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Comparison of blood loss in endoscopic powered adenoidectomy and conventional curettage

Nithya Krishnakumar, N. K. Bashir*, Girish Raj

Department of ENT, MES Medical College, Perinthalmanna, Malappuram, Kerala, India

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***Correspondence:**
Dr. N. K. Bashir,
E-mail: bashirnk@gmail.com

ABSTRACT

Background: Adenoidectomy is one of the most common surgeries done in children. Over the years many techniques have evolved like powered adenoidectomy, radiofrequency ablation, electro cautery etc. Use of endoscopes has enabled surgeons to perform adenoidectomy under direct vision. The objectives of the study were to compare blood loss of conventional and endoscopic assisted powered adenoidectomy.
Methods: In this a prospective observational study of 30 children attending ENT department in MES Medical College was done. In the conventional technique, adenoidectomy was done using St Claire Thomson adenoid curette. In powered adenoidectomy technique, micro debrider was used under guidance of 0^0 nasal endoscope (2.7 mm). Intra operatively blood loss during surgery were looked for and noted in both groups.
Results: In the study of 30 children divided in to 2 groups who are comparable statistically. Average blood loss in patients who underwent CA was 38.53 ml and in patients who underwent EAA was 28.27 ml, with standard deviation of 4.704 and 3.863 respectively. The difference in mean blood loss was 10.26 ml.
Conclusions: Endoscopic assisted powered adenoidectomy has lower blood loss as compared to conventional adenoidectomy.

Keywords: Adenoidectomy, Powered adenoidectomy, Endoscopic adenoidectomy

INTRODUCTION

Adenoidectomy is the most commonly done operation in small children but the reason for adenoid hypertrophy is not fully explained. Adenoidectomy is performed for various indications which include nasal obstruction, sleep apnoea, otitis media with effusion, and recurrent otitis media. Studies have shown a correlation between allergic diseases and adenoid hypertrophy. It was found to be associated with allergic rhinitis but no correlation was found to bronchial asthma or atopic dermatitis.[1] Adenoid hypertrophy was found in 3% in normal population whereas it was found to be 12.4% in allergic patients.[2]

Conventional adenoidectomy by curettage method is mostly done as a blind procedure. Over the years many techniques have evolved like powered adenoidectomy, radiofrequency ablation, electro cautery etc. Cannon et al highlighted endoscopic assisted adenoidectomy calling it a "Natural progression of endoscopic technology to allow a more complete adenoidectomy".[3] Direct visualisation is particularly useful in avoiding damage to important structures located near to the adenoid tissue like Eustachian tube and/or the pharyngeal muscles. A recognized disadvantage of power-assisted adenoidectomy is the increased cost associated with the disposable instrumentation.[4] Many studies show importance of histopathological examination of adenoid specimens. The specimens obtained after powered adenoidectomy is of poor quality which makes diagnosis difficult.[5] However which of the two surgical methods is better is still a matter of preference and experience of the

surgeon. In the present study we will compare conventional curettage with endoscopically assisted powered adenoidectomy.

Aims and objectives

- To compare blood loss during conventional and endoscopic assisted powered adenoidectomy.

METHODS

Study setting; Department of ENT, MES Medical College, Perinthalmanna, Kerala, India.

Study design: Prospective observational study

Study period: January 2016 to July 2017 (18 months).

Study sample size*:* 30

Ethical consideration

Ethical clearance obtained from institutional ethical committee. Informed consent was taken from each patient after providing detailed subject information sheet. Patient and guardians were given the option of the type of surgery to be conducted of which investigator had no role. Confidentiality of patients was well maintained. There were no risks involved in the procedure.

Inclusion criteria

Patients presenting in ENT outpatient department diagnosed as adenoid hypertrophy clinically and confirmed by X-ray soft tissue neck lateral view and/or nasal endoscopy.

Exclusion criteria

Exclusion criteria were patients unwilling for adenoidectomy and patients undergoing tonsillectomy or other procedures along with adenoidectomy.

Sampling method

Patients attending ENT Department in MES Medical College, who satisfy the inclusion criteria between January 2016 and December 2016 were included.

Collection of data

A detailed history of all 30 patients enrolled in study, including presenting complaints, past history and personal history were taken and recorded in Performa. Findings of general examination and examination of ear, nose, and throat were recorded. Results of various investigations like nasal endoscopy, pure tone audiometry, tympanometry were also recorded.

All surgeries were done under general anaesthesia by ENT surgeons in our department. In conventional adenoidectomy, patients were draped and positioned in rose's position. Patient lies in supine position with head extended by a pillow placed under shoulder and head stabilised by a head ring. Boyle Davis mouth gag with tongue blade was introduced. Before removal of adenoids, nasopharynx was palpated to confirm diagnosis, to assess the size of adenoid mass, to push lateral adenoid mass into midline and to rule out submucous cleft palate. St Claire Thomson curette with and without guard was used to remove the adenoid tissue. Haemostasis was achieved by nasopharyngeal pack made of 4*4 gauze pieces.

