

COBLATION TONSILLECTOMY VERSUS DISSECTION TONSILLECTOMY IN MANAGEMENT OF PATIENTS WITH CHRONIC TONSILLITIS

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ABSTRACT

Background: In past few years Tonsillectomy is the most common surgical procedure. No consensus is present upon one tonsillectomy technique which is most effective with few complications. Tonsillectomy with Coblation method is gaining popularity in recent years and undergoing intensive research. For more than a century, traditional dissection tonsillectomy has remained the gold standard for tonsil removal.

Objective: To compare mean operation time and blood loss in Coblation tonsillectomy versus cold dissection tonsillectomy in patients undergoing tonsillectomy.

Results: The mean age of cases in this study was 33.78±16.21 years with 56(46.67%) male and 64(53.33%) female cases. In dissection group mean blood loss was 143.63±34 mL and in Coblation group the mean blood loss was 113.45±24.61 mL, p-value < 0.001. The mean surgery time in dissection group was 40.08±6.64 minutes and in Coblation group was 32.62±4.21 minutes with significantly less in Coblation method when compared with dissection group, p-value < 0.001.

Conclusion: When compared to cold steel dissection tonsillectomy, this study found that radiofrequency Coblation results in less mean operation time and mean blood loss. With radiofrequency Coblation, a better outcome can be attained, as well as the satisfaction of both the patient and the surgeon.

Keywords: Tonsillectomy, dissection, Coblation, Complications, blood loss, pain

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INTRODUCTION

Tonsillectomy is the most common surgical procedure¹ performed in the ear, nose, and throat practice² with approximately 20%-40% of surgical procedures.³

Tonsillectomy procedure should be fast with minimum blood loss and having less morbidity and complications. One must take care of blood loss, pain, fever, and decreased oral intake after surgery. So a technique which has less morbidity and complications should be selected.⁴

There is no consensus on which technique is best to reduce morbidity and post operative complications.⁵ Different methods for tonsillectomy are cold steel dissection, guillotine, cryosurgery, monopolar and bipolar diathermy, bipolar scissor dissection, radiofrequency ablation and laser surgery.^{6,7}

Coblation tonsillectomy is a modern technique which uses and radiofrequency bipolar current in normal saline. It results in a plasma field of highly ionized particles which break down intercellular bonds and cause melting of tissues at a temperature of 70°C.⁶ Compared to conventional electrocautery methods, it uses radiofrequency ablation to dissect out tissues and now frequently used in otolaryngology.⁸

A study found Intraoperative blood was 103.4 ± 28.7 ml for the coblation and 161.5 ± 46.4 for the dissection group ($p < 0.001$). Mean operation time was 27.3 ± 4.8 minutes in coblation group and 31.0 ± 5.4 minutes in dissection group ($p < 0.001$).¹⁸ Another study reported mean Operative time (min) in coblation group was 15 and in control group was 11, p -value > 0.05 . Moreover, the mean intraoperative blood loss (ml) 11 ± 7.87 was in coblation group and 34 ± 12.89 was in conventional group, p -value = 0.009.¹⁹

The rationale of this study is to compare outcome of two techniques of tonsillectomy by coblation method and cold dissection method. There are international studies available but not local data exists. Global studies favored coblation method as compared to dissection method in terms of less blood loss^{18,19} and there are controversies in mean duration of surgery as one study reported less time⁵ and one study reported no significant difference in mean duration of surgery.¹⁹ This study can help us to generate evidence from local population and to confirm the role of coblation methods in terms of low blood loss and less duration of surgery. After this study if prove coblation as good procedure when compared to dissection methods then in future we will alter our practice to gain more patients and surgeons satisfaction. The objective of this study is to compare mean operation time and blood loss in coblation tonsillectomy versus cold dissection tonsillectomy in patients undergoing tonsillectomy.

METHODS

It was randomized controlled trial study conducted at ENT department Lahore General Hospital Lahore. Duration of the study was 6 months (From OCTOBER 31, 2016 till April 30, 2017).

