

# Coblation tonsillectomy versus cold dissection tonsillectomy

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## ABSTRACT

**Background:** Post tonsillectomy pain and haemorrhage are important factors for the safety and efficacy of any surgical procedure. This study aimed to compare the efficacy of two surgical techniques i.e. coblator assisted tonsillectomy and time-tested gold standard operation of cold steel dissection tonsillectomy. Assessment of efficacy of coblator assisted tonsillectomy with cold steel dissection tonsillectomy.

**Patients and Methods:** A prospective comparative interventional study was conducted on 100 patients. Coblation group included 50 patients while 50 patients were in cold dissection group. Following parameters like operative time, intraoperative bleeding amount, postoperative bleeding (secondary haemorrhage), postoperative pain, tonsillar fossa healing and time required to resume normal diet were compared.

**Results:** In this study operation with coblator took shorter time with less per operative bleeding (p-value<0.001). For initial five days after surgery, patients who underwent coblation tonsillectomy experienced less pain as compared to dissection method (p-value<0.001). Coblation group also took less time to resume normal activity and diet.

**Conclusion:** Coblation tonsillectomy appears to be a safe method. It is an effective procedure to reduce operative time and bleeding. It provides early healing of fossa with less postoperative pain. Being a new procedure, long term follow up studies will be required to analyze the long term outcomes.

## Keywords:

Coblation tonsillectomy; cold dissection tonsillectomy; radio frequency.

## INTRODUCTION

Tonsillectomy being the most common procedure performed now a days is also a most primitive procedure of ear nose throat as mentioned in Hindu medicine 1000BC.<sup>1,2</sup> Aulus cornelius celsus was the first person to perform tonsillectomy by using fingernails in the year AD 30.<sup>3</sup> Since then many procedures and surgical instruments have been introduced to improve the surgical technique and to reduce the post-operative morbidity and complications.<sup>4,5</sup> Although cold dissection tonsillectomy (CDT) stands as a most performed and most utilized method of tonsillectomy,<sup>6,7</sup> many other techniques of performing tonsillectomy have been evolved in the last century including unipolar and bipolar tonsillectomies, laser tonsillectomy, harmonic knife, cryo surgery and coblation tonsillectomy being the most recent.<sup>8-10</sup>

Tonsillectomy by coblation method was started in the year 1997 Coblation tonsillectomy technique uses

two different ways namely subtotal tonsillectomy (intracapsular) where tonsillar capsule is retained and total tonsillectomy (subcapsular) where tonsil is dissected out from the superior constrictor muscle along with its capsule.<sup>13,14</sup> Many studies have been conducted either to confirm the efficacy of coblation tonsillectomy or to show unsatisfactory outcome.<sup>15</sup>

Cold dissection method is considered as a gold standard technique.<sup>12</sup> Consideration to reduce the post-operative complications like pain and secondary haemorrhage lead to the introduction of coblation. This comparative interventional study aims at comparing gold standard technique (traditional dissection) with coblation method for intraoperative short term complications and postoperative outcomes including haemorrhage, pain, healing time, and recommencement time for oral feeding and return to work.

## PATIENTS AND METHODS

Comparative interventional study was conducted in Unit II of the Ear, Nose, Throat Department of Fatima Jinnah Medical University and Sir Ganga Ram Hospital, Lahore from July 2015 to May 2017. Main parameters studied were whether coblation tonsillectomy decreases post-operative pain and secondary haemorrhage as compared to cold dissection method or not. Other parameters considered included operative time, intraoperative bleeding and time in days required to resume normal diet

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normal saline medium through which bipolar current (radiofrequency) is passed, which becomes highly ionized and break bonds between the tissues at a temperature of 48-70°C. It separates the tissues and coagulate at the same time with minimum tissue penetration and very less collateral damage as compared to bipolar and unipolar cautery.<sup>11,12</sup> Coblation tonsillectomy is usually done in

and work. Total of 100 patients were randomized in 2 groups: 50 were in cold dissection method and 50 in coblation tonsillectomy technique. Main indications for surgery were chronic and recurrent tonsillitis and snoring with sleep apnea. Patients with bleeding disorders and acute infections were excluded. All operations were performed in general anesthesia. Operations were performed using ArthroCare II- assisted Evac-70 coblator tonsil wand® and traditional cold steel instruments (CDT) using bipolar cautery and sutures for haemostasis. All surgeries were done by experienced consultants. Patients were administered a single dose of intravenous antibiotic (Amoxicillin Clavulanate) at induction and continued orally for 1 week. Analgesia was given orally for 7 days (Ibuprofen and Paracetamol). Duration of surgery was calculated from the application till the removal of Boyle-Davis mouth gag. Intra operative bleeding amount was calculated from collection in suction bottle and swabs weight before and after surgery. Post-operative pain score was calculated by visual analog scale (VAS) in adults and in children under 8 years by faces pain scale (FPS).<sup>12</sup> Secondary haemorrhage was determined by reports by patients, or in case of children by parents, or by attending doctors and nurses. All episodes of post-operative bleeding including interventions needed to stop the bleeding were recorded. All data was entered and analyzed by SPSS version 23.

