Original Article

Surgical Techniques For Adenoidectomy: A Comparative Analysis Of "Conventional Curettage Adenoidectomy" And "Endoscopic Assisted Microdebrider Adenoidectomy"

Ayesha Saeed[1], Muhammad Yasir Khan[2], Muhammad Ali[3], Muhammad Jamalullah[4], Yousra Riaz[5]

Contributions:
AS MYK - Conception, Design
MA MJ YR - Acquisition, Analysis, Interpretation
AS MA MJ - Drafting
MYK YR - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

Conflicts of Interest: None
Financial Support: None to report
Potential Competing Interests: None to report

Disclaimer: This study has not been published or submitted elsewhere for publication.

AI Disclosure: Artificial intelligence tools were used solely for language refinement and formatting. No AI tools were used for data analysis, interpretation, or result generation. All scientific content, analyses, and conclusions were developed and verified by the authors, who took full responsibility for the integrity and accuracy of the work.

Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Institutional Review Board Approval
KRL-HI-ERC/Dec21/45
18-12-2021
KRL Hospital, Islamabad

Review began 22/12/2025
Review ended 04/06/2026
Published 30/06/2026

How to cite this article: Saeed A, Khan MY, Ali M, Jamalullah M, Riaz Y. Surgical Techniques For Adenoidectomy: A Comparative Analysis Of "Conventional Curettage Adenoidectomy" And "Endoscopic Assisted Microdebrider Adenoidectomy". JRMC. 2026 Jun. 30;30(2).

https://doi.org/10.37939/jrmc.v30i2.3134

Abstract

Objective: To compare mean intraoperative blood loss, mean operative time, and frequency of post-operative adenoid remnant with "conventional curettage adenoidectomy" versus "endoscopic assisted microdebrider adenoidectomy".

Methods: This cross-sectional study was conducted at the Department of ENT - Head and Neck Surgery, KRL Hospital, Islamabad, from February 2023 to December 2023. 40 patients of both genders with adenoidal hypertrophy aged 5 to 12 years of age were included. In group-C, adenoidectomy was performed by the conventional curettage method, while in group-E "endoscopic assisted microdebrider adenoidectomy" was performed. Intraoperative blood loss and duration of surgery were noted. One month post-operatively, patients were assessed for adenoid remnant by nasal endoscopy.

Results: This study includes 23 males and 17 females. The age range was 5 -12 years. The mean duration of surgery was 27.75 ± 3.67 min and 39.10 ± 4.24 min in Group C and Group E, respectively. Mean intra-operative blood loss was 20.25 ± 3.04 ml and 28.90 ± 4.44 ml in Group C and Group E, respectively. The frequency of postoperative adenoid remnant was 45.0 % and 15.0% in Group C and Group E, respectively.

Conclusion: Both techniques are effective and safe for adenoidectomy. However, the chances of adenoid remnant are lower in "endoscopic assisted microdebrider adenoidectomy".

Key words: Adenoidectomy, Adenoids, Operative time, Hemorrhage, Nasopharynx.

Introduction

Hypertrophy of adenoids is commonly encountered in children. Chronic adenoiditis and adenoidal hypertrophy have a key role in serous otitis media, resulting in hearing loss among children. These children have poor school performance and speech/language learning delay. Adenoidal tissue is a component of Waldeyer's ring. It is situated in the nasopharynx. The Eustachian tube nasal opening is in proximity to adenoidal tissue.[1]

The size of adenoids is different in children of the same age. The growth of a child changes the size of the adenoidal tissue. Between three and seven years of age, adenoidal tissue increases in size. After seven years of age, its size reduces significantly. Facial growth and adenoidal size reduction with advancing age significantly widen the nasopharyngeal airway.[2]

Repeated upper respiratory infections cause chronic adenoiditis. These chronically infected adenoids act as a persistent source of infection and inflammation in the nasopharynx, leading to eustachian tube dysfunction. In addition, hypertrophic adenoids mechanically obstruct the eustachian tube opening and disrupt ventilation of the middle ear cleft.[3-5]