A total of 120 patients (60 in each group) were taken in this study. The sample size is calculated using expected mean operation time was 27.3 ± 4.8 minutes in coblation group and 31.0 ± 5.4 minutes in dissection group.

The patients included in group were all the patients aged 6-60 years of either gender or the patients undergoing tonsillectomy due to chronic tonsillitis without any acute infection. The patients with history of acute infection and known bleeding disorders (on history) were excluded in this study.

All 120 (60 in each group) patients fulfilling inclusion criteria after taking permission form hospital ethical committee were taken. An informed consent was taken and cases were enrolled from Department of ENT, Lahore General Hospital Lahore. Demographical information such as name, age and gender along with their contact details were obtained from all patients. Patients were randomly allocated (using lottery method) to receive either traditional tonsillectomy or coblation group. All surgeries were performed by a single consultant having more than 5 years of experience after post-graduation. All surgeries were performed by using either coblator device or cold steel dissection instruments. Postoperative analgesia was given with acetaminophen only. Duration of surgery and blood loss was measured as per operational definition.

Data was entered and analyzed using SPSS (statistical package for social sciences) version 20. Mean \pm S.D was calculated for quantitative data like Age, duration of surgery and blood loss. Qualitative data like gender was presented in for of frequency and percentage. Independent sample t-test was applied to compare duration of surgery and blood loss in both groups. A p value ≤ 0.05 was significant. Stratification of data was done for age and gender to rule effect modifiers. Post stratified independent sample t-test was applied. P -value ≤ 0.05 was considered as significant.

RESULTS

- The mean age was 33.78 ± 16.21 years age range 6 and 60 years. The mean age in Dissection and Coblation group was 33.78 ± 17.49 years and 33.77 ± 14.98 years. Table-1
- There were 70(58.33%) cases who were < 40 of age and 50(41.67%) cases were ≥ 40 years of age. There were 56(46.67%) male and 64(53.335) female cases in this study.
- In dissection group mean blood loss was 143.63 ± 34 mL and in Coblation group the mean blood loss was 113.45 ± 24.61 mL with significantly less blood loss in Coblation group, p value < 0.001 . Table-2
- The mean surgery time in dissection group was 40.08 ± 6.64 minutes with minimum and maximum time as 30 and 50 minutes, while the mean surgery time Coblation group was 32.62 ± 4.21 minutes with minimum and maximum duration of 25 and 40 minutes. The mean surgery time was significantly less in Coblation method when compared with dissection group, p -value < 0.001 . Table-3
- When data was stratified for age and gender, we found significant less blood loss and surgery times in strata of age and both gender, p -value < 0.05 . Table-4,5,6,7.

Table-1 Age (years) in both groups Age (years)

Study groups	Mean	S. D	Minimum	Maximum
Dissection (n=60)	33.78	17.49	6.00	60.00
Coblation (n=60)	33.77	14.98	7.00	60.00
Total (n=120)	33.78	16.21	6.00	60.00

Table-2 Comparison of blood loss (ml) in both groups Blood Loss (ml)

Study groups	Mean	S. D	Minimum	Maximum
Dissection (n=60)	143.63	34.00	80.00	199.00
Coblation (n=60)	113.45	24.61	70.00	159.00
Total (n=120)	128.54	33.21	70.00	199.00

Table-3 Surgery time (minutes) in both groups Surgery time (minutes)

Study groups	Mean	S. D	Minimum	Maximum
Dissection (n=60)	40.08	6.64	30.00	50.00
Coblation (n=60)	32.62	4.21	25.00	40.00
Total (n=120)	36.35	6.69	25.00	50.00

Table-4 Blood loss in both groups with respect to age groups

Age groups	Study groups	Mean	S. D	p-value
<40	Dissection	144.39	34.67	<0.001
	Coblation	114.78	24.07	
40 or more	Dissection	142.70	33.79	0.001
	Coblation	111.30	25.86	

