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Does Endoscopic Adenoidectomy Really Make a Difference? A Retrospective Comparison with Conventional Adenoidectomy

Endoskopik Adenoidektomi Gerçekten Fark Yaratıyor mu? Konvansiyonel Adenoidektomi ile Retrospektif Karşılaştırma

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ABSTRACT

Objective: To compare endoscopic and conventional curettage adenoidectomy in terms of operative time, postoperative pain, complications, and recurrence.

Methods: This retrospective, observational comparative study screened 532 adenoidectomy cases performed between December 2015 and December 2024. After applying the inclusion and exclusion criteria, 143 patients were included in the final analysis: 73 in the endoscopic group and 70 in the conventional group, all of whom had a follow-up period of at least 12 months. Postoperative pain was assessed using visual analogue scale (VAS) at 6 and 12 hours. Recurrence at 1 year was defined as recurrence of symptoms accompanied by endoscopic evidence of adenoid hypertrophy of grade ≥ 2.

Results: Groups were comparable in sex, age, and preoperative adenoid grade. Postoperative VAS pain (4.84 ± 1.31 vs. 4.34 ± 1.34; p = 0.033) and operative time (30.75 ± 8.11 vs. 15.64 ± 5.03 minutes; p < 0.001) were significantly greater in the endoscopic group. No perioperative complications occurred in the endoscopic group, whereas one patient (1.4%) in the conventional group experienced postoperative bleeding (p = 0.490). No recurrence was observed in the endoscopic group. Recurrence occurred in two patients (2.9%) in the conventional group at the 1-year follow-up (p = 0.238).

Conclusion: Endoscopic adenoidectomy was associated with longer operative time and higher early postoperative pain. Complication and recurrence rates were lower in the endoscopic group; however, these differences did not reach statistical significance.

Keywords: Adenoidectomy, endoscopic adenoidectomy, conventional curettage adenoidectomy, postoperative pain, operative time, complication

ÖZ

Amaç: Endoskopik ve konvansiyonel küretaj adenoidektomiyi cerrahi süre, postoperatif ağrı, komplikasyon ve nüks açısından karşılaştırmak.

Yöntemler: Retrospektif, gözlemsel karşılaştırmalı bu çalışmada Aralık 2015–Aralık 2024 döneminde yapılan 532 adenoidektomi olgusu tarandı. Dâhil edilme/dışlama kriterleri uygulandıktan sonra en az 12 aylık takibi olan 143 hasta analize alındı: endoskopik grup 73, konvansiyonel grup 70. Postoperatif ağrı 6. ve 12. saatte görsel analog skala (VAS) ile değerlendirildi. Nüks, 1. yılda şikâyetlerin tekrarıyla birlikte endoskopide grade ≥ 2 adenoid hipertrofisi saptanması olarak tanımlandı.

Bulgular: Gruplar cinsiyet, yaş ve preoperatif adenoid boyutu açısından benzerdi. Postoperatif VAS ağrı skoru endoskopik grupta anlamlı olarak daha yüksekti (4,84 ± 1,31 vs. 4,34 ± 1,34; p = 0,033) ve cerrahi süre endoskopik grupta belirgin daha uzundu (30,75 ± 8,11 vs. 15,64 ± 5,03 dk; p < 0,001). Endoskopik grupta komplikasyon izlenmezken, konvansiyonel grupta 1 hastada (%1,4) kanama görüldü (p = 0,490). Endoskopik grupta nüks saptanmazken, konvansiyonel grupta 1. yıl kontrolünde 2 hastada (%2,9) nüks izlendi (p = 0,238).

Sonuç: Endoskopik adenoidektomi, daha uzun cerrahi süre ve daha yüksek erken postoperatif ağrı ile ilişkili bulundu. Komplikasyon ve nüks oranları endoskopik grupta daha düşük olmakla birlikte, bu farklar istatistiksel olarak anlamlı değildi.

