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# PAEDIATRIC COBLATION TONSILLECTOMY: A PROSPECTIVE HOSPITAL BASED STUDY.

**Ori Jego[1], Ram Ratan[2], Tago Nani[3], Debbarma Amrit[4*]**

[1]Assistant Prof. Department of Otorhinolaryngology TRIHMS, Naharlagun
[2]Assistant Prof. Department of Medicine, TRIHMS Naharlagun
[3]Associate Prof. Department of Paediatrics, TRIHMS, Naharlagun
[4*]Associate Prof Department of Otorhinolaryngology, TRIHMS, Naharlagun

***Corresponding Author:** Dr. Amrit Debbarma
*Associate professor, Department of Otorhinolaryngology, TRIHMS, Naharlagun.
Email:amrittrihms2018@gmail.com

**Objectives:**
To Study the Paediatric Coblation tonsillectomy: its efficacy, outcome, adverse effects, if any and share our experience at Hormin Hospital, Naharlagun, Arunachal Pradesh.

**INTRODUCTION:**

Tonsillectomy remains one of the most commonly performed surgical procedures by otorhinolaryngologists worldwide. Over the years, various techniques and instruments have evolved to accomplish this operation and have a long history. There are various methods of tonsillectomy includes dissection, guillotine, cryosurgery, monopolar and bipolar diathermy, ultrasonic removal, radiofrequency surgery and laser surgery [1]. Coblation is a relatively new technique that was started in 1997. It is widely utilized across various specialties including procedures addressing snoring, obstructive sleep apnoea, nasal disorders and laryngeal surgeries. Its mechanism is based on plasma kinetic energy; wherein bipolar diathermy is applied through a medium of isotonic saline which results in production of plasma field of sodium ions. These ions are able to breakdown inter-cellular bonds and effectively vaporize the tissue at low temperature. The presence of irrigation saline helps to limit the amount of heat delivered to the surrounding structure and reduces post-operative pain experienced by the patient.

Unlike most operative procedures, that heal by primary intention; tonsillectomy results in an open wound that undergoes healing by secondary intention. The major postoperative complications are pain and secondary hemorrhage. Pain primarily results from disruption of mucosa and irritation of glossopharyngeal and vagal nerve fiber followed by inflammation and spasm of the pharyngeal muscles that leads to ischemia.

A prolonged period of post-operative recovery lasting for up to 3 weeks is normally seen after tonsillectomy [2]. There is always risk of postoperative secondary hemorrhage, which is due to secondary infection of the tonsillar fossa resulting in disruption of vessels and bleeding.

Any improvement of tonsillectomy procedures will result in one or more of the following advantages such as decrease in the operating time, reduction in the intra-operative and postoperative blood loss,and reduction in postoperative pain.

There are various studies describing the use of coblation in tonsillectomy with varying conclusions regarding intra-operative blood loss, postoperative hemorrhage rates, postoperative pain, and healing rates [3]. But in this part of the country, north east India, no such studies have been done so far.

Therefore, this study was undertaken to evaluate the efficacy of pediatric coblation tonsillectomy as an optimal surgical technique and to identify factors influencing postoperative pain, bleeding, and rate of healing in children undergoing tonsillectomy in this region of Northeast India.

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**METHODS:**

A prospective study was conducted on 300 paediatric patients, aged from 1 to 18 years who underwent coblation tonsillectomy at Hormin Hospital, Naharlagun, Arunachal Pradesh, India, between April 2020 to April 2025. All the Children underwent bilateral tonsillectomy by coblation method, with or without adenoidectomy, were included in the study. Cases of coblation tonsillectomy done by another surgeon were not included in the study. The operative time, intra-operative and post operative bleeding, pain and other morbidity were analysed and compared. Data were analysed with STATA for Macintosh v.15.1 and statistically significance level was considered at a P value < 0.05.

**RESULT:**

**Table 1.Showing Age and Sex distribution of paediatrics coblation patients:**

| Age in group | Male | Female | Percentages (%) |
|---|---|---|---|
| 0-3 | 2 | 1 | 1 |
| 3-18 | 180 | 117 | 99 (297) |
| | 182 (60 %) | 118 ( 39% ) | 100 |

Table 1: Of the total 300 paediatric cases, only 3 patients (1%) belonged to the 0-3 years group, while the remaining 297 patients (99%) were aged between 3 and 18 years. Among them, 182 (60 %) were male and 118 (39%) were female, yielding a male-to-female ratio of approximately 1.5:1.

