

Adenoidectomy in Paediatric Cases - Endoscopic Assisted Coblation Method versus Conventional Curettage Method

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Abstract

Introduction: Adenoidectomy is a common surgical procedure in children. Conventional curette adenoidectomy claimed few disadvantages including high operative blood loss and postoperative recurrence. Endoscopic assisted coblation adenoidectomy gained better outcome with minimal postoperative complications. The present study was designed to assess the efficacy of endoscopic assisted coblation and conventional curettage method in adenoidectomy in paediatric patients.

Material and methods: A total of 48 cases clinically diagnosed with adenoid hypertrophy between age group 5 to 15 years were included. Study participants were randomly divided in to two groups. Group 1 (conventional curettage adenoidectomy) and group 2 (endoscopic assisted coblation adenoidectomy). Parameters like total surgical duration, operative blood loss, recovery time and visual analogue score was recorded.

Results: The mean operative blood loss was 30.78 ml in group 1 and 12.76 ml in coblation group. The mean pain score was 4 in group 1 and 3 in group 2. The mean recovery duration was 3.56 days in group 1 and 2.59 days in group 2. The mean difference of operative blood loss and pain score between two study groups was statistically significant ($p < 0.05$).

Conclusion: Endoscopic coblation adenoidectomy was effective in terms of minimal operative blood loss, less operative pain score, less recovery period and higher rate of adenoid tissue removal compared to conventional adenoidectomy.

Keywords: Conventional curette adenoidectomy, Endoscopic coblation adenoidectomy, efficacy, children, pain score

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Introduction

Adenoidectomy is second most happening surgical procedure in the paediatric population as alone or combined either with tonsillectomy or grommet insertion [1]. The optimal adenoidectomy should attain a complete and safe removal of adenoid tissue with minimal operative blood loss, less operative duration, post

operative morbidity and post operative recurrence [2].

The conventional cold curette adenoidectomy is a widely used method with reported drawbacks in terms of partial removal of adenoid tissue, auditory tube or nasopharyngeal stenosis and high

operative blood loss [3]. Besides this, several novel management options have been evolved to manage adenoidectomy including bovie, bipolar coagulation, micro debrider, monopolar and bipolar diathermy, stripping under endoscopic control and coblation to optimize intraoperative blood loss, operative duration, postoperative morbidity and recurrence [4-7]. The combined use of endoscopic coblation method is effective methods to minimize the above-mentioned drawbacks. Coblation utilizes radiofrequency energy with saline solution to draw out adenoid tissue. It authorizes resection and coagulation of soft tissue and haemostasis of blood vessels in one device [8]. With wide availability new surgical options, it is must for surgeons to monitor the efficacy, safety, accuracy and feasibility of different surgical techniques. Few studies have been reported that coblation adenoidectomy was superior than cold curette adenoidectomy [9,10]. The present study was designed to assess the efficacy of endoscopic assisted coblation and conventional curettage method in adenoidectomy in paediatric patients.

Material and Methods

The present prospective randomized study was conducted in the Department of ENT,

MNR Medical College and Hospital, Sangareddy during April 2021 to October 2022. A total of 48 cases clinically diagnosed with adenoid hypertrophy between age group 5 to 15 years were recruited. Cases with symptoms of snoring, earache, mouth breathing, diagnosed with adenoid hypertrophy by radiological and nasal endoscopy were included.

Cases with bleeding disorders, neuromuscular difficulties, history of adenoidectomy and not willing to participate were excluded. Written informed consent was obtained from all the parents or guardians and study protocol was approved by institutional ethics committee.

Study participants were randomly divided in to two groups. Group 1 participants (n=24) were undergone conventional curettage adenoidectomy and group 2 participants (n=24) underwent endoscopic assisted coblation adenoidectomy. All participants were subjected to preoperative laboratory investigations and radiological investigations to know the extent of adenoid enlargement. Pre-operative grading of adenoid enlargement was performed through diagnostic nasal endoscopy and assessed according to Clemens and McMurray scale [11].