Anahtar Sözcükler: Adenoidektomi, endoskopik adenoidektomi, konvansiyonel küretaj adenoidektomi, postoperatif ağrı, cerrahi süre, komplikasyon

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INTRODUCTION

The adenoid is a pharyngeal lymphoid tissue located in the midline of the nasopharynx, forming part of Waldeyer's ring and contributing to immune defense. It begins to develop in early embryogenesis, continues to enlarge until approximately six years of age, and then undergoes involution, typically regressing during adolescence (1,2). Adenoid hypertrophy is common in children and may result in upper airway obstruction and recurrent infections, particularly during the early school-age period. Typical clinical manifestations include nasal obstruction, mouth breathing, snoring, obstructive sleep apnoea, recurrent sinusitis, Eustachian tube dysfunction, otitis media, speech problems, and impaired maxillofacial development (3). When symptoms persist despite medical therapy, adenoidectomy is considered. Conventional curettage adenoidectomy remains the most commonly performed technique because of its low cost and technical simplicity. However, the limited surgical field may lead to residual adenoid tissue, which can increase the risk of symptom recurrence. In addition, complications such as bleeding and soft palate injury may occur with this technique.

Endoscopic adenoidectomy, by contrast, involves the removal of adenoid tissue under direct visualisation with a nasal endoscope. This technique was first described by Uçar (4) and has been reported as a safe alternative. Performing the procedure under direct visualisation facilitates more complete adenoid removal and may reduce symptomatic recurrence (5). Nevertheless, the endoscopic approach requires additional equipment and may prolong operative time.

The present study aimed to compare conventional and endoscopic adenoidectomy with respect to operative time, postoperative pain, complications, and recurrence, and to contribute to clinical decision-making regarding technique selection.

MATERIALS AND METHODS

Study Design and Ethical Approval

This retrospective, observational, comparative review was approved by the Ethics Committee of Gazi University Faculty of Medicine (decision number: 2025-223, date: 28.01.2025).

Study Population

Between December 2015 and December 2024, 532 patients who underwent adenoidectomy at the Department of Otorhinolaryngology of Gazi University Hospital were screened. Patients aged 5–14 years who underwent endoscopic or conventional adenoidectomy and had Grade III (50–75%) or Grade IV (>75%) adenoid hypertrophy on flexible nasopharyngoscopy were considered eligible. Patients were excluded if they had craniofacial anomalies; a history of cleft lip and/or palate (even if surgically corrected), velopharyngeal insufficiency, or nasal polyposis; prior adenoidectomy or adenotonsillectomy; concomitant tonsillectomy and/or ventilation tube insertion; malignancy involving the adenoid/nasopharynx; or incomplete postoperative follow-up data. After applying these criteria (Figure 1), 143 patients remained and were included in the final analysis, comprising 73 patients in the endoscopic adenoidectomy group and 70 patients in the conventional curettage adenoidectomy group; all with at least 12 months of follow-up.

Surgical Technique

All procedures were performed under general anaesthesia with orotracheal intubation by a single experienced otolaryngologist with at least 10 years' experience. Operative time was defined as the interval from initiation of adenoid excision to achievement of final haemostasis.

For endoscopic adenoidectomy, the nasopharynx was visualised via the nasal route using a 3-mm, 0° endoscope. Adenoid tissue was excised transorally using an adenotome under endoscopic guidance, and haemostasis was achieved by endoscopic identification and cauterisation of bleeding foci.

For conventional curettage adenoidectomy, the adenoid tissue was assessed transorally by digital palpation, and curettage was then performed. Residual tissue was then re-assessed by digital palpation, and curettage was repeated until the surgeon was satisfied that no residual tissue remained. Haemostasis was subsequently achieved, and the procedure was concluded.