**Table 2.Showing the Pain Score after Coblation Tonsillectomy by visual analog scale (VAS)**

| Post-operative Periods | Number of patients with pain | Percentages (%) |
|---|---|---|
| 6 hours | 55 | 18 |
| 12 hours | 145 | 48 |
| Day 1 | 230 | 80 |
| Day 2 | 300 | 100 |
| Day 3 | 300 | 100 |
| Day 7 | 230 | 76 |
| Day 18 | 00 | 00 |

Table 2 : Presents the distribution of postoperative pain among patients following coblation tonsillectomy. All patients (100%) reported pain on postoperative Day 2 and Day 3. At 6 hours postoperatively, 55 patients (18%) experienced pain, increasing to 145 patients (48%) at 12 hours. By postoperative Day 1, pain was reported in 230 patients (80%). On Day 7, 230 patients (76%) continued to report pain. Notably, no patients reported any pain by Day 18.

**Table 3.Showing the of Pain intensity after paediatrics Coblation Tonsillectomy by visual Analog scale (VAS)**

| Intensity of Pain | Number of Cases | Percentages (%) |
|---|---|---|
| No pain | 0 | 00 |
| Mild Pain | 150 | 50 |
| Moderate Pain | 50 | 16 |
| Severe pain | 50 | 16 |

| | | |
|---|---|---|
| Very severe pain | 30 | 10 |
| Worse Pain | 20 | 6 |

Table 3.Shows the Pain Score after Coblation Tonsillectomy by visual Analog scale (VAS). Out of 300 patients, 150 (50 %) experienced mild pain, whereas 20 patients (6%) experienced worse pain. 50 patients (16%) were showing moderate & severe pain and 30 patients (10 %) were experiencing very severe pain.

**Table 4.Showing incidence of postoperative bleeding in paediatric coblation:**

| Type of Haemorrhage | Number | Percentages (%) |
|---|---|---|
| Primary Haemorrhage | 10 | 3 |
| Reactionary Haemorrhage | 20 | 6 |
| Secondary Haemorrhage | 25 | 8 |
| No haemorrhage | 255 | 85 |
| Total | 300 | 100 |

Table 4.Shows the incidence of postoperative bleeding in paediatric coblation.Out of 300 patients 255 (85%) patients had no haemorrhage, whereas as 10 patients (3%) were having primary haemorrhage.20 patients (6%) had reactionary haemorrhage and 25 patients (8%) had secondary haemorrhage.

**Table 5. Showing operative time during paediatric Coblation:**

| Operative time | Numbers | Percentages (%) |
|---|---|---|
| 0- 30 minutes | 255 | 85 |
| 30-60 minutes | 45 | 15 |
| Total | 300 | 100 |

Table 5.Shows operative time during paediatric Coblation. Out of 300 patients 255 (85 %) patients were operated within 30 minutes whereas 45(15%) were operated within one hour.

**DISCUSSION**:

Coblation Tonsillectomy has not been discussed widely in literature. The other methods of tonsillectomy like dissection and bipolar tonsillectomy are widely reported in the literature. Ideally tonsillectomy should be quick, painless and associated with no blood loss. In reality, however, we are seeing many cases of significant morbidity like post operative pain, haemorrhage and other complications. The surgeons need to select the technique that results in minimum morbidity.

In our study, we operated on the paediatric age group of patients, only 3 (1%) were age below 3 years and 297 (99%) were under the age group of 3-18 years. Out of 300 cases, 182 (60 %) were male children and 118 (39%) were female children with male to female ratio of 1:1.

In our study we recorded the post operative pain using the pain analogue scale in relation to the postoperative period. Pain was significantly less in the initial period at 6 hours with P value 0.0006, this could be due to persistent effects of anaesthesia and analgesic given during operation. N Polites et al. 2006 [5] also found that coblation tonsillectomy caused significantly less pain during the first three postoperative days. In our study, all patients (100%) reported experiencing pain from postoperative Day 3 through Day 7. However, by Day 18, pain had completely resolved in all cases. This pattern of recovery highlights several significant advantages associated with coblation tonsillectomy, including a more rapid return to a normal diet, marked reduction in analgesic use, and earlier resumption of regular school activities. Additionally, the intensity of pain demonstrated a progressive decline over time. In our study 16% of the patients were experiencing moderate and severe

pain whereas as only 6 % experienced worse pain (Table 3). This clearly shows that there is significantly less post operative pain level in paediatric coblation tonsillectomy. Although the pain was significantly less in our study, the tonsillar fossae healing was delayed as evidenced by the presence of slough in the fossae on day 7 with *P* value of 0.04 which is statistically significant. The reduced pain in pediatrics coblation may be a result of the reduced temperature used in coblation (60–70°C), and less damage to surrounding tissues.

In our study, 255 (85 %) patients had no haemorrhage, whereas as 10 patients (3%) were having primary haemorrhage which was minimal and was effectively controlled without complications. In our study reactionary haemorrhage was also less (8%) and secondary haemorrhage was only 6% (20 patients). Divi V et al reported that following coblation there is evidence of a lower prevalence of secondary hemorrhage in the paediatric age coblation group. (4.40%).

