Removal of adenoid remnants after curettage adenoidectomy: Do we need powered instruments?

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Aim
To compare powered to cold instruments for removing adenoid remnants after conventional curettage adenoidectomy.

Methods
110 patients (4 to 12 years old) scheduled for adenoidectomy with or without other surgeries (tonsillectomy, myringotomy and ventilation tube insertion) were enrolled in this prospective controlled study. We included patients with endoscopically detected adenoid remnants after curettage adenoidectomy including revision cases. Adenoidectomy was done using the adenoid curette, adenoid remnants detected endoscopically were removed by blakesley forceps (Group A) or by the microdebrider (Group B). Both groups were compared in terms of operative time, operative bleeding, post operative complications and adenoid recurrence.

Results
20 patients were excluded due to absence of adenoid remnants after curettage and 10 more were lost for follow up, so we were left with 80 patients (42 in group A and 38 in group B). The mean age was 4.5 years for group A and 5 years for group B. The mean operative time was 10 minutes in group A and 9.5 minutes in group B, the difference was not statistically significant ($p>0.05$). Excessive intra operative bleeding was encountered in 1 patient of group B, which was controlled with suction cauetry. We didn't encounter any postoperative bleeding in either group. Also, there were no other post operative complications like nasopharyngeal stenosis and velopharyngeal insufficiency, no adenoid recurrence was detected in both groups.

Conclusions
Both the powered instruments (microdebrider) and the traditional instruments (blakesley forceps) under endoscopic control were characterized by a high level of precision, complete resection of residual adenoid with a very low incidence of post-operative bleeding and no recurrence, but we feel that powered instruments didn't add any advantage over the traditional ones especially if the cost of the disposable blades is taken in consideration

Keywords
adenoidectomy, curette, powered, remnants, traditional

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Introduction

Adenoid hypertrophy is a common condition in children and can cause symptoms such as mouth breathing, nasal discharge, snoring, sleep apnea, and hyponasal speech [1]. Adenoidectomy is used to treat enlarged adenoids that have not responded to conservative treatments [2].

Several adenoidectomy methods have been well described in the literature. Adenoid curette guided by an indirect transoral mirror and a headlight is a simple and quick procedure that has already been in use for a long time, but this method carries a high risk of recurrence unless performed by a well-experienced surgeon [3,4]. Recent methods such as curved suction electrical coagulator [3] and the curved microdebrider shaver transorally [4,5] guided by a transoral indirect mirror or a 45° endoscope have successfully been used. After the initial pass with the curette, surgeons often check the nasopharynx by means of digital palpation or occasionally using a laryngeal mirror. This enables residual tissue to be removed. After checking the operating field visually with a 70° endoscope after performing surgery, residual tissue was found in most patients close to the choanae and adjoining the torus tubarius. This finding could explain the partial relief of obstructive symptoms obtained in some patients [6]. The incidence of residual adenoid after curettage adenoidectomy varies between 39 and 95% [7,8].

The aim of this study was to compare powered instruments with cold instruments for removing adenoid remnants after conventional curettage adenoidectomy.

Materials and methods

Between January 2010 and August 2012, 110 patients (4–12 years old) scheduled for adenoidectomy with or without other surgeries (tonsillectomy, myringotomy, and ventilation tube insertion) were enrolled in this prospective randomized study. This study was conducted at the Saudi German Hospital, Jeddah, KSA, after taking approval from the local ethics committee and obtaining informed consents from the parents. The study was in accordance with the principles laid down in the Declaration of Helsinki.

We included patients with endoscopically detected adenoid remnants after curettage adenoidectomy; revision patients were not excluded.

All patients were subjected to thorough history taking and complete ear, nose, and throat examination including otoscopic examination of the ear. The presence of adenoid was documented by flexible nasopharyngoscopy and plain radiographic nasopharynx lateral view, both were repeated 6 months postoperatively to exclude adenoid recurrence.