## RESULTS

The study included 50 patients in coblation group and another 50 in CDT group. There were 28 males and 22 female patients in coblation group and 30 male and 20 females in CDT group, age ranged from 4 to 28 years; mean ages in coblation group being 11.4 years and in CDT group 12 years, with no significant difference between 2 groups. Mean operating time had been 26.4±4.5 (range 16-29) minutes in coblation group and 30.6±5.2 (range 22-46) minutes in CDT group. In coblation group operating time was significantly low (p-value<0.001). Intra operative bleeding was also definitely less in coblation tonsillectomy as compared to cold dissection tonsillectomy (p-value <0.009); 20 ml

being average blood loss in coblation tonsillectomy (range 5-85 ml) and 62ml in CDT group (range 45-180 ml).

Post-operative pain data was recorded in both groups on days 1, 3, 5, 7, 10 and 14. For coblation group average pain score over 14 days was 2.25 as compared to 4.36 in CDT group. Significantly less pain was observed in coblation group up to day 5 as compared to CDT group (p-value <0.05). There was no episode of primary haemorrhage neither in coblation nor in CDT group, both groups had one episode of secondary haemorrhage on day 6<sup>th</sup> and 7<sup>th</sup> respectively in coblation and CDT group. Both cases were settled down after admission with antibiotics and conservative measures. As regard the healing process and return to normal diet, coblation tonsillectomy group took less days to resume normal diet and healing of tonsillar fossa. Table 1 summarizes the main outcome measures compared in Coblation and CDT Groups.

## DISCUSSION

Coblation tonsillectomy is a newly developed technique aiming to reduce the morbidity associated with tonsillectomy. Use of coblation has received remarkable attention in other areas of body such as nose, throat, tongue and larynx.<sup>16,17</sup> Toft and colleagues compared coblation and traditional tonsillectomy and found that surgery time was significantly shorter and intra operative bleeding was less in coblation technique.<sup>18</sup> Incidence of secondary haemorrhage showed no difference, which is quite consistent with present study (p-value<0.001).<sup>18</sup> Other authors have also documented low rates of primary and secondary haemorrhage with coblation technique which is consistent with findings of this study.<sup>19-21</sup> Polites and coauthors concluded that coblation tonsillectomy has significant advantages of rapid healing and reduced postoperative pain.<sup>20</sup> Similar results have been reported by various other authors.<sup>9,19-22</sup> Shapiro and Bhattacharyya found lower primary haemorrhage rate with coblation but reported more pain with coblation tonsillectomy in contrast to CDT.<sup>19</sup> This contradicts findings of this study. Rakesh and coworkers<sup>19</sup> concluded that healing took longer in the coblation side as compared to cold dissection side which is contradictory to this and other studies.<sup>12,19, 21-23</sup>

**Table 1.** Comparison of intra- and postoperative study parameters in coblation and CDT groups

Studied Outcome Measures	Coblation Group	CDT Group	p-value
Operative time (minutes)	26.4 ± 4.5	30.6 ± 5.2	<0.001
Intra operative blood loss (ml)	20 ± 6.87	62 ± 11.29	<0.009
Average VAS & FACES score	2.25	3.86	<0.001
Average No. of days to resume normal diet	2.7 ± 1.8	6.9 ± 2.6	<0.01
Average No. of days required for fossa healing	8 ± 2.4	11 ± 1.2	<0.01

This study found lesser post-operative pain, rapid healing of fossa and quick resumption to normal diet with coblation tonsillectomy. These findings are similar to various other reports.<sup>11,12,14,23-25</sup> When cold dissection tonsillectomy is compared with coblation tonsillectomy, operative time was shorter and bleeding was lesser with coblation technique.<sup>23,24</sup> Similarly post-operative pain and

resumption of normal activity and diet were also better in coblation technique.<sup>23-25</sup> This study found that 18% coblation wands were thinned out during surgery and a second wand was needed to complete the tonsillectomy.<sup>26</sup> Despite these advantages, learning curve, availability and cost in resource-limited countries remain potential limitations of coblation technique.

## CONCLUSION

Coblation tonsillectomy appears to be a safe and minimally invasive technique. It is an effective procedure to reduce operative time and bleeding and postoperative pain and reactionary and secondary haemorrhages. Tonsillar fossa healing is faster with early return to normal diet and activity.

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