

A Comparison of Dissection Method and Diathermy Cauterization Tonsillectomies

Rahman MS¹, Biswash NN², Roy D³, Alam MS⁴

Abstract

Background: Tonsillectomy is one of the most common procedures performed by otolaryngologists. It is a surgical operation that removes both Palatine tonsils from the tonsillar fossa. It is typically performed in youngsters for recurrent tonsillitis and tonsillar hypertrophy.

Objective: To compare the dissection and diathermy methods of tonsillectomy and evaluate their advantages and disadvantages during surgery and convalescence.

Methods: This is a retrospective analysis of 400 patients from January 2015 to January 2020 of otorhinolaryngology department in Banga Bandhu Sheikh Mujib Medical College Hospital. Out of total 400 patients 200 patients underwent tonsillectomy by dissection method and rest 200 patients underwent electrocautery method. Data were generated through record review using a checklist. A total of 400 patients were analyzed in respect of operation methods, operation time, and amount of blood loss, post operative complications, duration of hospital stay in addition to age & sex distribution separately for comparison.

Results: The overall hospital stay in both types was 1-3 days. The average intra operative blood loss was 5-7 ml with cautery and average 50 ml with dissection method. The average operative time was 25-30 minutes with dissection method and 10-15 minutes with cautery. We found higher amounts of blood loss and intra - operative time with dissection method than electrocautery. The Chance of Secondary haemorrhage was more in electro - cautery method than dissection method. Pain, Scar formation, odynophagia were more in cauterization method. Complete healing time was more in cauterization method than dissection method. There was no death in both methods.

Conclusion: Although per- operative blood loss, operative time were less in cauterization method but post operative bleeding, pain, odynophagia and infection were more in electro cauterization method. In both methods, there were some advantages and some disadvantages.

Keywords: Tonsillectomy, dissection method & diathermy method.

Introduction

Tonsillectomy is one of the commonly performed operations undertaken by otolaryngologists. It is a surgical procedure in which both Palatine tonsils are removed from

the tonsillar fossa. It is usually performed for recurrent tonsillitis and tonsillar hypertrophy and usually done in children.¹ It is one of the commonest ENT procedures done in paediatric population, the technique of which has evolved over years to decrease the morbidity associated with the surgery.² Various methods of tonsillectomy have been practiced and oriented around reducing or eliminating both intra-operative and post-operative morbidity in the patients.³ Every technique has advantages and disadvantages. Any advancement in this surgery should reduce surgical time, blood loss, postoperative bleeding, and, most importantly, postoperative morbidity. With the increased popularity of day-case surgery, fast procedures with short recovery are preferred. If at all feasible, the procedure should be painless, allowing for a quicker return to normal food and everyday activities.⁴

In this study, we will compare the dissection and diathermy methods of tonsillectomy and evaluate their advantages and disadvantages during surgery and convalescence. Unlike most operative procedures, which are closed primarily, tonsillectomy produces an open wound that heals by secondary intention. The major postoperative morbidity problems are pain and hemorrhage.

1. Dr. Md. Shafiq-Ur Rahman
Associate Professor & Head, Department of Otorhinolaryngology & Head-Neck surgery, Bangabandhu Sheikh Mujib Medical College, Faridpur.
2. Dr. Nripendra Nath Biswash
Associate Professor, Department of Otorhinolaryngology & Head-Neck surgery, Bangabandhu Sheikh Mujib Medical College, Faridpur.
3. Debobryto Roy
Registrar, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.
4. Dr. Md. Shabub Alam
Associate Professor, Department of Otorhinolaryngology, Sir Salimullah Medical College, Dhaka

Correspondence to:

Dr. Md. Shafiq-Ur Rahman
Associate Professor & Head, Department of Otorhinolaryngology & Head-Neck surgery, Bangabandhu Sheikh Mujib Medical College, Faridpur, E-mail: rshafiq864@gmail.com

Materials and Methods

This is was a retrospective analysis of 400 patients from January 2015 to January 2020 of otorhinolaryngology Department in Bangabandhu Sheikh Mujib Medical Collage. Out of total 400 patients 200 patients under went tonsillectomy by dissection method and rest 200 patients underwent electro cautery method and selected purposively. Data were generated through record review of 400 patients using a checklist and were analyzed in respect of operation methods, operation time, and amount of blood loss, post operative complications, duration of hospital stay in addition to age & sex distribution separately for comparison. In this comparison of operation methods. Tonsillectomy by electrocautery was defined as tonsillectomy performed with electrocautery dissection (bipolar) with hemostasis also being achieved by electrocautery. On the other hand, dissection method tonsillectomy was defined as tonsillectomy performed by a combination of sharp and blunt dissection, hernostasis being obtained with ligature or minimal electrocautery (bipolar). The complications were divided into per-operative, postoperative and late. Per-operative complications like, damage to lips tongue pharyngeal wall, TM joint dislocation and bleeding were those occurring during the operation and post-operative complications like bleeding, infections and otalgia occurred immediately after the operation upto 4 weeks. Any complications like; pharyngeal and palatal scarring, tonsillar remnants and voice changes after 4 weeks were classified as late complications.

