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ADENOIDECTOMY IN ADULTS: CONVENTIONAL CURRETAGE VERSUSENDOSCOPIC MICRODEBRIDER

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ABSTRACT

Adenoid hypertrophy in adults is a common entity nowadays because of chronic infection and allergy. Although, adenoidectomy is conventionally done by curettage method, a new technique of endoscopic adenoidectomy with microdebrider is gaining popularity. This study was conducted in ENT department of Sree Balaji Medical College and hospital, Chennai, India. A prospective randomized study was done. 48 patients more than 16 years of age requiring adenoidectomy for various causes with/ without tonsillectomy were included in the study and divided into 2 groups. Group A underwent adenoidectomy with curette and group B underwent endoscopic adenoidectomy with microdebrider. Parameters assessed were Operative time, intraoperative bleeding, damage to surrounding structures, residual adenoids at the end of the procedure and after 3 months. The study shows that after surgery, in group A, 11 patients (45.8%) had residual adenoids as compared to none in group B. The difference was found to be significant (p=0.0002). After 3 months, in group A, 14 patients (58.3%) had residual /recurrent adenoids whereas in group B, 2 patients (8.3%) had recurrent adenoids. The difference was found to be significant (p=0.0002). The injuries to surrounding structures were more in group A. The mean operative time and bleeding were more in group B ($p<0.05$). It is concluded that endoscopic adenoidectomy with microdebrider results in complete and accurate removal of adenoid tissue and is an effective alternative to curettage especially in adults.

KEYWORDS: **Endoscopic adenoidectomy, microdebrider, adenoidectomy in adults, adenoid hypertrophy, St. Clair Thompson curette.**

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INTRODUCTION

Adenoids, a condensation of lymphoid tissue in nasopharynx forms a part of Waldeyer's ring which was initially described in 1868 by Meyer.[1] Adenoids hypertrophy occurs physiologically in children between the age of 6-10 years, then atrophy at the age of 16 years.[2] Adenoid enlargement is considered uncommon in adults but various studies have shown that adenoid hypertrophy is increasing in adults due to various causes like chronic infection and allergy.[3] It can be a sequelae of persistence of childhood adenoids associated with chronic inflammation or reenlargement of adenoids due to infections or allergens. Adenoidectomy or removal of adenoids in adults is done for adenoid hypertrophy with nasal obstruction,snoring, mouth breathing, or bilateral chronic otitis media to remove the focus of infection.Adenoidectomy is conventionally being done by using St. Clair Thompson adenoid curette which being a blind procedure, is associated with complications like incomplete removal and injury to surrounding structures. In view of these shortcomings, newer methods have evolved using endoscopes for direct visualization and microdebriders for precise removal of adenoid tissues.

MATERIALS AND METHODS

The study was carried out in ENT department of Sree Balaji Medical College and Hospital, Chennai between November 2014 to October 2015. A prospective randomized study was designed.48 patients more than 16 years of age requiring adenoidectomy with or without tonsillectomy were included in the study. For the study, relevant institutional approval has been received. All patients in both the study groups were informed about the surgery and written consent were taken from the study participants/ individuals about the study and publications. The indications for adenoidectomy were Nose block, snoring, mouth breathing, recurrent upper respiratory tract infections, bilateral chronic suppurative otitis media. Patients having significant nasal septal deviations, polyps, or sinonasal masses were excluded from the study. Diagnostic nasal endoscopy was done in all patients. The grade of adenoid hypertrophy was assessed using the scale described by Clemens and Mcmurray where Grade I has adenoid tissue filling 1:3 the vertical height of the choana, Grade II up to 2:3 , Grade III from 2:3 to nearly all but not complete filling of the choana and Grade IV with complete channel obstruction .[4]The cases were randomly divided into 2 groups: group A consisted of patients undergoing adenoidectomy with curette while group B of patients undergoing endoscopic adenoidectomy with microdebrider.