Grade	Findings
Grade 1	Adenoid tissue filling 1:3 the vertical height of the choana
Grade 2	Adenoid tissue filling 2:3 the vertical height of the choana
Grade 3	Adenoid tissue filling 2:3 to nearly all but not complete filling of the choana
Grade 4	With complete choanal obstruction

Parameters like total surgical duration, operative blood loss, recovery time and visual analogue score was recorded. The collected data was analyzed by using SPSS version 23.0.

Results

Table 1: Demographic and clinical characteristics of study participants.

Demographic data	Total no of cases (n=48)		p-value
	Group 1 (n=24)	Group 2 (n=24)	
Age (In years)	9.98±2.37	9.87±2.28	0.0761
Gender (M:F)	15:9	10:14	-
Preoperative adenoid grading			

Grade 1	-	4 (16.67%)	-
Grade 2	17 (70.83%)	14 (58.33%)	
Grade 3	7 (29.17%)	06 (25%)	
Grade 4	-	-	

Table 2: Operative findings of the study participants

Operative findings	Group 1 (n=24)	Group 2 (n=24)
Intraoperative blood loss		
<5 ml	-	04 (16.67%)
6-20 ml	06 (25%)	20 (83.33%)
21-40 ml	18 (75%)	-
Operative duration (In min)		
6-10	15 (62.5%)	02 (8.33%)
11-15	09 (37.5%)	17 (70.84%)
16-20	-	05 (20.83%)
Removal of adenoid tissue		
Complete	04 (16.67%)	18 (75%)
Partial	20 (83.33%)	06 (25%)
Pain score		
Score 1	-	-
Score 2	-	-
Score 3	7 (29.17%)	19 (79.17%)
Score 4	15 (62.5%)	5 (20.83%)
Score 5	02 (8.33%)	-
Duration of recovery (In days)		
One	-	-
Two	04 (16.67%)	10 (41.67%)
Three	14 (58.33%)	14 (58.33%)
Four	06 (25%)	-
Five	-	-

Table 3: Mean operative findings of study participants

Operative findings	Total no of cases (n=48)		p-value
	Group 1 (n=24)	Group 2 (n=24)	
Blood loss	30.78±2.35	12.76±3.18	0.0182
Operative time	11.34±4.98	14.22±2.19	0.0446
Pain score	4±1.28	3±0.95	0.001
Recovery days	3.56±1.13	2.59±1.09	0.0298

Discussion

The mean age of the participants in group 1 was 9.98 years and in group 2 was 9.87 years. The mean difference was statistically not significant ($p>0.05$). Male participants were more in group 1 and female participants were more in group 2. In group 1, majority cases (70.83%) had grade 2 and 29.17% had grade 3 adenoid

hypertrophy. In group 2, 16.67% had grade 1, 58.33% had grade 2 and 25% had grade 3 adenoid hypertrophy (Table 1). A study by Anand *et al.*, on comparison of conventional curettage adenoidectomy (Group A, n=20) with endoscopically assisted adenoidectomy (Group B, n=20) found mean age 8.68 years in group A and

7.70 years in group B [12]. Di Rienzo Businco *et al.*, on comparison of endoscopic coblation technique and cold curettage in paediatric adenoidectomy between 4-16 years found mean age 8.4 years in group A and 7.4 years in group B [13].

El Tahan AER *et al.*, noticed that mean operative blood loss was 25 ml in conventional group and 10 ml in coblation technique group [14]. Salam *et al.*, noticed that operative blood loss was 0-10ml in 76%, 11-20 ml in 24% cases of coblation group, and 31-40 ml in 44%, 21-30 ml in 52% and 11-20 ml in 4% of cases under conventional adenectomy [15] Saravana Selvan *et al.*, reported mean intraoperative bleeding in conventional group was 32.7 ml and in coblation group was 2.5 ml [16]. The above findings were similar to the present study, in that intraoperative blood loss was 6-20 ml in 25% and 83.33% in conventional and coblation groups respectively. In conventional group, 75% of the cases had 21-40ml of intraoperative blood loss. The mean operative blood loss was 30.78 ml in group 1 and 12.76 ml in coblation group. The mean difference of operative blood loss was statistically significant between two study groups ($p=0.0182$) (Table 2).