Results

Table 1 shows that in dissection method group, majority 65 (32.5%) patients belonged to age group 11-20 years and in cauterization method group 70 (35.0%) belonged to age group 4-10 years. Male patients were predominant in both groups, that was 110 (55.0%) in dissection method group and 115 (57.5%) in cauterization method group. Age, sex difference was not statistically significant compared with between two groups ($p>0.05$). Table 2 shows that time duration of operation was significantly higher in dissection method group than cauterization method group ($p=0.001$). Table 3 shows that blood loss was significantly higher in dissection method group than cauterization method group ($p=0.001$). Table 4 shows that secondary haemorrhage, referred otalgia and fever was significant higher in cauterization method group than dissection method group. However, odynophgia was significantly higher in dissection method group than cauterization method group. Regarding hospital stay, most of the patients need hospital stay 1 day in both groups, that was 187(93.5%) in dissection method group and 182(91.0%) in cauterization method group. The difference was not statistically significant ($p>0.05$) between two groups (Table-5).

Table 1: Distribution of operation methods by age and sex of patients under study (n=200+200)

Post operative complications	Dissection method		Cauterization method		p value
	Number	%	Number	%	p value
Age in years					
4-10	60	30.0	70	35.0	
11-20	65	32.5	69	34.5	
21-30	35	17.5	37	18.5	
31-40	30	15.0	19	9.5	
41-50	10	5.0	5	2.5	
Total	200	100	200	100	0.279
Sex					
Male	110	55.0	115	57.5	0.614
Female	90	45.0	85	42.5	
Total	200	100	200	100	

Table 2: Distribution of operation methods by time mean±SD in minutes (n=200+200)

Operation methods	Operation time mean±SD	p value
Dissection method	27.6±1.9	0.001
Cauterization method	12.8±2.1	

Table 3: Distribution of operation methods by blood loss mean±SD in cc/ml (n=200+200)

Operation methods	Blood loss mean±SD in cc/ml	p value
Dissection method	50.2±4.2	0.001
Cauterization method	6.3±1.3	

Table 4: Distribution of post operative complications by operation methods

Post operative complications	Dissection method(n=200)		Cauterization method(n=200)		p value
	Number	%	Number	%	p value
Primary haemorrhage	8	4.0	2	1.0	0.054
Reactionary of haemorrhage	6	3.0	10	5.0	0.307
Secondary haemorrhage	5	2.5	20	10.0	0.001
Referred otalgia	60	30.0	80	40.0	0.036
Odynophgia	70	35.0	40	20.0	0.001
Fever	10	5.0	25	12.5	0.007

Table 5: Distribution of duration of hospital stay by operation methods (n=200+200)

Duration of hospital stay	Dissection method		Cauterization method		p value
	Number	%	Number	%	p value
1 day	187	93.5	182	91.0	
2 day	10	5.0	10	5.0	0.310
3 day	3	1.5	8	4.0	
Total	200	100	200	100	