In powered adenoidectomy technique, microdebrider (Medtronic XPS 3000) was used under guidance of 0^0nasal endoscope (2.7 mm/4 mm). Adenoid tissue was completely debrided in the oscillating mode with saline irrigation using speed up to 1500 rpm by using adenoidectomy blades. Bipolar cautery was used to stop bleeding from the raw surface of the adenoid bed. Debrider is introduced through oral cavity. Haemostasis is achieved using nasopharyngeal pack made of gauze pieces 4*4 and bipolar cautery.

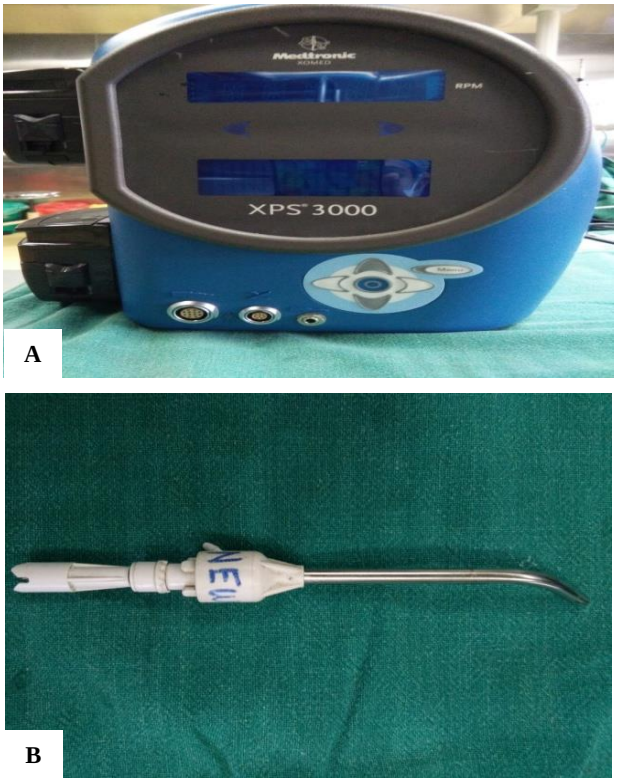

Figure 1 (A and B): The equipment used microdebrider adenoid blade.

Amount of blood loss during surgery- blood loss will be assessed by counting number of 4×4 gauze pieces soaked in blood which were used to pack the nasopharynx. Each gauze was calculated equal to 10ml of blood. It was also

assessed by measuring the fluid in suction apparatus before and after surgery after subtracting irrigation fluid.

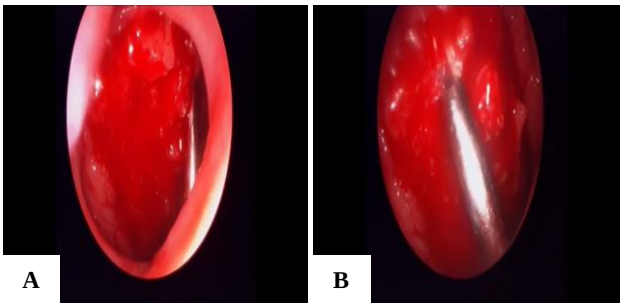

Figure 2 (A and B): Endoscopic assisted powered adenoidectomy.

Statistical analysis

The results were entered in Microsoft excel and analysed using SPSS trial version. Comparison is done using paired 't' test, chi square ANOVA. Results were considered statistically significant when p<0.001.

RESULTS

30 patients presenting in ENT outpatient department diagnosed as adenoid hypertrophy clinically and confirmed by X-ray soft tissue neck lateral view and/or nasal endoscopy were included in the study. Intra operative and post -operative parameters were assessed and recorded, in both patients undergoing conventional and endoscopic powered adenoidectomy, the following observations were obtained.

Demographic data

Mean age was found to be 7.9 with a standard deviation of 3.220 (Figure 3).

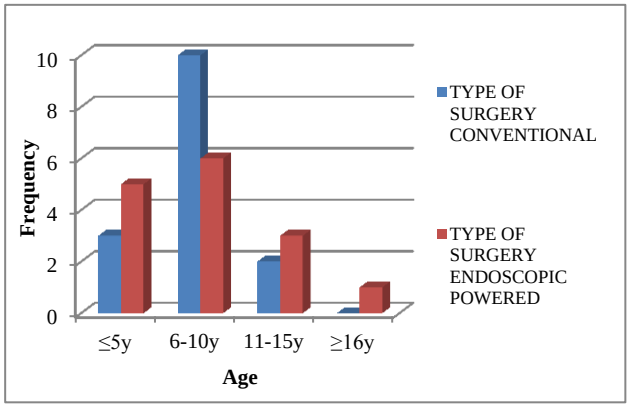

Figure 3: Age distribution.

Clemens and McMurray grading was done in 30 patients after doing nasal endoscopy. Patients undergoing CA and EAA are compared, taking p>0.001 significant, both groups were found to be comparable (Figure 4).