The surgical procedure to remove adenoids is called adenoidectomy. Conventionally curettage method is used, in which it is removed with a curette by the trans-oral route without visualizing the nasopharynx and relying on finger palpation.[6]

Endoscopic-assisted microdebrider adenoidectomy provides good visualization and accurate removal of adenoids without damage to surrounding structures.[7] Local data on endoscopic-assisted microdebrider adenoidectomy is limited. Therefore, this study was

conducted to compare both techniques so that the better technique can be opted for patients to reduce post-operative morbidity.

Materials And Methods

This cross-sectional study was conducted at the Department of ENT, KRL Hospital, Islamabad, from February 2023 to December 2023. Ethical approval was taken from the ethical review committee (Reference no: KRL-HI-ERC/Dec21/45). The WHO sample size calculator was used to calculate the sample size. By keeping the level of significance 5%, power of test 80 %, and considering two means,[8] the calculated sample size came out to be 40 (20 in each group).

Non-probability, consecutive sampling was used. Patients of either gender between 5 and 12 years undergoing adenoidectomy for symptomatic adenoidal hypertrophy were enrolled. Patients with allergic rhinitis, chronic rhinosinusitis, and deviated nasal septum were excluded from the study. Informed written consent was taken from all patients. In all patients surgical procedure was carried out by a blindfolded single surgical team of experienced ENT surgeons. Patients were divided into two groups, C & E, by lottery method. In group-C adenoidectomy was performed by the conventional curettage technique. In group-E endoscopic-assisted microdebrider adenoidectomy was performed using 0 degree 4 mm nasal endoscope and a curved adenoid microdebrider shaver. The duration of the surgical procedure in minutes was documented for each group. Intra-operative blood loss was recorded by measuring suction volume and the number of gauzes used. Each 5-inch blood-soaked gauze represents 3 ml of blood loss. Post-operatively, all patients receive oral paracetamol, oral antibiotic, oral antihistamine, and intranasal decongestant for 5 days. One month post-operatively, all patients underwent 0-degree rigid diagnostic nasal endoscopy to determine any adenoidal remnant in the nasopharynx. All data was collected by a blindfolded team member on a form.

The data were entered and analyzed in SPSS version 22. Mean and standard deviated was calculated for quantitative variables like age, duration of surgery, and intra-operative blood loss. Frequency and percentage were calculated for qualitative variables like gender and adenoid remnant. An independent sample t-test was used to compare the duration of surgery and intra-operative blood loss, while a chi-square test was applied to compare the adenoid remnant between the two groups. Effect modifiers such as age and gender were controlled by stratification. Post-stratification, an independent sample t-test and chi-square test were applied. P-value of <0.005 was considered statistically significant.

Results

The age range in this study was 5 to 12 years. Mean age was 7.6 ± 2.1 years and 7.7 ± 1.9 years in group C and group E, respectively. 23 patients (57.50 %) were males, and 17 patients (42.50 %) were females, as shown in Table 1.

Table 1: Age and gender distribution for groups (n=40).

		Group C (n=20)	Group E (n=20)
Gender	**Male**	12 (60 %)	11 (55 %)
	Female	08 (40 %)	09 (45 %)
Age in years	**Mean ± SD**	7.6 ± 2.1	7.7 ± 1.9

The mean duration of surgery was 27.75 ± 3.67 min and 39.10 ± 4.24 min in Group C (“conventional curettage adenoidectomy”) and Group E (“endoscopic assisted microdebrider adenoidectomy”), respectively. Mean intra-operative blood loss was 20.25 ± 3.04 ml and 28.90 ± 4.44 ml in Group C (“conventional curettage adenoidectomy”) and Group E (“endoscopic assisted microdebrider adenoidectomy”), respectively. Table 2

Table 2: Comparison of groups in terms of operative time and intra-operative blood loss (n=40)