The operative duration was 6-10 min in 62.5% and 11-15 min in 37.5% of cases of group 1. Whereas, in group 2, 70.84% of cases had 11-15 min and 20.83% had 16-20 min operative duration. The mean operative duration was 11.34 min in group 1 and 14.22 min in group 2. The mean difference was statistically significant ($p=0.0446$). In group 1, complete removal of adenoid tissue was observed in 16.67%, and partial removal in 83.33%. Whereas in group 2, complete removal of adenoid tissue was seen in 75% and partial in 25% of cases. Anand *et al.*, found complete removal of adenoids in 100% cases in endoscopic assisted group, but in conventional group 75% of cases had complete removal and 25% had partial

removal [12]. El Tahan AER *et al.*, found that mean operative time in conventional group was 10 min and in coblation technique was 15 min [14]. Salam *et al.*, noticed complete removal of adenoid tissue in 76% cases of coblation group and 20% of cases in conventional group. Whereas, partial removal was observed in 8% of conventional group and 20% of coblation group [15]. However, the present study found less operative duration in conventional adenoidectomy than coblation adenoidectomy.

In group 1, 62.5% of cases had pain score 4 and 29.17% gas pain score 3. In group 2, 79.17% of cases had pain score 3 and 20.83% has score 4. None reported pain score 1 and score 2 in both study groups. The mean pain score was 4 in group 1 and 3 in group 2. The mean difference of pain score was statistically significant ($p=0.001$). Anand *et al.*, assessed pain score according to objective pain scale of Hanallah *et al.*, found that 70% had pain score 4, 25% had score 5 and 5% had pain score 3 in endoscopic assisted group, however in conventional group, 45% had pain score 5, 35% had score 4 and 20% had pain score 6 [12] Salam *et al.*, reported that 84% of cases in coblation group showed pain score 3 and 16% showed score 4. However, in conventional group, 80% of cases showed pain score 4, 16% showed score 3 and 4% showed score 5 [15]. The duration of recovery was two days in 16.67%, three days in 58.33%, and four days in 25% of cases in group 1. Whereas in group 2, 41.67% of cases were recovered in two days and 58.33% of cases were recovered in three days. The mean recovery duration was 3.56 days in group 1 and 2.59 days in group 2. The mean difference between two study groups was statistically significant ($p=0.0298$). Bidaye *et al.*, on 60 cases aged between 5-12 years under curettage adenoidectomy and endoscopic assisted coblation adenoidectomy found that mean operative duration was significantly high in endoscopic group. Mean operative blood

loss was 44.33 ml in endoscopic group and 44.33ml in conventional group. The grade of pain was less in endoscopic group (17). Hapalia *et al.*, on 40 children aged 4-17 years under cold curettage adenoidectomy (Group 1) and Coblation adenoidectomy (Group 2) found that coblation adenoidectomy has lesser operative blood loss (19 ml) and less pain score (score 2). But, mean duration of surgery 10.3 min in conventional group and 15.5 min in coblation group [18] El Tahan AER *et al.*, found insignificant difference of pain score at first postoperative week and significant difference at second postoperative week [14]

Saravana Selvan *et al.*, concluded that coblation adenoidectomy was effective than conventional curettage [16] Bidaye *et al.*, concluded that coblation adenoidectomy was effective than conventional adenoidectomy in terms of low-grade pain, low operative blood loss and without postoperative residual tissue [17] Hapalia *et al.*, concluded that coblation adenoidectomy is the superior choice and effective method for adenoidectomy over curettage adenoidectomy [18]. A systemic review and meta-analysis by Aleem *et al.*, reported that endoscopic coblation technique claimed superior outcome in terms of less intraoperative blood loss, and less postoperative pain score than cold curettage adenoidectomy in children [19]. The present study outcome was according to the above finding that endoscopic assisted coblation method was superior than conventional method. This study has limitations in terms of less sample size, lack of follow-up and recurrence rate. Further long-term studies are required to compare different available surgical procedure with more participants.

Conclusion

In conclusion, endoscopic coblation adenoidectomy was effective in terms of minimal operative blood loss, less operative pain score, less recovery period

and higher rate of adenoid tissue removal compared to conventional adenoidectomy.

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