otorhinolaryngology* 122 (2019): 130–132, https://doi.org/10.1016/j.ijporl.2019.04.013.

5. L. Di Rienzo Businco and G. Coen Tirelli, "Paediatric Tonsillectomy: Radiofrequency-Based Plasma Dissection Compared to Cold Dissection With Sutures," *Acta Otorhinolaryngologica Italica* 28 (2008): 67.

6. R. B. Mitchell, S. M. Archer, S. L. Ishman, et al., "Clinical Practice Guideline: Tonsillectomy in Children (Update)," *Otolaryngology–Head*

and Neck Surgery 160 (2019): S1–S42, https://doi.org/10.1177/0194599818801757.

7. M. Dhiwakar, W. A. Clement, M. Supriya, and W. McKerrow, "Antibiotics to Reduce Post-Tonsillectomy Morbidity," *Cochrane Database of Systematic Reviews* 12, no. 12 (2012): CD005607, https://doi.org/10.1002/14651858.cd005607.pub4.

8. B. Lm, "Merck Manual Professional Version," accessed April 9, 2024, https://www.merckmanuals.com/professional/infectious-diseases/biology-of-infectious-disease/fever.

9. A. Bérard-Giasson, K. A. Brown, R. V. Agnihotram, and C. Frigon, "Validation of the parent's Postoperative Pain Measure With an Age-Appropriate Reference Pain Scale for Children 2–12 Years Old During a 14-Day Recovery After Tonsillectomy: A Prospective Cohort Study," *Paediatric Anaesthesia* 32 (2022): 654–664, https://doi.org/10.1111/pan.14407.

10. M. Dhiwakar, C. Y. Eng, S. Selvaraj, and W. S. McKerrow, "Antibiotics to Improve Recovery Following Tonsillectomy: A Systematic Review," *Otolaryngology and Head and Neck Surgery* 134, no. 3 (2006): 357–364, https://doi.org/10.1016/j.otohns.2005.12.016.

11. A. O. Abdelhamid, T. S. Sobhy, H. M. El-Mehairy, and O. Hamid, "Role of Antibiotics in Post-Tonsillectomy Morbidities: A Systematic Review," *International Journal of Pediatric Otorhinolaryngology* 118 (2019): 192–200, https://doi.org/10.1016/j.ijporl.2018.12.011.