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ORIGINAL ARTICLE

Comparison of the Efficacy and Safety of Conventional Curettage Adenoidectomy and Alternative Surgical Techniques

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ABSTRACT

Introduction: Adenoidectomy is a widely performed surgical procedure for managing chronic adenoid hypertrophy, which can contribute to nasal obstruction, recurrent otitis media, and obstructive sleep apnea in children. Conventional curettage adenoidectomy has been the standard technique; however, concerns regarding residual adenoid tissue, intraoperative bleeding, and postoperative morbidity have led to the adoption of newer techniques, including Coblation, Microdebrider-assisted, Suction Diathermy, and Endoscopic-assisted adenoidectomy. This study aims to compare the efficacy and safety of these techniques with conventional curettage adenoidectomy in terms of intraoperative blood loss, operative time, residual adenoid tissue, and postoperative complications.

Materials and Methods: This prospective, comparative study included 100 pediatric patients (aged 3–12 years) undergoing adenoidectomy. Patients were randomly assigned to one of five groups: Conventional curettage, Coblation, Microdebrider assisted, Suction Diathermy, and Endoscopic-assisted adenoidectomy. Primary outcomes assessed included operative time, intraoperative blood loss, and completeness of adenoid removal via postoperative endoscopy. Secondary outcomes included postoperative pain scores, time to resume normal diet, and complications such as bleeding and velopharyngeal insufficiency. Statistical analysis was performed using SPSS software, with significance set at $p < 0.05$.

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Results: Coblation demonstrated the shortest operative time (9.7 minutes), significantly lower intraoperative blood loss (20.5 ml), and the least residual adenoid tissue (15%) compared to conventional curettage (20.1 minutes, 50.9 ml blood loss, and 70% residual tissue). Postoperative pain scores were lowest in the Coblation group (3.6), whereas the highest was observed in the conventional curettage group (6.3). The complication rate was lowest in Coblation (5%) compared to Conventional (20%) and Suction Diathermy (25%).

Conclusion: Coblation adenoidectomy offers significant advantages over conventional curettage, including reduced operative time, minimal intraoperative blood loss, and lower residual adenoid tissue with fewer complications. These findings suggest that Coblation may be the preferred technique for pediatric adenoidectomy. However, further long-term studies are warranted to validate these findings.

KEYWORDS:

• Adenoidectomy • Efficacy and Safety • Surgical Techniques

INTRODUCTION

Adenoidectomy is a commonly performed surgical procedure for the treatment of chronic adenoid hypertrophy, which can lead to nasal obstruction, recurrent otitis media, and obstructive sleep apnea in children.[1] Conventional curettage adenoidectomy, traditionally considered the standard technique, involves the removal of adenoid tissue using a curette under direct or indirect visualization. Despite its widespread use, concerns remain regarding incomplete removal, residual adenoid tissue, and post-operative complications such as bleeding and infection.[2]

In recent years, various advanced surgical techniques have emerged, including microdebrider-assisted adenoidectomy, suction diathermy, coblation, laser ablation, and endoscopic-assisted approaches.[3] These techniques aim to improve surgical precision, reduce intraoperative bleeding, and minimize postoperative morbidity. However, the comparative efficacy and safety of these techniques relative to conventional curettage adenoidectomy remain a topic of debate.[2]

This study aims to compare the efficacy and safety of conventional curettage adenoidectomy with other adenoidectomy techniques by evaluating key surgical outcomes, including intraoperative blood loss, operative time, completeness of adenoid removal, and postoperative complications. The findings of this study helps to determine whether alternative techniques offer significant advantages over conventional methods and provide guidance for clinicians in selecting the most appropriate surgical approach for adenoidectomy.

METHODOLOGY

This prospective, comparative study was conducted to evaluate the efficacy and safety of conventional curettage adenoidectomy in comparison with other adenoidectomy techniques, including microdebrider assisted adenoidectomy, suction diathermy, coblation adenoidectomy, and endoscopic assisted adenoidectomy.

The study included patients aged 3 to 12 years who were diagnosed with chronic adenoid hypertrophy requiring surgical intervention. Patients with a history of prior adenoidectomy, coexisting craniofacial anomalies, bleeding disorders, or an active infection at the time of surgery were excluded from the study.