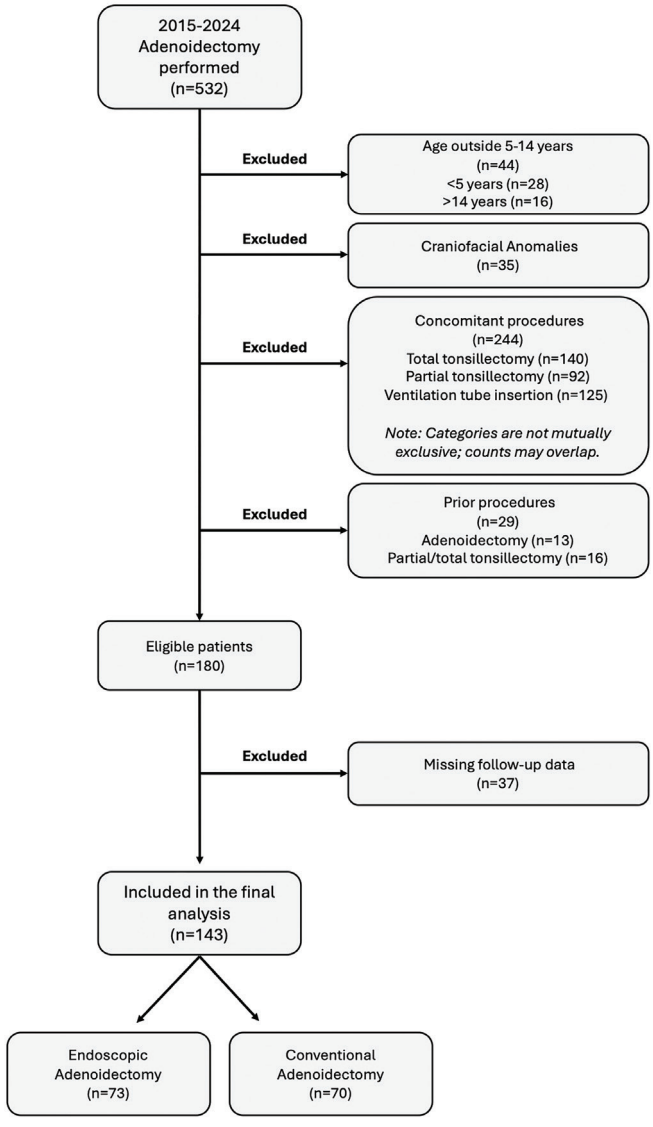

Figure 1. Flow diagram of patient selection.

Postoperative Follow-Up

Postoperative pain was assessed in all patients using the visual analogue scale (VAS) at 6 and 12 hours after surgery; the higher of the two scores was used for analysis. Patients underwent endoscopic follow-up on postoperative day 7, at 3 months, and at 1 year. Recurrence was defined as the return of symptoms at the 1-year follow-up and endoscopic evidence of grade ≥ 2 adenoid hypertrophy.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics (version 26.0; USA). Continuous and ordinal variables were summarised as mean ± standard deviation and median (minimum–maximum), and categorical variables were summarised as number and percentage [n (%)]. The Shapiro–Wilk test was used to assess normality. Because variables were non-normally distributed or ordinal, comparisons between the two independent groups (endoscopic vs. conventional adenoidectomy) were conducted using the Mann–Whitney U test for age, pain VAS score, operative time, and adenoid grade. Categorical variables were compared using Pearson's chi-square test when appropriate (e.g., sex) and Fisher's exact test when expected cell counts were fewer than 5 (e.g., recurrence and complications). A two-sided p-value < 0.05 was considered statistically significant.

RESULTS

A total of 143 patients were included in the study: 73 underwent endoscopic adenoidectomy, and 70 underwent conventional adenoidectomy. The demographic and clinical characteristics of the study groups are summarised in Table 1. The two groups were comparable in terms of sex distribution (endoscopic: 63.0% male, 37.0% female; conventional: 65.7% male, 34.3% female; p = 0.598). The groups were similar in age (endoscopic: 85.07 ± 21.88 months; conventional: 90.30 ± 22.88 months; p = 0.115). Preoperative adenoid size was similarly high in both groups; the mean adenoid grade was 3.75 ± 0.43 in the endoscopic group and 3.86 ± 0.35 in the conventional group (p = 0.120). Postoperative pain, assessed using the VAS, was significantly higher in the endoscopic group than in the conventional group (endoscopic: 4.84 ± 1.31; conventional: 4.34 ± 1.34; p = 0.033). Operative time also differed markedly between groups: it was longer in the endoscopic group (30.75 ± 8.11 min) than the conventional group (15.64 ± 5.03 min; p < 0.001). No perioperative complications were observed in the endoscopic group, whereas one patient (1.4%) in the conventional group experienced bleeding. This difference was not statistically significant (p = 0.490). Similarly, no recurrence was detected in the endoscopic group, whereas recurrence occurred in two patients (2.9%) in the conventional group at the 1-year follow-up; this difference was not statistically significant (p = 0.238).

DISCUSSION

In this retrospective study, we compared the two most commonly used techniques—conventional adenoidectomy and endoscopic adenoidectomy—in terms of operative time, complications, postoperative pain, and symptom recurrence. Our findings indicate that endoscopic adenoidectomy significantly prolongs operative time and is associated with slightly higher postoperative pain, whereas complication and recurrence rates are comparable to those observed with the conventional technique.

