



## BIPOLAR ELECTROCAUTERY TONSILLECTOMY VS COLD DISSECTION METHOD TONSILLECTOMY; OUR EXPERIENCE

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**ABSTRACT** **Introduction :** Tonsillectomy is one of the most commonly performed operations in otolaryngology. There are many proven methods of tonsillectomy, like dissection and snare method, bipolar electrocautery, radiofrequency ablation, coblation tonsillectomy, harmonic scalpel, co2 laser, and thermal welding. The objective of this study is to compare the cold dissection and bipolar electrocautery methods of tonsillectomy and evaluate their advantages and disadvantages during and after surgery.

**MATERIALS AND METHOD:** This study was done in government medical college Srinagar from march 2015 to march 2017. A total of 58 patients (5 to 40 yrs) were randomly assigned to two tonsillectomy groups. 30 patients underwent bipolar cautery tonsillectomy, and 28 patients underwent classical cold dissection tonsillectomy. Patients were compared with respect to bleeding during tonsillectomy, operation time, post operative pain and secondary hemorrhage.

**RESULTS:** The average intraoperative blood loss was 1.5 ml with Bipolar cautery and 15 ml with dissection method. The average operative time was 11.1 minutes with cautery and 25.3 minutes for cold dissection. post operative pain was seen more in bipolar cautery patients using visual analog scale. rate of secondary hemorrhage was found to be same in two groups.

**CONCLUSION:** In this study it was seen that bipolar electrocautery tonsillectomy was associated with significant decrease in surgical time and intraoperative blood loss compared to cold dissection method where as post operative pain was more in bipolar cautery group. there was no difference in rate of secondary hemorrhage in two groups.

### KEYWORDS :

#### INTRODUCTION:

Tonsillectomy is one of the commonest surgical procedures performed in the field of otolaryngology. Tonsillectomy was described for the first time by Celsius in the first century AD<sup>1</sup>. There are many proven methods of tonsillectomy, like dissection and snare method, bipolar electrocautery, radiofrequency ablation, coblation tonsillectomy, harmonic scalpel, co2 laser, and thermal welding. The use of electrocautery for tonsillectomy was described by Goycoolea et al<sup>2</sup> in the 1980's. Ideally, the procedure to be employed should be fast, safe, painless, and bloodless, and associated with rapid recovery<sup>3</sup>. The use of monopolar diathermy in tonsillectomy was first introduced by Haase and Noguera<sup>4</sup> and Johnson.<sup>5</sup> Use of bipolar diathermy, although decreases the time to control the bleeding, is always associated with a danger of necrosis and infected slough formation which may lead to secondary hemorrhage.<sup>6,7</sup> The most common causes to do tonsillectomy is hypertrophied tonsils causing obstructive symptoms.

#### MATERIALS AND METHOD:

This prospective study was done in department of Otorhinolaryngology and head and neck surgery, Government Medical College Srinagar from march 2015 to march 2017. A total of 58 patients between age groups of 5 to 40 years were randomly assigned to two tonsillectomy groups. 30 patients underwent bipolar cautery tonsillectomy, and 28 patients underwent classical dissection tonsillectomy. Proper history and examination was done in all patients. X Ray nasopharynx was done in patients in whom adenoid hypertrophy was suspected. Proper consent was obtained from all patients

#### INCLUSION CRITERIA:

1. Patients operated for tonsillectomy aged between 5 to 40 years.
2. Recurrent acute exacerbation of chronic tonsillitis (3 to 4 episodes for 2-3 yrs)
3. hypertrophied tonsils causing obstructive symptoms.

All surgeries were performed under general anaesthesia by single surgeon. Boyle davis mouth gag along with stand was used for adequate exposure of the oropharynx. Operation time was recorded from the time of incision to complete hemostasis. The amount of blood loss was obtained by calorimetric method of estimation (swab weighing technique) by calculating the difference in weights of soaked cotton balls and gauze bits used for pressure hemostasis before and after use and adding it to the blood collected in suction bottles. post

operative pain was compared in two groups using visual analog scale. follow up of patients was done for 2 weeks to check for any secondary hemorrhage.

#### RESULTS:

this study showed maximum incidence of tonsillitis occurring in the age group of 11 to 20 years followed by 5 to 10 years. 56% of patients were females, showing higher incidence of tonsillitis in females. All cases had enlarged tonsils majority of patients (45%) presented with grade III hypertrophic tonsils.