Surgery was performed under general anesthesia using orotracheal intubation. Whenever indicated, tonsillectomy and/or myringotomy and ventilation tube insertion were performed. The patient was then placed in the Rose position and covered with sterile drapes, and the Boyle–Davis mouth gag was inserted into the mouth. The soft palate was palpated to exclude the presence of submucus cleft palate.

Adenoid curette St. Clair Thomson adenoid curette, (Karl Storz, Germany) was inserted into the nasopharynx, and then the adenoid was removed by sweeping the curette downwards into the oropharynx. Curettage of the adenoid was repeated using smaller curettes until we were satisfied with the completion of adenoid removal by palpating the nasopharynx with the index finger. Packing of the nasopharynx was carried out with a piece of gauze, which was left for 5 min to secure hemostasis.

After removing the pack, a rubber catheter was introduced through the nose and into the oropharynx and retrieved through the mouth; both proximal and distal ends were clamped to retract the palate, thus providing wide access to the nasopharynx.

Examination of the nasopharynx was performed using a 0°, 4-mm (2.7 mm for narrow nasal passages) rigid endoscope, which was inserted transnasally to exclude any adenoid remnants. Patients with no adenoid remnants were excluded at this stage.

The patients were randomized into two groups: in group A the patients had their adenoid remnants removed transorally with cold instruments (upward Blakesley forceps) and in group B also the patients had their adenoid remnants removed transorally but with powered instruments [such as Osseouno shaver system, Bien Air surgey, (Switzerland), and curved microdebrider tip, 3 mm in the oscillating mode at a speed of 3000 rpm]. Any bleeding was controlled with suction electrocautery. At the end, the catheters and mouth gag were removed.

The operative time was recorded from the insertion of the curette until the removal of the mouth gag at the end of the surgery; the time for any additional procedures was not included. Any excessive intraoperative bleeding was documented.

The patients were discharged on the same day of surgery on oral antibiotic and anti-inflammatory medications. The parents were instructed to report any postoperative bleeding.

Follow-up visits were scheduled at 1 week, 1 month (to detect any postoperative complications, e.g. nasopharyngeal stenosis and velopharyngeal insufficiency), and 6 months to detect adenoid recurrence.

Statistical analysis

Data were statistically described in terms of mean, frequencies (number of patients), and relative frequencies (percentages) when appropriate. Comparison of quantitative variables between different groups in the present study was carried out using the Mann–Whitney *U*-test for independent samples. For comparing categorical data, the c^2-test was performed. Yates correction was used instead when the expected frequency was less than 5. A probability value (*P*) less than 0.05 was considered statistically significant. All statistical calculations were performed using computer programs Microsoft Excel version 7 (Microsoft Corporation, New York, USA) and SPSS (Statistical Package for the Social Sciences; SPSS Inc., Chicago, Illinois, USA) statistical program.

Results

A total of 110 patients were enrolled in this study; 20 patients were excluded because of the absence of adenoid remnants after curettage and 10 more were lost to follow-up. Hence, we were left with 80 patients (42 in group A and 38 in group B). No difference was found between the two groups in terms of age and sex distribution; group A had ~60% male patients, whereas group B had ~63% male patients. The mean age was 4.5 years for group A and 5 years for group B. Surgeries performed in both groups are shown in Table 1.

Endoscopic examination of the nasopharynx revealed adenoid remnants at different sites as shown in Table 2.

The mean operative time was 10 min in group A (range 7–16 min) in comparison with 9.5 min (range 8–22 min) in group B; the difference was not statistically significant ($P > 0.05$).

Excessive intraoperative bleeding was encountered in one patient of group B, which was controlled with suction cautery.

We did not encounter any postoperative bleeding in either group. In addition, there were no other postoperative complications such as nasopharyngeal stenosis and velopharyngeal insufficiency.