Operative Time

According to our findings, operative time was significantly longer in the endoscopic group (mean, 30.75 ± 8.11 minutes) than in the conventional group (mean, 15.64 ± 5.03 minutes) (p < 0.001). Previous studies have reported variable results regarding operative time in endoscopic adenoidectomy. In the 2023 systematic review and meta-analysis by Malas et al. (6), no significant difference in operative time was reported between conventional curettage and other surgical techniques; however, our results are consistent with those reported by Beemrote et al. (5), Manhas et al. (7), and the systematic review by Saibene et al. (8), indicating longer operative times with the endoscopic approach. This increase in operative time may be explained by the time required for endoscopic equipment setup, detailed visualisation of the nasopharynx, and meticulous, piecemeal resection in relatively difficult-to-access areas such as the torus tubarius and the nasopharyngeal roof. In addition, achieving haemostasis under direct visualisation may prolong the procedure. Given the aim of achieving more complete excision and minimising residual tissue, the longer operative time associated with the endoscopic technique may be considered acceptable.

Residual Adenoid Tissue and Recurrence

The primary goal of adenoidectomy is complete removal of adenoid tissue to minimise the risk of symptom recurrence. Conventional

Table 1. Comparison of demographic and clinical variables between endoscopic and conventional adenoidectomy groups

Parameter	Endoscopic adenoidectomy (n = 73)	Conventional adenoidectomy (n = 70)	p-value
Gender[a], n (%)			0.598
Male	46 (63)	46 (65.7)	
Female	27 (37)	24 (34.3)	
Age (months)[b]			0.115
Mean ± SD	85.07 ± 21.88	90.30 ± 22.88	
Median (min–max)	78 (60–142)	84 (60–156)	
Pain VAS score[b]			**0.033***
Mean ± SD	4.84 ± 1.31	4.34 ± 1.34	
Median (min–max)	5 (2–8)	4 (1–7)	
Operative time (min)[b]			**<0.001***
Mean ± SD	30.75 ± 8.11	15.64 ± 5.03	
Median (min–max)	30 (15–55)	15 (10–30)	
Adenoid grade[b]	3.75 ± 0.43	3.86 ± 0.35	0.120
Mean ± SD	4 (3–4)	4 (3–4)	
Median (min–max)			
Complication[c], n (%)	-	1 (1.4)	0.490
Recurrence[c], n (%)	-	2 (2.9)	0.238

[a]Pearson chi-square test, [b]Mann–Whitney U test, [c]Fisher's exact test, *p < 0.05
SD: Standard deviation, min: Minimum, max: Maximum, VAS: Visual analogue scale

curettage is often regarded as an "blind" procedure because surgical exposure is limited. In addition, after curettage, residual tissue is typically assessed by digital palpation, and the procedure is terminated once the surgeon is satisfied. These factors may contribute to residual adenoid tissue and subsequent symptom recurrence (9,10). Postoperative adenoid regrowth has been reported in up to 31.3% of cases, particularly in children younger than 5 years (11). Residual tissue has also been reported more frequently in the choanal and tubal regions, which are relatively difficult to address with the conventional technique (9,12,13)

In our study, no recurrence attributable to residual tissue was observed in the endoscopic group, whereas recurrence occurred in two patients (2.9%) in the conventional group. While this finding supports the potential advantage of the endoscopic approach in reducing residual tissue, the lack of statistical significance may be related to the relatively small sample size and a limited one-year follow-up period. Consistent with this interpretation, the literature generally emphasises the superiority of endoscopic techniques over conventional curettage with respect to residual adenoid tissue. In a systematic review and meta-analysis, Malas et al. (6) reported that the likelihood of residual adenoid tissue was 97% lower in patients treated with alternative techniques (including endoscopic methods) than in those treated with conventional curettage. Similarly, Songu et al. (14), using adenoid/nasopharyngeal measurements derived from temporal bone CT, reported that the endoscopic technique was more effective than curettage in reducing postoperative adenoid size. Another study found 23.3% of patients in the curettage group, whereas no residual adenoid tissue was observed in the endoscopic group (7). Overall, removal under direct endoscopic visualisation facilitates more complete excision and may reduce the likelihood of residual tissue.