	Group C n=20 (conventional curettage adenoidectomy)	Group E n=20 (endoscopic-assisted microdebrider adenoidectomy)	p-value
Duration of surgery (minutes)	27.75 ± 3.67	39.10 ± 4.24	0.0001
Intra-operative blood loss (ml)	20.25 ± 3.04	28.90 ± 4.44	0.0001

Frequency of postoperative adenoid remnant was 09 (45.0%) and 03 (15.0%) in Group C (“conventional curettage adenoidectomy”) and Group E (“endoscopic assisted microdebrider adenoidectomy”), respectively, as shown in Table 3.

Table 3: Comparison of groups in terms of frequency of postoperative adenoid remnant (n=40)

	Group C n=20 (conventional curettage adenoidectomy)	Group E n=20 (endoscopic-assisted microdebrider adenoidectomy)	p-value
postoperative adenoid remnant	09 (45 %)	03 (15%)	0.038

Discussion

Adenoidectomy is the most common ENT daycare procedure. "conventional curettage adenoidectomy" is a blind procedure. There are more chances of injury to surrounding structures and adenoidal remnant with this technique. However, "endoscopic assisted microdebrider adenoidectomy" provides excellent visualization, leading to complete removal of adenoidal tissue.[9]

In our study duration of surgery was longer in the "endoscopic-assisted microdebrider adenoidectomy" group. Another study showed the mean operative time in "conventional curettage adenoidectomy" and microdebrider adenoidectomy as 29.12 ± 6.70 min and 37.80 ± 6.90 min, respectively.[10] Our result is comparable to this study. Longer duration with endoscopic-assisted microdebrider adenoidectomy" is due to equipment set-up and instrument handling during the procedure. However, this additional 10-15 minutes of time consumption brings more benefit to the patient in terms of safety and procedure completeness.

In our study, intra-operative blood loss was 20.25 ± 3.04 ml with "conventional curettage adenoidectomy" and 28.90 ± 4.44 ml with "endoscopic assisted microdebrider adenoidectomy". A study by Modi et al, [11] concluded average blood loss during curettage adenoidectomy and microdebrider adenoidectomy at 35.57 ± 11.10 and 37.14 ± 8.02, respectively. This study also endorses higher blood loss in endoscopic adenoidectomy. Increase intra-operative blood loss in endoscopic-assisted microdebrider adenoidectomy" is due to piece by piece removal of adenoids and endoscopic handling time consumption during the procedure.

In our study, the frequency of adenoid remnant was 45 % with "conventional curettage adenoidectomy". Another study by Tulaci et al,[12] detected adenoidal remnant in 60.2 % patients operated on with the conventional curettage technique. A recent study by Omer et al,[13] found 61.8 % incidence of adenoidal tissue remnant with the conventional curettage technique. Our study and the above-mentioned studies have consistent findings in terms of adenoid remnant. This is due to the blind nature of the procedure.

Endoscopic-assisted microdebrider adenoidectomy" provides better visualization of the post-nasal space, resulting in complete removal of adenoidal tissue. In our study, only 15 % patients had adenoid remnant operated with endoscopic assisted microdebrider technique. Other studies have similar findings in this regard.[14-16]

Both techniques are safe in expert hands. However, endoscopic techniques have better patient outcomes.[17-19].

Conclusions

"Endoscopic-assisted microdebrider adenoidectomy" is safe and superior to "conventional curettage adenoidectomy" in terms of surgical completeness and patient outcome.

Author Information

1. Senior Registrar, Akhtar Saeed Medical College, Farooq Hospital, Rawalpindi 2. Associate Professor, KRL Hospital, Islamabad 3. Assistant Professor, Akhtar Saeed Medical College, Rawalpindi 4. Professor of ENT, Akhtar Saeed Medical College, Rawalpindi 5. Senior Registrar ENT, IIMC, Rawalpindi

Corresponding author: Dr. Muhammad Ali alisaleem933@gmail.com

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