Plain radiographic nasopharynx lateral view and flexible nasopharnygoscopy performed 6 months postoperatively confirmed the absence of adenoid recurrence in all patients.

Discussion

Adenoidectomy is a safe and effective procedure, regardless of the method employed. Many different instruments and techniques have been utilized throughout the history of the procedure [9].

Our practice was performing adenoidectomy using an adenoid curette followed by checking the nasopharynx using an endoscope to exclude any residual adenoid tissue, which, if present, was removed transorally using upward Blakesley forceps; this technique yielded very satisfactory results.

Table 1 Surgeries performed in both groups

Surgeries performed	Group A [*n* (%)]	Group B [*n* (%)]
Adenoidectomy	10 (23.8)	8 (21.1)
Adenotonsillectomy	20 (47.6)	17 (44.7)
Adenoidectomy and grommet tube insertion	8 (19.1)	7 (18.4)
Adenotonsillectomy and grommet tube insertion	4 (9.5)	6 (15.8)
Total	42 (100)	38 (100)

Table 2 Sites of adenoid remnants

Site	Group A [*n* (%)]	Group B [*n* (%)]
Choana	12 (28.6)	11 (28.9)
Peritubaric region	17 (40.5)	14 (36.9)
Superior part of the nasopharynx	2 (4.7)	1 (2.6)
Multiple sites	11 (26.2)	12 (31.6)
Total	42 (100)	38 (100)

With the widespread use of microdebrider, we started to think what the microdebrider can add to our patients; hence, we conducted this prospective randomized study with the aim of comparing the powered instruments with traditional instruments for removing adenoid remnants after curettage adenoidectomy.

The issue of residual adenoid tissue after curettage adenoidectomy was raised by many authors [7,8,10,11]. Havas and Lowinger [7], Cannon *et al.* [8], and Pagella *et al.* [10] removed the residual adenoid using the microdebrider, whereas El-Badrawy and Abdel-Aziz [11] removed it using St Claire Thomson forceps.

The incidence of residual adenoid after curette adenoidectomy is variable; low figures such as 39% was reported by Havas and Lowinger [7], high figures such as 95% was reported by Cannon *et al.* [8], and Pagella *et al.* [10] reported an incidence of 50%. In our study, residual adenoid tissue was found in 82% of our patients.

Havas and Lowinger [7] found residual adenoid tissue occluding the posterior choana in 42 of the 51 patients (82.4%) and the remaining nine patients had residual tissue in the superior part of the nasopharynx, whereas in our study the peritubaric area was the main area of residual tissue (about 40%) followed by the multiple sites, the posterior choana, and finally the superior part of the nasopharynx. The distribution was similar in both groups.

The microdebrider was found to be faster than the curettage adenoidectomy in many studies [4,12–14]; we did not find any difference in the operative time between the two groups because in our study we compared the microdebrider with the Blakesley forceps in removing only the residual tissue, which was not big enough to demonstrate the relative fast action of the microdebrider.

The efficacy of the microdebrider was not the main concern of our study, as it was already reported in many studies [4–6,12–14].

We used the microdebrider transorally, as we felt it was very suitable for children especially with narrow nasal passages. The safety and precision of the transoral curved microdebrider for adenoidectomy was well documented by many authors [5,12,14].

We did not encounter any complication in our patients in both groups, especially bleeding, nasopharyngeal stenosis, and velopharyngeal insufficiency. In addition, no recurrence was reported in our study.

One limitation of our study is the short follow-up period; longer follow-up period is required for proper evaluation of adenoid recurrence.

Conclusion

On the basis of the results of this study, both powered instruments (microdebrider) and traditional instruments (Blakesley forceps) under endoscopic control were characterized by a high level of precision, complete resection of residual adenoid with a very low incidence of postoperative bleeding, and no recurrence. However, we feel that powered instruments did not add any advantage over the traditional ones, especially if the cost of the disposable blades is taken into consideration.

Acknowledgements

Conflicts of interest

None declared.

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