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Original Article

Dissection Method and Diathermy Cauterization in Tonsillectomy- A Hospital Based Comparative Study

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Abstract:

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 youngers for recurrent tonsillitis and tonsillar hypertrophy. This study was done to compare the dissection and diathermy methods of tonsillectomy and evaluate their advantages and disadvantages during surgery and convalescence. This study was a retrospective analysis of 400 patients from January 2015 to January 2020 in Otorhinolaryngology and Head-Neck Surgery department of Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur. Out of 400 patients 200 patients underwent tonsillectomy by dissection method and rest 200 patients underwent electrocautery method. Total 400 patients were analyzed separately their hospital stay, blood loss per-operatively, complications in each method and overall outcome of the patients. The overall hospital staying in both types was 1-3 days. The average intra operative blood loss was 5-7 ml in cautery and average 50 ml in dissection method. The average operative time was 25-30 minutes in dissection method and 10-15 minutes was in electrocautery. We found higher amounts of blood loss and intra - operative time in dissection method than electrocautery. The chance of secondary haemorrhage was more in electrocautery 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. Although per-operative blood loss, operation 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

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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.

Materials and Methods:

This was a retrospective analysis of 400 patients from January 2015 to January 2020 in otorhinolaryngology and Head-Neck Surgery Department of Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur. Out of 400 patients 200 patients underwent tonsillectomy by dissection method and rest 200 patients underwent electrocautery method. Total 400 patients were analyzed separately their hospital staying, per-operative blood loss and complications in each methods and overall outcome of the patients. Tonsillectomy by electrocautery was defined as tonsillectomy performed with electrocautery dissection (bipolar) with haemostasis also being achieved by electrocautery. Dissection method tonsillectomy was defined as tonsillectomy performed by a combination of sharp and blunt dissection, haemostasis being obtained with ligature. The complications were divided into per-operative, postoperative and late. Per-operative complications like injury to lips, tongue, pharyngeal wall, temporomandibular joint dislocation and preoperative bleeding and post-operative complications like bleeding, infections and otalgia occurred immediately after the operation up to 4 weeks. Any complications; like pharyngeal and palatal scarring, tonsillar remnants and voice changes, after 4 weeks were classified as late complications.

Results

Table I 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 two groups (p>0.05).

Table I: Demographic characteristics of the study patients (n=400)

Variables	Dissection method		Cauterization method		p value
	n	%	n	%	
Age group (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
Gender					
Male	110	55.0	115	57.5	0.614
Female	90	45.0	85	42.5	
Total	**200**	**100**	**200**	**100**	

Table II shows that time of operation was significantly higher in dissection method group than cauterization method group (p=0.001).

Table II: Time of operation of the study patients (n=400)

Operation Method	Time of operation (minute) Mean±SD	p value
Dissection method	27.6±1.9	
Cauterization method	12.8±2.1	0.001

Table III shows that blood loss was significantly higher in dissection method group than cauterization method group (p=0.001).

Table III: Blood loss of the study patients (n=400)

Operation Method	Blood loss (CC) Mean±SD	p value
Dissection method	50.2±4.2	
Cauterization method	6.3±1.	0.0013

Table IV shows that secondary haemorrhage, referred otalgia and fever were significantly higher in cauterization method group than dissection method group. However, odynophagia was significantly higher in dissection method group than cauterization method group.

Table IV: Post-operative complications of the study patients (n=400)

Post-operative complications	Dissection method (n=200)		Cauterization method (n=200)		p value
	n	%	n	%	
Primary haemorrhage	8	4.0	2	1.0	0.054
Reactionary 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
Odynophagia	70	35.0	40	20.0	0.001
Fever	10	5.0	25	12.5	0.007
Total	**159**	**79.5**	**177**	**88.5**	

Table V shows 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 V: Hospital stay of the study patients (n=400)