Table-5 Surgery time (minutes) in both groups with respect to age groups

Age groups	Study groups	Mean	S. D	p-value
<40	Dissection	40.52	6.78	<0.001
	Coblation	32.46	4.23	
40 or more	Dissection	39.56	6.57	<0.001
	Coblation	32.87	4.26	

Table-6 Blood loss in both groups with respect to gender

Gender	Study groups	Mean	S.D	p-value
Male	Dissection	142.38	31.81	0.01
	Coblation	122.50	20.48	
Female	Dissection	145.07	36.87	<0.001
	Coblation	107.42	25.53	

Table-7 Surgery time (minutes) in both groups with respect to age groups

Gender	Study groups	Mean	S.D	p-value
Male	Dissection	39.56	6.98	<0.001
	Coblation	32.96	4.73	
Female	Dissection	40.68	6.31	<0.001
	Coblation	32.39	3.88	

DISCUSSION

In our study the mean age of cases was 33.78±16.21 years with 56(46.67%) male and 64(53.335) female. In another study, a total of 43 tonsillectomies were carried out of which 38 patients were drafted into the study aged between 10 years and 31 years. There were 21 (55.3%) males and 17 (44.7%) females giving a male to female ratio of 1.2:1. Eleven (28.9%) patients were in the age range 10 to 15 years²⁰. Their age and gender distribution is not in agreement to our study. In another study, 349 patients underwent tonsillectomy among them, alike to our results, 134 were males and 215 were females. The mean age was in their study was found to be 16.7 years which was lower than observed in our study¹⁶

In current study we found that in dissection group mean blood loss was 143.63±34 mL and in Coblation group the mean blood loss was 113.45±24.61 mL, p-value < 0.001. The mean surgery time in dissection group was 40.08±6.64 minutes and in Coblation group was 32.62±4.21 minutes with significantly less in Coblation method when compared with dissection group, p-value <0.001.

A study found Intraoperative blood was 103.4 ± 28.7 ml for the coblation and 161.5 ± 46.4 for the dissection group (p < 0.001).¹⁸ The findings are in consistent to our statistics regarding less blood loss in Coblation method. While they reported mean operation time was 27.3 ± 4.8 minutes in coblation group and 31.0 ± 5.4 minutes in dissection group (p < 0.001).¹⁸ We also found similar statistics regarding less surgery timings in Coblation groups. Another study reported mean Operative time (min) in coblation group was 15 and in standard procedure was 11, p-value > 0.05.⁷ This finding is not in line to our findings. Moreover, the mean intraoperative blood loss (ml) 11 ± 7.87 was in coblation group and 34 ± 12.89 was in conventional group, p-value = 0.009.⁷ These findings are consistent with our findings.

One more study favored coblation methods in terms of less primary and secondary hemorrhage i.e. 2.25% secondary hemorrhage occurred in coblation method compared with 6.19% in the control group (P < .05) and in children it was 0.95% compared with 4.77% in the control group (P < .05). Significant difference was present in adults (4.40% vs. 8.81%, respectively) (P<.05). On contrary one study reported there were no complications in either group. Coblation patients had less pain and greater oral intake at all 3 time points. Percentage of normal activity level returned to >70% earlier and more frequently in Coblation patients. There was slightly decreased analgesic use on postoperative day 5 in the Coblation group^{17,20}

CONCLUSION

Through the findings of this study, we found that radiofrequency Coblation yields less mean operation time and mean blood loss when compared with cold steel dissection tonsillectomy in patients with chronic tonsillitis. Using radiofrequency Coblation better outcome can be achieved along with patient's and surgeon's satisfaction.

ETHICAL APPROVAL

The study was approved by the Ethical Review Committee of Postgraduate Medical Institute / Ameer- ud- Din Medical College/ Lahore General hospital, Lahore via Research No. 180-20 Dated September 22, 2020.

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AUTHOR'S CONTRIBUTIONS

MI: Manuscript writing, Editing

WJ: Data collection, editing

MMS: Literature search

MUK, MF: Data collection

HM: Proof reading, Data collection