Discussion

In this study it was observed that in dissection method group, majority 65 (32.5%) patients belonged to age group 11-20 years and in cauterization method group 70 (35.0%) belonged to age group 4-10 years. The difference was not statistically significant compared with between two groups ($p>0.05$). Al-Shehri et al.⁴ reported TDT and cauterization were performed. 50 (27 male and 23 female) patients, whose ages ranged from 9 to 16 years old underwent traditional tonsillectomy, 50 (35 male and 15 female) patients whose ages ranged from 8 to 16 years old underwent thorough cauterization. The two groups were similar for demographic parameters. No statistically significant difference was noted for age and gender. Malik et al.⁵ observed that the age of patients was between 13 and 50 years. 120 pts were in the range of 13 to 20 years (60%). 50 pts were in the range of 21 to 30 yrs (25%). 20 pts were in the range of 31 to 40 yrs (10%). 10 pts were in the range of 41 to 50 yrs (5%). Ahmed et al.⁶ reported that the mean age of the patients 15.8 years (SD = 9.4 years) ranging from 4-49 years. The study also observed male patients were predominant in both groups, that was 110 (55.0%) in dissection method group and 115 (57.5%) in cauterization method group. The difference was not statistically significant compared with between two groups ($p>0.05$). Malik et al.⁵ reported out of 200 patients 128 (64%) were males and 36 (36%) were females. The duration of operation time of operation was significantly higher in dissection method group than cauterization method group ($p=0.001$). Al-Shehri et al.⁴ reported the median time spent for the traditional tonsillectomy was 21.5 min (range, 18–25 min) compared to cauterization method that has a median time of 9 min (range, 5–13 min). The difference between mean operative times of the two methods was statistically significant. Ahmed et al.⁶ reported operative time also differed between the two, with diathermy procedures taking an average of 15.7 minutes and dissection-method procedures taking average of 26.9 minutes. Statistical analysis revealed no differences between complications rates for dissection-method and diathermy tonsillectomies. Malik et al.⁵ reported regarding operating time for dissection method, the maximum duration of time taken for surgery was 20 minutes and the minimum was 05 minutes. The average was 12 minutes while considering the operating time for diathermy method, the maximum duration of time taken for surgery

was 10 minutes and the minimum was 03 minutes. The average was 06 minutes.

Moreover, blood loss was significantly higher in dissection method group than cauterization method group ($p=0.001$). Ahmed et al.⁶ per-operative blood loss for each dissection-method tonsillectomy ranged from 50 to 100 ml, with the average being 65 ml. In contrast, per-operative blood loss for diathermy tonsillectomies ranged from 5 ml to 20 ml, with the average being 10 ml. Malik et al.⁵ observed the amount of intraoperative hemorrhage by dissection method varies between 50 milliliters to 150 milliliters with an average of 75 ml. The same variable for diathermy method was in the range of 5 ml to 30 ml at an average of 10ml. Al-Shehri et al.⁴ observed severe bleeding was seen in 6 patients who underwent traditional tonsillectomy. Majority of the patients who underwent the traditional method experienced moderate bleeding (44 out of 50).

In this study observed that secondary haemorrhage, referred otalgia and fever was significant higher in cauterization method group than dissection method group. However, odynophagia was significantly higher in dissection method group than cauterization method group. Al-Shehri et al.⁴ reported there are complications experienced by the patients after undergoing tonsillectomy such as fever, bleeding, and anesthetic complications. There were only a few patients who had fever, bleeding, and other complications related to anesthesia. The most common serious complication of tonsillectomy is delayed hemorrhage, which occurs in 2%–4% of all patients. Most of these bleeds are primary.⁷ Windfuhr⁸ stated that primary bleeding is reported to be seen in the first 24 h after the operation and be more dangerous. Secondary hemorrhage is seen after the first 24 h postoperatively and early measures should be taken, as both bleedings are life-threatening particularly in children. Secondary bleeds can occur at any time during the first two postoperative weeks.⁷ As reported herein, there was no significant benefit in the traditional group compared to cauterization group except that bleeding is lesser in the cauterization method. Most previous studies have shown no significant difference in the postoperative hemorrhage rates. Postoperative bleeding did not influence postoperative pain.^{9,10} Malik et al.⁵ reported postoperative hemorrhage was classified as reactionary, primary and secondary. Regarding the incidence of secondary haemorrhage and postoperative morbidity, a Spanish study found no significant difference between diathermy and ligation method.¹¹ Lassaletta Land Martin G also observed no difference between these two techniques in the incidence of postoperative haemorrhage.¹² Salam MA and Cable in their study found no difference between two procedures in terms of postoperative bleeding.¹³ The results of these studies do match with the observations that are made in this study. Likewise some studies conclude dissection technique as a better one regarding the incidence of post-operative haemorrhage comparing diathermy.¹⁴ Regarding hospital stay, most of the patients need hospital stay 1 day in both groups, that was

187 (93.5%) in dissection method group and 182 (91.0%) in cauterization method group. The difference was not statistically significant ($p>0.05$) between two groups. Ahmed et al.⁶ also reported the average stay of admitted patients was 1.68 days (SD 0.7), with a range of 1-3 days.

Conclusion

The cauterization method had reduced per-operation blood loss and operative time, but the electro cauterization method had greater post-surgical bleeding, discomfort, odynophagia, and infection. There were pros and down sides to both strategies.

Conflict of interest: No

References

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