Patients were randomly assigned to one of five groups based on the surgical technique used. Group A underwent conventional curettage adenoidectomy, Group B received microdebrider-assisted adenoidectomy, Group C underwent suction diathermy adenoidectomy, Group D was treated with coblation adenoidectomy, and Group E underwent endoscopic-assisted adenoidectomy. All procedures were performed under general anesthesia

by experienced otolaryngologists. In the conventional curettage group, adenoid tissue was removed using a curette, while the other groups underwent their respective procedures using specialized surgical equipment and techniques.

The study evaluated both primary and secondary outcome measures for efficacy and safety. Primary outcomes included operative time, measured from the time of incision to the completion of adenoid removal, intraoperative blood loss, assessed using suction canister measurements and visual estimation, and the presence of residual adenoid tissue, determined through postoperative endoscopic examination at four weeks. Secondary outcomes included postoperative pain, assessed using a visual analog scale (VAS) at 6, 24, and 48 hours post-surgery, post-operative complications such as bleeding, infection, and velopharyngeal insufficiency, and the time required for patients to resume a normal diet based on their recovery and pain tolerance.

STATISTICAL ANALYSIS

All statistical analyses were performed using SPSS software. Continuous variables were expressed as mean ± standard deviation and compared using the independent t-test or ANOVA. Categorical variables were analyzed using the chi-square test or Fisher's exact test. A p-value <0.05 was considered statistically significant.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Institutional Ethics Committee. Informed consent was obtained from the parents or guardians of all patients before enrollment in the study.

RESULTS

The study analyzed multiple clinical outcomes among five surgical techniques: Coblation, Conventional, Endoscopic, Microdebrider, and Suction Diathermy. The assessment included nasal obstruction, snoring, recurrent ear infections, mouth breathing, postoperative complications, residual adenoid tissue, and postoperative pain. The demographic details are described in Table 1.

Nasal obstruction was most frequent in the Endoscopic group (85%), followed by Conventional (70%), Suction Diathermy (70%), Microdebrider (65%), and Coblation (60%). Snoring was prevalent in 70% of patients in the Endoscopic and Coblation groups, 60% in Conventional, 65% in Suction Diathermy, and was least reported in the Microdebrider group (45%). Recurrent ear infections were highest in the Suction Diathermy group (60%) and lowest in the Endoscopic group (40%), while both the Coblation and Conventional groups had an equal occurrence of 55%. Mouth breathing was most common in the Endoscopic group (85%) and least in the Conventional group (65%).

Regarding complications, the incidence of bleeding varied significantly among the groups (Table 2), with the highest rate observed in the Microdebrider group (30%), followed by Suction Diathermy (25%), Conventional and Endoscopic (10% each), and Coblation (0%). Infection rates were highest in the Microdebrider group (20%) and lowest in the Suction Diathermy and Endoscopic groups (5%). Velopharyngeal insufficiency was observed in 5% of patients in the Conventional, Microdebrider, and Suction Diathermy groups, but it was absent in the Coblation and Endoscopic groups. Airway obstruction occurred in 5% of patients in the Endoscopic, Microdebrider, and Suction Diathermy groups, while no cases were reported in the Coblation and Conventional groups.

The study also evaluated residual adenoid tissue and postoperative pain. The lowest residual adenoid tissue was recorded in the Coblation and Suction Diathermy groups (15.0), whereas the highest was observed in the Conventional method (70.0), with a statistically significant difference ($p = 0.01$). Postoperative pain scores were highest in the Conventional group (6.32 ± 0.80) and lowest in the Coblation group (3.64 ± 0.65), indicating that Coblation was associated with reduced postoperative discomfort ($p < 0.001$). Overall, Coblation demonstrated the most favorable outcomes with lower residual adenoid tissue, reduced postoperative pain, and minimal complications compared to other techniques. While all surgical methods were effective in symptom relief, the variations in complication rates suggest differences in safety and efficacy among the techniques.