OPERATIVE TECHNIQUE

ADENOIDECTOMY WITH CURETTE

Under general anesthesia, oro-tracheal intubation was done and patient was put in Rose position.Boyle-Davis mouth gag was applied and digital palpation of adenoid mass was done. Using St Clair Thompson adenoid curette, adenoidectomy was done. Hemostasis is achieved by putting gauze pack in nasopharynx.

ENDOSCOPIC ADENOIDECTOMY WITH MICRODEBRIDER

Under general anesthesia with oro-tracheal intubation, patient is placed in supine position with head end up like endoscopic sinus surgeries. Both nasal cavities are packed with 4% xylocaine with adrenaline to constrict the nasal mucosa. 4mm 0degree endoscope is introduced in one nasal cavity to visualize the adenoid tissue and straight microdebrider in other nasal cavity. In some cases of septal deviation, angled microdebrider is introduced orally. Under endoscopic vision, precise removal of adenoid tissue is done with microdebrider. A gauze pack is inserted in nasopharynx for hemostasis. Suction cautery is used if bleeding is not controlled with packing. The intraoperative parameters studied were operative time, bleeding, completeness of adenoid removal, damage to surrounding structures. Postoperative parameters included postoperative pain and recovery time. All patients were followed up and at the end of 3 months; diagnostic nasal endoscopy was done to assess completeness of adenoid removal and any other post operative complications. Patients were studied for symptomatic relief of symptoms. Operative time was the time taken for the procedure from taking the patient from anesthetist to hemostasis. In cases of combined tonsillectomy, the time taken for tonsillectomy and its hemostasis was not considered. Bleeding was measured by number of three square inches gauze pieces used for hemostasis (one gauze is approximately 10 ml) and blood in suction chamber minus the irrigation fluid. At the end of the procedure, nasal endoscopy was done to see the completeness of adenoidectomy in both groups. Complete removal is considered if the remaining adenoid tissue is less than 20%. More than 20% residual adenoid tissue is considered only partial removal. Damage to the surrounding structures e.g. Eustachian tube opening; nasal mucosa etc. was also assessed. Pain in postoperative period was assessed only for patients undergoing adenoidectomy alone. Pain was assessed by universal pain assessment tool (0-no pain and 10-worst pain possible). Recovery time was indicated by the number of days patients took to return to normal activity. Patients were assessed at the end of 3 months by nasal endoscopy to look for any residual or recurrent enlargement of adenoid tissue and any damage to surrounding areas. History was taken regarding symptomatic relief of preoperative symptoms. The data was analyzed by unpaired t-test and chi square test. Values are considered statistically significant if P value< 0.05.

RESULTS

Forty eight patients participated in our study (24 in each group A and B) between 16 and 42 years of age with mean age of 27 years. In group A, 16 patients (66.6%) were males and 8 patients (33.3%) were females while in group B, 12 patients (50%) were males and 12 patients 50%) were females. The commonest indications for adenoidectomy were nasal obstruction followed by snoring, mouth breathing, and recurrent

upper respiratory tract infections. In group A , 14 patients (58.3%) underwent only adenoidectomy and 10 patients (41.6%) underwent tonsillectomy with adenoidectomy by conventional curettage method. In group B, 16 patients (66.6%) underwent only adenoidectomy and 8 patients (33.3%) underwent tonsillectomy with adenoidectomy endoscopically using microdebrider. Tonsillectomy was done by dissection and snare method in all indicated patients. In group A, operative time in maximum (20) patients was in range of 11-20 minutes (Table 1). The mean operative time was 17 minutes (range 15- 25 minutes). In group B, the operative time taken in maximum (12) patients was in range of 31-40 minutes. The mean operative time was 42 minutes (range 30- 55 minutes). The difference in the means* of operative time was found to be statistically significant ($p < 0.05$).

