

Comparative Study for Efficacy and Outcome of Adenoidectomy According to the Surgical Method: A Prospective Study

Pradeep Kumar Balia¹, Pawan Kumar Khatri², Mamta Mehra³

¹Associate Professor, Department of Oto-Rhinolaryngology, American International Institute of Medical Sciences, Udaipur

²Principal Specialist, Department of Oto-Rhinolaryngology, M D M Hospital, Dr SN Medical College, Jodhpur

³Principal Specialist, Department of Oto-Rhinolaryngology, Partap Nagar District Hospital, Dr SN Medical College, Jodhpur

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Corresponding author: Dr. Pradeep Kumar Balia

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Abstract

Background: The operative procedure of choice for adenoidectomy should attain a safe removal criterion, which includes less operative time, minimum blood loss, less postoperative morbidity, no or minimum recurrence. Hence, there was need to development of newer technologies and operative procedures to improve the post-operative outcome.

Material & Methods: The present cross sectional, prospective study was carried out at department of ENT, at our tertiary care hospital. The study duration was of one year from January 2020 to December 2020. A sample size of 40 was calculated at 90% confidence interval at 10% acceptable margin of error by epi info software version 7.3.

Results: In the present study the operative time in Conventional adenoidectomy and Endoscopic –assisted adenoidectomy was 22.01 minutes and 39.12 minutes respectively. This difference was statistically significant (P value < 0.05). The post-operative fiber-optic nasal endoscopy done for look at the residual adenoid tissues displayed that resection was very nearly complete in Group B whereas 4 patients (20%) of Group A had residual adenoid tissues. This difference was statistically significant (P value < 0.05). The fiber-optic nasal endoscope also assessed the associated trauma during procedure, in Group A 3 patients (15%) had trauma, all are minor and associated with the uvula and posterior pharyngeal wall whereas in Group B trauma shown in 4 patients (20%), out of then 3 patients had minor septal mucosal injuries while 1 patient had major injury and required anterior nasal packing. Velopharyngeal dysfunction resulting in hyper nasal speech without nasal regurgitation reported in 2 patients (10%) of Group A and 3 patients (15%) of Group B, all were temporary resolved spontaneously within a period of one week. However, we did not find any statistically significant difference in these (P value> 0.05).

Conclusion: We concluded from the present study that Endoscopic assisted adenoidectomy method is safe, effective and accurate than curette adenoidectomy. We found complete removal of remnants in Endoscopic assisted adenoidectomy but also had several demerits including need of specialized equipment and experience and more operating time.

Keywords: Adenoidectomy, Endoscopic assisted adenoidectomy, Conventional curette adenoidectomy.

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Introduction

The adenoids, are nasopharyngeal lymphoid tissues constituting the Waldeyer's ring, firstly explained in 1868 by Meyer [1]. In long standing cases, they may lead to long-term upper airway obstruction which include learning difficulties, failure to thrive, behavioral changes, pulmonary hypertension and even cardiac hypertrophy in severe cases [2]. Adenoidectomy is among one of the commonest operation performed all over the world [3]. Adenoidectomy is either operated alone or combined operative procedures with tonsillectomy and myringotomy and it has been subject for many clinical research studies, to enhance quality, improve outcome and to reduce post-operative complications [4]. The hypertrophy in there lymphoid tissues result in chronic nasal obstruction, recurrent otitis media, recurrent sinusitis, apneic episodes, rhinorrhea, snoring, mouth breathing while sleeping, feeding difficulties, craniofacial deformities, and hypo nasal voice [5].

The operative procedure of choice for adenoidectomy should attain a safe removal criteria, which includes less operative time, minimum blood loss, less postoperative morbidity, no or minimum recurrence [6]. Hence, there was need to development of newer technologies and operative procedures to improve the post-operative outcome. Numerous methods had been developed such as monopolar and bipolar diathermy, laser, microdebrider, radiofrequency, coblation and endoscopic assisted technique. Most commonly used conventional curette adenoidectomy (CCA) was first explain in 1885 [7]. There are many drawbacks of this procedure which includes more bleeding, inadequate success, Eustachian tube or nasopharyngeal stenosis [8].

Reduction in these parameters concludes the better operative procedure of choice. Endoscopic assisted adenoidectomy (EAA) had been popularized in recent

decade and it is proposed to enabled the complete adenoidectomy under direct visualization [5]. All the above procedures were discovered for aiming to decrease the operative time, blood loss and morbidity. Post adenoidectomy morbidity consists of postoperative pain, postoperative infection, primary or reactionary hemorrhage and secondary or delayed hemorrhage [9]. Hence, the present study was conducted to compare the advantages and disadvantages of the Endoscopic assisted adenoidectomy with the conventional cold curettage technique in the operation of adenoidectomy at our tertiary care hospital.