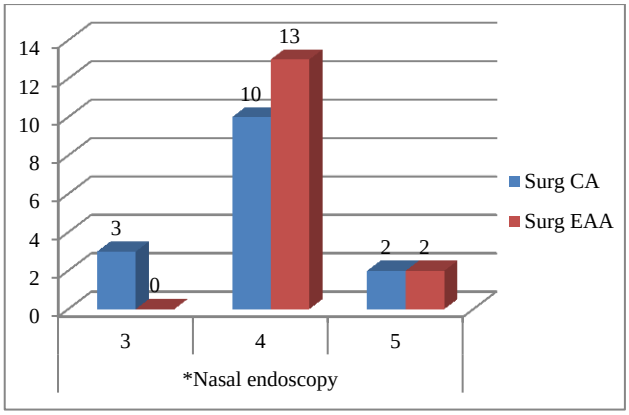

Figure 4: Comparison of adenoid hypertrophy in both groups (Clemens and McMurray grading).

Average blood loss in patients who underwent conventional adenoidectomy (CA) was 38.53 ml and in patients who underwent endoscopic assisted powered adenoidectomy (EAA) was 28.27 ml, with standard deviation 4.704 and 3.863 respectively (Figure 5). The difference in blood loss was 10.26 ml, which was found to be statistically significant.

Table 1: Comparison of blood loss.

	Surgery	No.	Mean	SD	P value
Volume of blood loss	CA	15	38.53	4.704	0.0001
	EAA	15	28.27	3.863	

SD= Std. deviation.

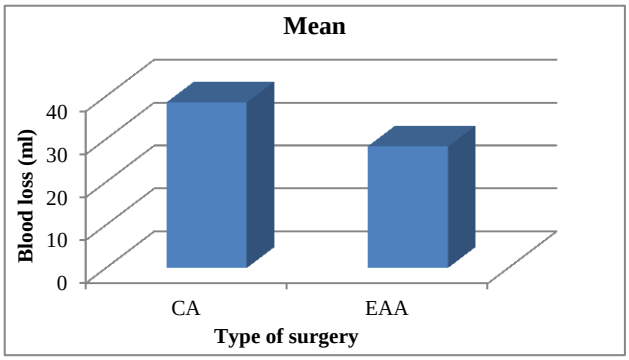

Figure 5: Blood loss.

DISCUSSION

In this observational study, I have compared amount of bleeding between 15 patients who underwent conventional adenoidectomy (CA) and 15 patients who underwent endoscopic assisted powered adenoidectomy (EAA).

In our study mean blood loss in patients who underwent CA was 38.53 ml and in those patients who underwent EAA was 28.27 ml. Mean difference in blood loss was 10.26 ml which was statistically significant. In a study

conducted by Bradoo et al, blood loss in both CA and EAA were 38 and 35 ml respectively.[4] In a comparative study done by Murray et al, blood loss was comparable for both groups, in powered group mean blood loss was 2.0 ml/kg and in conventional group mean blood loss was 2.1 ml/kg.[5] In a study done by Timms, radiofrequency ablation of adenoid tissue using a coblator, comparing it with conventional and other newer methods of adenoidectomy, it was found that chief advantages of use of coblater is that it produces a bloodless field, precision of tissue removal and less damage to the surrounding tissues.[6] A study conducted by Feng blood loss between 2 procedures were compared, blood loss during powered-assisted and conventional adenoidectomy was 50 (10-125) ml and 75 (5-175) ml respectively, ($p>0.05$).[7] One case after powered-assisted adenoidectomy had bleeding, and one case after conventional adenoidectomy had dehydration. In a study conducted by Stanislaw et al, the mean operative blood loss was 17.5 ml for power assisted adenoidectomy, which was 27% less than the 24.0 ml for CA ($p<0.001$). Hence all these studies support my study.[8] In contrast to our study, a study conducted by Datta, the average blood loss in CA was 21 ml (range 10–50) as compared to 31.67 ml (range 10-60) in EAA ($p<0.05$).[9] EAA using microdebrider has low blood loss as adenoid tissue was removed under vision and constant irrigation. Precise removal of adenoid tissue is possible. In a study conducted by Tomkinson et al it was found that incidence of primary hemorrhage in adenotonsillectomy was double that of either procedure when performed alone.[10]

CONCLUSION

Adenoidectomy is one of the most common surgeries performed in children. With the use of nasal endoscopes and powered instruments like microdebrider, conventional adenoidectomy by curettage has been widely replaced by endoscopic assisted powered adenoidectomy. An observational study of comparison of blood loss between CA and EAA in 30 patients was done. The mean difference in blood loss between 2 surgeries was 10.28 ml. But EAA requires a good learning curve and is more expensive as compared to CA.

Endoscopic assisted powered adenoidectomy has lower blood loss as compared to conventional adenoidectomy.

Limitations

The main limitation of this study is the sample population size was adequate for the study but still small in number. A larger study population would have given clearer results.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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