Table I
Operative Time

Time taken (in minutes)	Group A#,@ (No. of patients)	Group B##,@@ (No. of patients)
0-10	-	-
11-20	20 (83.3%)	-
21-30	4 (16.6%)	6 (25%)
31-40	-	4 (16.6%)
41-50	-	12 (50%)
51-60	-	2 (8.3%)

 # In group A, the operative time taken in maximum patients (20) was in range of 11-20 minutes.
In group B, the operative time taken in maximum patients(12) was in range of 41-50 minutes.
@ Mean operative time in group A was 17 minutes.
@@ Mean operative time in group B was 42 minutes.
** The difference in the means of operative time of 2 groups was found to be significant (p= 0.004).*

The per operative blood loss in maximum (18) patients was in range of 11-20 ml in group A (Table 2) and the average blood loss was 20ml (range 20-40 ml). In group B , per operative blood loss in maximum (12) patients was in range of 20- 30 ml and the average blood loss was 38ml (range 30 -55 ml) .The difference in means* of blood loss in 2 groups was statistically significant.

Table 2
Operative blood loss

Blood loss (in ml)	Group A#,@ (No. of patients)	Group B##,@@ (No. of patients)
0-10	-	-
11-20	18 (75%)	-
21-30	2(8.3%)	12 (50%0
31-40	4(16.6%)	6 (25%)
41-50	-	4(16.6%)
51-60	-	2(8.3%)

 # In group A, the blood loss in maximum patients (18) was in range of 11-20 ml.
In group B, the blood loss in maximum patients (12) was in range of 20-30 ml.
@ The mean blood loss in group A was 20ml.
@@ The mean blood loss in group B was 38ml.
**The difference in the means of blood loss in 2 groups was found to be significant (p=0.039).*

At the end of the procedure, nasal endoscopy was done to inspect any damage to the surrounding structures and residual adenoids. In group A, 2 patients had injury over torus tubaris and 3 patients had abraded posterior pharyngeal wall (Table 3). In group B, no injury was seen in nasopharynx but nasal mucosal was injured in 3 patients.

Table 3
Damage to surrounding structures*

Structures injured (after surgery)	Group A# (No. of patients)	Group B## (No. of patients)
Torus tubaris	2 (8.3%)	-
Posterior pharyngeal wall	3 (12.5%)	-
Nasal mucosa	-	3 (12.5%)

**Damage to the surrounding structures at the end of the procedure.*
#In group A, surrounding structures in nasopharynx (torus tubaris, posterior pharyngeal wall) were damaged.
##In group B, surrounding structures in nasopharynx were not damaged. Injury to nasal mucosa was seen in 3 patients.

After surgery, on endoscopic examination, residual adenoids were seen in 11 patients (45.8%) in group A whereas in group B, no residual adenoids were seen (Table 4). The difference was found to be significant (p=0.0002). After 3 months, repeat nasal endoscopy showed residual or recurrent adenoids in 14 patients(58.3%) in group A whereas in group B, only 2 patients (8.3%) had recurrent adenoid hypertrophy(p=0.0002).

Table 4
Residual adenoids

Residual adenoids	Group A	Group B
After surgery[#]	11 (45.8%)	0
After 3 months[##]	14 (58.3%)	2 (8.3%)

[#]After surgery, In group A, 11 patients had residual adenoids. In group B, no patient had residual adenoids. Using Chi-square test, x^2=14.26 (significant at 1 degree of freedom)(p<0.05)

[##]After 3 months, In group A, 14 patients had residual adenoids. In group B, 2 patients had recurrent adenoids. Using Chi-square test,x^2=13.5 (significant at 1 degree of freedom)(p,0.05)

Post operatively, patients were evaluated for pain only in cases where isolated adenoidectomy was done. Pain score in group A was 3.63 and in group B was 3.06, which was insignificant statistically. The mean recovery period was 3.5 days in group A and 3.4 days in group B. No major complication was reported in both groups in postoperative period. 15 patients (62.5%) reported relief of symptoms in group A while 22 patients (91.6%) reported relief in group B (p=0.0163).