Table 1: Showing the demographic details

Group	Mean Age	Std deviation	p-value	Male Count	Female Count	Sex p-value
Coblation	6.72	1.27		13(65%)	7(35%)	
Conventional	7.39	1.82		13(65%)	7(35%)	
Endoscopic	7.56	1.67	0.27	9(45%)	11(55%)	0.64
Microdebrider	7.8	2.74		13(65%)	7(35%)	
Suction Diathermy	6.74	1.76		12(60%)	8(40%)	

Table 2: Showing Complications

Group	Complication Count	Complication Percentage	p-value
Coblation	1	5.0	
Conventional	4	20.0	
Endoscopic	4	20.0	0.01
Microdebrider	1	5.0	
Suction Diathermy	5	25.0	

DISCUSSION

Our study aimed to compare the efficacy and safety of various adenoidectomy techniques, including Coblation, Suction Diathermy, Endoscopic-assisted, Microdebrider, and Conventional Curettage. The findings indicate that Coblation adenoidectomy offers significant advantages over conventional curettage, particularly in terms of operative time, intraoperative blood loss, residual adenoid tissue, and post-operative pain.

In our study, Coblation adenoidectomy had the shortest operative time (mean 9.7 minutes), significantly less than conventional curettage (20.1 minutes). This finding is consistent with previous research.[4] For instance, a study reported that Coblation-assisted adenoidectomy had a mean operative time of 11.1 minutes, compared to 14.2 minutes for conventional curettage, demonstrating a statistically significant reduction (p=0.000).[5] The reduced operative time with Coblation may be attributed to its efficient tissue removal and hemostasis capabilities.

Our results showed that Coblation adenoidectomy resulted in significantly less intraoperative blood loss (mean 20.5 ml) compared to conventional curettage (50.9 ml). Similarly, a study found that intraoperative blood loss was significantly lower in the Coblation group (7.58±3.28 ml) than in the conventional group (32.4±3.2 ml), with a p-value of 0.001.[6] Another study reported that Coblation technology in adenoidectomy offered advantages regarding less intraoperative blood loss and lower incidences of postoperative bleeding.[7] The reduced blood loss with Coblation can be attributed to its ability to coagulate tissue during removal, minimizing bleeding.[8]

The incidence of residual adenoid tissue was lowest in the Coblation group (15%) and highest in the conventional curettage group (70%) in our study. This is similar to systematic review and network meta-analysis, which found that participants undergoing techniques other than conventional curettage were 97% less likely to have residual adenoid tissue.[9] The enhanced visualization and precision of Coblation and other advanced techniques likely contribute to more complete adenoid removal.[10] Patients who underwent Coblation adenoidectomy reported the lowest postoperative pain scores (mean 3.6 on VAS), whereas those in the conventional group reported higher scores (mean 6.3). A comparative study also demonstrated that Coblation adenoidectomy was superior to cold curettage in terms of postoperative pain, with significant advantages in pain reduction. The reduced tissue trauma associated with Coblation may explain the lower pain levels observed.[11]

While our study found no statistically significant difference in overall complication

rates between the techniques (p=0.24), the Coblation group had a lower complication rate (5%) compared to the conventional group (20%). This trend aligns with findings from other studies, which reported fewer complications with Coblation-assisted adenoidectomy . The precise tissue removal and effective hemostasis associated with Coblation may contribute to a reduced risk of complications.[12]

Our study also evaluated Suction Diathermy, Endoscopic-assisted, and Microdebrider adenoidectomy techniques. Suction Diathermy demonstrated favorable outcomes in terms of operative time and blood loss, similar to Coblation, but had a slightly higher complication rate (25%). Endoscopic-assisted and Microdebrider techniques offered benefits in precision and moderate pain relief but were associated with longer operative times.[9] These findings are consistent with existing literature, which suggests that while advanced techniques like Coblation and Suction Diathermy offer improved outcomes, the choice of technique should be tailored to the patient's specific needs and the surgeon's expertise.

CONCLUSION

Coblation adenoidectomy appears to provide significant benefits over conventional curettage, including reduced operative time, less intraoperative blood loss, minimal residual adenoid tissue, and decreased postoperative pain. However, the selection of the surgical technique should consider individual patient factors and the surgeon's proficiency with the method.