#### Demography:

**Table 1; age wise distribution of patients**

age(years)	5 to 10	11 to 20	21 to 30	31 to 40
no. of patients	20	26	10	2
Percentage	34%	45%	17%	3%

**Table 2; table showing sex distribution of patients**

Sex	no. of patients	Percentage
Male	26	44.8
female	32	55.17

**Table 3; table showing amount of blood loss in two groups of patients**

Amount of blood loss (ml)	<1ml	1 to 3ml	4-6ml	7-9 ml	10-12	13-15	16-18
Bipolar cautery method(n=30)	18	12					
Cold dissection method(n=28)						13	15

Mean blood loss by Bipolar cautery method was seen to be 1.11±0.9 ml  
Mean blood loss by dissection method was seen to be 15.1±2.1 ml

Difference in the mean blood loss between the two groups is statistically significant(p<0.01)

**Table 4; visual analogue scaling showing severity of pain on 1<sup>st</sup> post operative day**

Method	0-4mm (No pain)	5-44mm (mild pain)	45-74mm (moderate pain)	75-100mm (severe pain)
Bipolar cautery method (n=30)	0	7	21	2
Cold dissection method (n=28)	3	18	6	1

**Table 5; operation time in two groups of patients**

Time in minutes	< 7	8-12	13-17	18-22	23-27
Bipolar cautery group (n=30)	9	21			
Cold dissection group (n=28)			3	8	17

The average operative time was 11.1 minutes with bipolar cautery and 25.3 minutes for cold dissection method. Post operative pain was seen more in bipolar cautery patients using visual analog scale. It was seen according to the scale that majority of patients treated with bipolar cautery method had moderate postoperative pain while majority of patients treated with cold dissection method were having mild postoperative pain.

1 patient presented with secondary hemorrhage in both the groups.

### DISCUSSION:

Tonsillectomy is one of the commonly performed operations undertaken by otolaryngologists<sup>8</sup>. With advances in technology and instrumentation, new techniques for tonsillectomy and hemostasis have been evolved by surgeons. The choice of technique often comes down to the surgeon's perceived benefits with regard to less intraoperative and post-operative bleeding, duration of the procedure and minimum pain in the post-operative period<sup>9</sup>.

In bipolar electrosurgery, the cutting action is not based on vaporization or an advancing spark; rather it has molecular resonance, whereby the cutting current divides the tissue without sparking or charring. This system can also operate in a wet or dry field, and thermal artifacts and charring are not seen<sup>10</sup>. Bipolar electrodissection technique is also used for tonsillectomy with significant advantages of minimum intraoperative blood loss and tissue damage<sup>11</sup>. But many studies have also rejected the use of bipolar electrocautery tonsillar dissection because of increases postoperative morbidity and higher incidence of secondary hemorrhage<sup>12</sup>. Idea of our study was to compare the efficacy of bipolar electrodissection tonsillectomy with conventional cold steel dissection tonsillectomy. There are very few studies specifically designed to compare the rate of hemorrhage in bipolar electrocautery and cold' dissection tonsillectomy<sup>13</sup>. In our study blood loss by cautery method was seen to be 1.11±0.9 ml when compared to dissection method where Mean blood loss was seen to be 15.1±2.1 ml. These results were also reproduced in the studies carried out by Pang et al. and Ahmed et al, who reported average intraoperative blood loss of 4 ml and 10 ml respectively in bipolar electrocautery dissection method, clearly establishing bipolar electrocautery dissection is superior than cold dissection as regard to peri-operative blood loss during tonsillectomy<sup>14</sup>.

Regarding operative time, Mean Time taken in surgery was also less in bipolar cauterization method (11.1 minutes with cautery and 25.3 minutes with dissection method) showing statistical significant difference in favor of bipolar electrocautery group. Similar results were stated in studies conducted by Ahmed et al and Bercin et al<sup>15</sup>. Less time in bipolar electrocautery dissection group is mainly because of immediate coagulation as compared to cold dissection method where more time is consumed first in packing of tonsillar fossa and use of monopolar coagulation for securing hemostasis. Pain is the most common problem after tonsillectomy. Nunez et al reported that pain is the main reason for seeking outpatient medical attention in the first 2 weeks after tonsillectomy<sup>16</sup>. In our study Postoperative pain was measured with visual analogue scale and it was seen that postoperative pain was more in patients treated with bipolar cautery method when compared with cold dissection method. Majority of patients treated with bipolar cautery method had moderate postoperative pain while majority of patients treated with cold dissection method were having mild postoperative pain. The same result was documented by Robert et al who did a systemic review of literature comparing cold versus hot

tonsillectomies techniques<sup>17</sup>. The main reason for this difference in pain score is because of more thermal damage caused during bipolar diathermy dissection procedure. Tay's study revealed significantly less pharyngeal pain on the electrodissection side in the first postoperative day in adult patients<sup>18</sup>.

### Conclusion :

All patients should undergo bipolar cauterization method of tonsillectomy, as it takes less time and has less intraoperative bleeding.

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