Complications

With regard to perioperative complications, none were observed in the endoscopic adenoidectomy group, whereas one patient (1.4%) in the conventional adenoidectomy group developed early postoperative bleeding within the first 24 hours. Overall, there was no statistically significant difference between groups in terms of postoperative complications. Although uncommon, adenoidectomy may be associated with complications such as infection, bleeding, pain, dehydration, and velopharyngeal insufficiency, with bleeding generally considered the most concerning event. In a large multicentre study reviewing 10 years of data, the most frequently reported complications within the first month were pain (3.1%), postoperative bleeding (2.3%), dehydration (2.1%), infection (0.26%), and acute respiratory complications (0.21%) (15).

The available literature suggests broadly similar complication profiles across adenoidectomy techniques. In a comparative study by Wadia and Dabholkar (16), no significant differences were found between endoscopic adenoidectomy and conventional adenoidectomy with respect to postoperative pain or bleeding. Likewise, Malas et al.(6), in a systematic review and meta-analysis comparing conventional curettage with other techniques, reported no significant differences in postoperative bleeding or in overall complication rates.

Findings regarding blood loss vary across studies. Manhas et al. (7) reported a higher mean blood loss in the endoscopic group (29.15 mL) than in the conventional adenoidectomy group (15.2 mL); this difference was statistically significant. Juneja et al. (17) reported a similar trend, although it did not reach statistical significance. In contrast, Kumar et al. (18) found higher rates of intraoperative and early postoperative primary bleeding using the conventional technique. In a meta-analysis, Yang et al. (19) reported greater blood loss with conventional curettage compared with endoscopic-assisted adenoidectomy, attributing this to the advantages of direct visualisation and more effective control of bleeding sources with endoscopic techniques. In the present study, no significant between-group difference in postoperative infection was observed. Consistent with findings from large-scale studies, overall complication rates after adenoidectomy appear to be low and serious complications are rare; this supports the view that isolated adenoidectomy is generally associated with low morbidity (20,21).

Postoperative Pain

In our cohort, postoperative pain assessed by VAS was significantly higher in the endoscopic group (4.84 ± 1.31) than in the conventional group (4.34 ± 1.34) ($p = 0.033$). The higher pain scores observed after endoscopic adenoidectomy may be related to the need for targeted cauterisation of residual adenoid tissue and bleeding foci performed under direct endoscopic visualisation. Previous reports on postoperative pain following endoscopic techniques are heterogeneous. Juneja et al. (17) reported significantly lower pain scores in the endoscopic group. In another study comparing standard and microdebrider adenoidectomy, postoperative pain was lower in the microdebrider group, although the difference between techniques was not statistically significant (22). Conversely, in a randomised controlled trial comparing cold dissection and coblation techniques for adenotonsillectomy, Shapiro and Bhattacharyya (23) found no significant difference in daily postoperative pain scores between the groups. These discrepancies may reflect differences in pain assessment methods and the influence of concomitant procedures, such as tonsillectomy.

A primary strength of this study is that both techniques were evaluated by a single surgeon, enabling a consistent comparison between the two approaches. The main limitations include the retrospective design, the relatively small sample size, and the follow-up period limited to one year. Larger prospective studies with longer follow-up, ideally including randomised comparisons, are needed to better define long-term outcomes associated with each technique.

CONCLUSION

Endoscopic adenoidectomy allows direct visualisation of the surgical field, enabling more controlled resection and prompt management of bleeding. However, longer operative time, the need for additional equipment, and higher cost are important disadvantages. In our study, no significant differences were observed between endoscopic and conventional adenoidectomy in terms of clinical outcomes and postoperative complications. Therefore, the selection of the adenoidectomy technique should consider the surgeon's experience, available technical resources, and operative conditions.

Ethics

Ethics Committee Approval: This retrospective, observational, comparative review was approved by the Ethics Committee of Gazi University Faculty of Medicine (decision number: 2025-223, date:

28.01.2025).

Informed Consent: Retrospective study.

Footnotes

Authorship Contributions

Concept: B.T.C., Design: B.T.C., B.U., Data Collection or Processing: E.A., B.U., Analysis or Interpretation: E.A., Literature Search: B.T.C., E.A., Writing: B.T.C., E.A.

Conflict of Interest: No conflict of interest was declared by the authors.

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