LIMITATION

This study's limitations include a small sample size, single-center design, and short follow-up, restricting long-term outcome assessment. Subjective pain evaluation, operator dependency, and variability in postoperative care may have influenced results. Excluding certain patient groups and potential interobserver variability in residual adenoid assessment further limit generalizability. Larger multi-center studies with extended follow-up are needed for validation.

REFERENCES

1. Singh J, Bhardwaj B. The Comparison between Microdebrider Assisted Adenoidectomy and Coblation Adenoidectomy: Analyzing the Intraoperative Parameters and Post-operative Recovery. Indian J Otolaryngol Head Neck Surg. 2020 Mar;72(1):59-65. doi: 10.1007/s12070-019-01736-5. Epub 2019 Sep 27. PMID: 32158657; PMCID: PMC7040151.
2. Zainea V. Conventional curettage adenoidectomy versus endoscopic assisted adenoidectomy. Maedica (Bucur). 2011 Oct;6(4):328-9. PMID: 22879849; PMCID: PMC3391952.
3. Ali, A.A.A.E., Elsharnouby, M.K., Khalil, Y.A.E. et al. Evaluation of endoscopic assisted suction coagulation adenoidectomy versus traditional curettage technique. Egypt J Otolaryngol 37, 122 (2021). https://doi.org/10.1186/s43163-021-00173-y.
4. Bidaye R, Vaid N, Desarda K. Comparative analysis of conventional cold curettage versus endoscopic assisted coblation adenoidectomy. The Journal of Laryngology & Otology. 2019;133(4):294-299. doi:10.1017/S0022215119000227
5. Aref ZF, Badawy SB, Abdelraheem AG, Mohamed EA, Tayaa U. A Comparative Study between Coblation Adenoidectomy and Conventional Adenoidectomy. SVU Int J Med Sci. 2022;5(1):155-163.
6. El Tahan AR, Elzayat S, Hegazy H. Adenoidectomy: comparison between the conventional curettage technique and the coblation technique in pediatric patients. Egypt J Otolaryngol. 2016;32(3):152.
7. Hapalia VB, Panchal AJ, Kumar R, Kapadia PB, Bhiryani MA, Verma RB, Parmar ND. Pediatric Adenoidectomy: A Comparative Study Between Cold Curettage and Coblation Technique. Indian J Otolaryngol Head Neck Surg. 2022 Oct;74(Suppl 2):1163-1168. doi: 10.1007/s12070-020-02247-4. Epub 2020 Oct 30. PMID: 36452765; PMCID: PMC9702207.
8. Calvo-Henriquez, C., RuedaFernandez-Rueda, M., Garcia-Lliberos, A. *et al.* Coblator adenoidectomy in pediatric patients: a state-of-the-art review. Eur Arch Otorhinolaryngol 280, 4339–4349 (2023). https://doi.org/10.1007/s00405-023-08094-7

9. Somani SS, Naik CS, Bangad SV. Endoscopic adenoidectomy with microdebrider. Indian J Otolaryngol Head Neck Surg. 2010 Oct;62(4):427-31. doi: 10.1007/s12070-011-0118-9. Epub 2011 Jan 11. PMID: 22319707; PMCID: PMC3266095.

10. Malas, M., Althobaiti, A.A., Sindi, A. et al. Comparison of the efficacy and safety of conventional curettage adenoidectomy with those of other adenoidectomy surgical techniques: a systematic review and network meta-analysis. J of Otolaryngol - Head & Neck Surg 52, 21 (2023). https://doi.org/10.1186/s40463-023-00634-9

11. Kim JW, Kim HJ, Lee WH, et al. Comparative study for efficacy and safety of adenoidectomy according to the surgical method: A prospective multicenter study. PLoS One. 2015;10(8):e0135304. doi: 10.1371/journal.pone.0135304. PMID: 26267337; PMCID: PMC4534417.

12. Yang L, Shan Y, Wang S, Cai C, Zhang H. Endoscopic assisted adenoidectomy versus conventional curettage adenoidectomy:a meta-analysis of randomized controlled trials. SpringerPlus. 2016;5:426.