DISCUSSION

Adenoids provide local immunity against bacteria, viruses and toxins. Although adenoid tissue undergoes regression toward the adolescent period [5], acute and chronic inflammation can cause progressive enlargement of adenoids. Regressed adenoid tissue may re-proliferate in response to infections and irritants[6]. In a study by Yaldrim et al [2], histopathological study was done for both adults and children, and it was found that, adult adenoids showed chronic inflammatory cell infiltration and secondary changes (eg. Squamous metaplasia) whereas children's adenoids showed numerous lymph follicles with prominent germinal centers. It showed that adenoid hypertrophy in adults represents a long standing inflammatory process. Adenoid enlargement for a long time can result in serous otitis media, obstructive sleep apnoea causing pulmonary hypertension, right sided cardiomegaly and poor mental alertness. For inflammatory conditions causing adenoid enlargement, antibiotics and steroids (oral or topical sprays) are advised. For symptomatic and chronic adenoid hypertrophy causing nasal obstruction and sleep apnea, surgery is indicated. Adenoidectomy involves removal of enlarged adenoid tissue from nasopharynx. An adenoidectomy can be done by variety of instruments, such as adenoid curette, an adenotome, an adenoid punch, a suction cautery, Blakesley forceps, microdebriders.[7,8] Traditionally, Adenoid curette is most commonly used for adenoidectomy but it does not remove the adenoid tissue completely .[7,9] In 1992, Becker at al reported endoscopic assisted adenoidectomy by using Blakesley forceps piece by piece.[10] Cannon et al in 1999 described " Endoscopic assisted adenoidectomy (EAA)". According to this technique, at the end of a conventional adenoidectomy, both the nasal cavities and the nasopharynx were inspected with a 4-mm 0degree rigid telescope. Adenoid remnants in the nasopharynx were removed under direct visualization by pediatric straight forceps or pituitary forceps.[11] In this study, we have compared the conventional curettage method with endoscopic microdebrider method in adults. The operative time was significantly more with endoscope. This time included setting of instruments also. The blood loss with microdebrider was significantly more as compared to curettage method. The raw surface during surgery is exposed for a longer duration resulting in more blood loss but the bleeding can be more efficiently managed using suction or bipolar cautery under vision by endoscope. The maximum blood loss reported was 55ml, which in adults if compared with total body fluid is a tolerable loss and can be easily compensated. As adenoidectomy with curette is a blind procedure, the surrounding structures were damaged which resulted in scarring at the nasopharyngeal end of Eustachian tube after 3 months. However no injury to surrounding tissues was seen in group B as microdebrider was used under endoscopic view and thus injuries were avoided. Most techniques of adenoidectomy concentrate on removing predominantly the midline mass of adenoid tissue.[12]Lateral aggressive curettage is avoided to prevent damage to medial end of Eustachian tube. In group B, under endoscopic view, careful tissue removal from central and lateral parts was done avoiding damage to the surrounding structures. It resulted in almost complete adenoid removal. The persistence of symptoms in almost 50% of patients after 3 months can be attributed to incomplete removal by blind curettage method where as more than 90% patients reported relief of symptoms after 3 months. No major complications are seen in the study but the conventional curettage method can be associated with serious complications which are difficult to manage. The blood loss and operative time although significantly more in study is overweighed by the advantages. The novelty of this study is that the study group includes adults only (>16 years). In adults, adenoid hypertrophy should be treated as a separate entity because in most of the cases, it is pathological having an underlying cause. As it can be easily missed on routine examination, the possibility of adenoid hypertrophy should always be kept in mind in cases of obstructive sleep apnoea syndrome, nose block, recurrent upper respiratory tract infections, chronic sinusitis and chronic suppurative otitis media.

Endoscopic removal with microdebrider allows complete removal of adenoid tissue especially in adults as both 4mm 0degree endoscope and straight microdebrider can be easily manipulated through one or both nostrils and no added instrumentation is required. Endoscopes and microdebriders are becoming basic tools for ENT surgeon although it requires training. The difficult inaccessible areas like nasopharynx can be directly visualized and operated upon with minimal complication.

CONCLUSION

Endoscopic adenoidectomy with microdebrider is an effective alternative to curettage especially in adults as endoscope and microdebrider can be negotiated through nasal cavities or oral cavity. This method results in complete removal of adenoid tissue and less complications.

CONFLICTS OF INTREST

Conflicts of interest declared none.

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