In our study 85% of the patients were operated within 30 minutes whereas 15% were operated within one hour. It is evident that paediatric Coblation Tonsillectomy takes less operative time and can be completed within 30 minutes. The longer additional operating time taken (15 %) in some cases were due to concurrent adenoidectomy done along with the tonsillectomy. The short operative time required to perform paediatrics coblation did not reach statistical significance. Also, the longer time did not translate into more postoperative pain. It may be possible to reduce this operative time further with experience.
It's important to note that some studies have found no significant difference in pain, complications, or other outcomes between coblation and traditional tonsillectomy [9].This may be due to factors such as the surgeon's experience, the specific surgical technique used, and the patient population.

**LIMITATIONS:**
Since the study was done in paediatric age group, the accurate pain score recording was difficult and subjective as per response of the child. Longer follow-up periods & comparative studies with conventional tonsillectomy are needed to further evaluate the long-term outcomes of paediatric coblation tonsillectomy and to compare the advantage and disadvantage of coblation technique over other conventional tonsillectomy.

## CONCLUSION:

Our study concludes that paediatric coblation tonsillectomy is an effective technique for performing tonsillectomy in children. It indicates that coblation tonsillectomy leads to less pain in the initial postoperative days. However, this effect may diminish over time. Pediatrics Coblation tonsillectomy is generally associated with reduced intra-operative blood loss, making it a potentially safer option, especially for children who are at higher risk of bleeding. It has the advantage of lower incidence of reactionary and secondary haemorrhage.Pediatrics Coblation tonsillectomy is associated with a shorter operative time, although the longer time did not translate into more postoperative pain. This may vary depending on the surgeon's experience. Coblation tonsillectomy is a relatively easy technique to learn and perform, providing a near bloodless field, and causing minimal surrounding tissue damage.

Our study suggests that children undergoing coblation tonsillectomy may experience a faster return to normal diet and activities. Hence coblation tonsillectomy is an easy to learn, safe procedure, with significant advantages in terms of reducing postoperative morbidity, and thus should be routinely used in all cases. However comparative studies of coblation methods and traditional dissection methods are needed in future to determine the precise comparative outcome.

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**REFERENCE :**

1. Weingarten C. Ultrasonic tonsillectomy: rationale and technique. Otolaryngol Head Neck Surg. 1997;116:193–196. doi: 10.1016/S0194-5998(97)70324-3.
2. Temple RH, Timms MS. Paediatric coblation tonsillectomy. Int J Pediatr Otorhinolaryngol. 2001;61:195–198. doi: 10.1016/S0165-5876(01)00553-5.
3. Mann DG, St George C, Scheiner E, et al. Tonsillectomy–some like it hot. Laryngoscope. 1984;94:677–679. doi: 10.1288/00005537-198405000-00019.
4. Shah UK, Galinkin J, Chiavacci R, et al. Tonsillectomy by means of plasma-mediated ablation: prospective, randomized, blinded comparison with monopolar electrosurgery. Arch Otol
5. Polites N, Joniau S, Wabnitz D, et al. Postoperative pain following coblation tonsillectomy: randomized clinical trial. ANZ J Surg. 2006;76:226–229. doi: 10.1111/j.1445-2197.2006aryngol Head Neck Surg.
6. Belloso A, Chidambaram A, Morar P, Timms M. Coblation tonsillectomy versus dissection tonsillectomy: post-operative hemorrhage. Laryngoscope. 2003;113:2010–2013.
7. Philpott CM, Wild DC, Mehta D, Daniel M, Banerjee AR. A double-blinded randomized controlled trial of coblation versus conventional dissection tonsillectomy on postoperative symptoms. Clin Otolaryngol. 2005;30:143–148.
8. Noon AP, Hargreaves S. Increased postoperative haemorrhage seen in adult coblation tonsillectomy. J Laryngol Otol. 2003;117:704–706.
9. Temple RH, Timms MS. Paediatric coblation tonsillectomy. Int J Pediatr Otorhinolaryngol. 2001;61(3):195–198. doi: 10.1016/S0165-5876(01)00553-5.
10. Mitic S, Tvinnereim M, Lie E, Šaltytė BJ. A pilot randomized controlled trial of coblation tonsillectomy versus dissection tonsillectomy with bipolar diathermy haemostasis. Clin Otolaryngol. 2007;32(4):261–267.
11. .Pang YT. Paediatric tonsillectomy: bipolar electrodissection and dissection/snare compared. J Laryngol Otol. 1995;109(8):733–736.
12. Timms MS, Temple RH. Coblation tonsillectomy: a double blind randomized controlled study. J Laryngol Otol. 2002;116:450–452.
13. Nielsen VM, Greisen O. Peritonsillar abscess. II. Cases treated with tonsillectomy à chaud. J Laryngol Otol. 1981;95(8):805–7.