Hospital stay	Dissection method		Cauterization method		p value
	n	%	n	%	
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 found 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 two groups (p>0.05). Al□Shehri et al[4] reported that fifty (27 male and 23 female) patients, whose ages ranged from 9 to 16 years underwent traditional tonsillectomy and 50 (35 male and 15 female) patients whose ages ranged from 8 to 16 years underwent cauterization tonsillectomy. The two groups were similar for demographic parameters. No statistically significant difference was noted for age and gender. Malik et al found that the age of patients was between 13 to 50 years[5]. One hundred and twenty patients were in the range of 13 to 20 years (60%), 50 patients were in the range of 21 to 30 years (25%), 20 patients were in the range of 31 to 40 yrs (10%), 10 patients were in the range of 41 to 50 years (5%). Ahmed et al reported that the mean age of the patients was 15.8 years (SD = 9.4 years) ranging from 4 to 49 years[6].

In this study, 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 two groups (p>0.05). Malik et al reported out of 200 patients 128 (64%) were males and 36 (18%) were females[5].

We found, time of operation was significantly higher in dissection method group than cauterization method group, average operative time was 25-30 minutes in dissection method and 10-15 minutes in electrocautery (p=0.001). Al□Shehri et al reported that 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)[4]. The difference between mean operative times of the two methods was statistically significant. Ahmed et al reported that 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[6]. Malik et al reported operating time for dissection method, the maximum duration of time was 20 minutes and the minimum was 05 minutes, average 12 minutes while considering the operating time for diathermy method, the maximum was 10 minutes and the minimum was 03 minutes, average 6 minutes[5].

Blood loss was significantly higher in dissection method group than cauterization method group in my study (p=0.001). Study by Ahmed et al found that per operative blood loss was in dissection method tonsillectomy ranged from 50 to 100 ml, with the average being 65ml[6]. 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 per-operative haemorrhage in dissection method varies between 50 ml to 150 ml with an average of 75 ml. The same variable for diathermy method was in the range of 5 ml to 30 ml with an average of 10ml. Al□Shehri et al observed severe bleeding in 6 patients who underwent traditional tonsillectomy[6]. Majority of the patients (44 out of 50) who underwent the traditional method experienced moderate bleeding. There was none who underwent cauterization tonsillectomy experienced severe bleeding. Two patients who underwent cauterization

method experienced moderate bleeding and most of the patients (48 out of 50) had mild bleeding. Postoperative bleeding is significantly higher in traditional technique compared to the cauterization method.

Secondary haemorrhage, referred otalgia and fever were significantly 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 reported complications experienced by the patients after undergoing tonsillectomy such as fever, bleeding and anesthetic hazards[4]. 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 haemorrhage, which occurs in 2%–4% of all patients. Most of these bleeding were primary[7]. Windfuhr stated that primary bleeding is reported to be seen in the first 24 hour after the operation and be more dangerous[8]. Secondary hemorrhage was seen after the first 24 hour postoperatively and early measures should be taken, as both bleedings are life threatening particularly in children. Secondary bleeding can occur at any time during the first two postoperative weeks[7]. As reported here in, 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 reported postoperative haemorrhage classified as primary, reactionary and secondary[5]. The frequency of primary, reactionary and secondary haemorrhage by dissection method tonsillectomy was 8%, 10% and 0% respectively while in diathermy method tonsillectomy, the frequency of reactionary hemorrhage was 0%, and 4% for primary and secondary hemorrhage. Regarding the incidence of secondary haemorrhage and postoperative morbidity, a Spanish study found no significant difference between diathermy and ligation method[11]. Lassaletta LMG also observed no difference between these two techniques in the incidence of post-operative haemorrhage[12]. Salam MA and Cable HR 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 also reported the average stay of admitted patients was 1.68 days (SD 0.7), with a range of 1-3 days[6].

Conclusion:

The cauterization method had reduced per-operative blood loss and operation time, but the electrocauterization method had greater postsurgical bleeding, discomfort, odynophagia and infection. There were pros and downsides to both strategies.

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