Materials & Methods

The present cross sectional, prospective study was carried out at department of ENT, at our tertiary care hospital. The study duration was of one year from January 2020 to December 2020. A sample size of 40 was calculated at 90% confidence interval at 10% acceptable margin of error by epi info software version 7.3. In this prospective study patients of age of both the genders were enrolled for the study. Patients aged between the age of 4-18 years and requiring adenoidectomy for variable symptoms were enrolled from outdoor department and from ward by simple random sampling. Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. Strict confidentiality was maintained with patient identity and data and not revealed, at any point of time.

All study participants underwent a preoperative assessment which includes clinical examination for nasal patency, ear examination, fiber-optic nasal endoscopy and radiography of post-nasal space. The size measurement of adenoids was assessed using Clemens McMurray scale (2). All the patients were randomized into

two groups, each of twenty cases. Group A undergone curettage technique and Group B undergone endoscopic assisted adenoidectomy. Data were entered in the MS office 2010 spread sheet and Epi Info v7. Data analysis was carried out using SPSS v22. Qualitative data was expressed as percentage (%) and Pearson's chi square test was used to find out statistical differences between the study groups and sensitivity, specificity, positive predictive value and negative predictive value were calculated. If the expected cell count was < 5 in more than 20% of the cells then Fisher's exact test was used. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05 and highly significant if p value less than 0.01.

Results

Table 1: Distribution of study participants according to symptoms.

Symptoms	Patients	Percentage
Nasal obstruction	10	25%
Sleep disturbance	19	47.5%
Otological symptoms	6	15%
Discharge	2	5%
Epistaxis	0	0

In the present study the operative time in Conventional adenoidectomy and Endoscopic –assisted adenoidectomy was 22.01 minutes and 39.12 minutes respectively. This difference was statistically significant (P value < 0.05). The post-operative fiber-optic nasal endoscopy done for look at the residual adenoid tissues displayed that resection was very nearly complete in Group B whereas 4 patients (20%) of Group A had residual adenoid tissues. This difference was statistically significant (P value < 0.05). The fiber-optic nasal endoscope also assessed the associated trauma during procedure, in Group A 3 patients (15%) had trauma, all are minor and associated with the uvula and posterior pharyngeal wall whereas in Group B trauma shown in 4 patients (20%), out of then 3 patients had minor septal mucosal injuries while 1

In present study a total of forty subjects aged between the age of 4-18 years and requiring adenoidectomy for variable symptoms were enrolled from outdoor department and from ward by simple random sampling and divided into two groups of twenty individuals each. The mean age of patients was 9.25 ± 2.4 years in Group A and 9.89 ± 2.1 years in Group B. Among all of the 40 patients sleep disturbance is found most commonly in 19 patients (47.5%) which is followed by nasal obstruction, present in 10 patients (25%) which is followed by otological symptoms, present in 6 patients (15%) and lastly 2 patients (5%) presented with discharge. History or presence of epistaxis was not recorded in any of the patients in both groups. (table 1)

patient had major injury and required anterior nasal packing. Velopharyngeal dysfunction resulting in hyper nasal speech without nasal regurgitation reported in 2 patients (10%) of Group A and 3 patients (15%) of Group B, all were temporary resolved spontaneously within a period of one week. However, we did not find any statistically significant difference in these (P value> 0.05).

Infection occurred in 2 patient (10%) of each Groups. Retained swab complicated 1 patient (5%) was seen in Group A but none in Group B. Symptoms resolved in all the cases of Group B whereas two cases in Group A (10%) continued to had symptoms. However, we did not find any statistically significant difference in these (P value> 0.05). The overall complication

rate reported in Group A was 50% whereas in Group B it was 40%. (Table 2)

Table 2: Comparison of the Conventional and Endoscopic –assisted adenoidectomy.

parameter	Conventional adenoidectomy	Endoscopic –assisted adenoidectomy	P value
Operating time	22.01 minutes	39.12 minutes	<.001
Remnant	20%	None	<.05
Associated trauma	15%	20%	>.05
Velopharyngeal dysfunction	10%	15%	>.05
Infection	10%	10%	>.05
Retained swab	5%	None	>.05

Discussion

The present study was an attempt to compare conventional curette adenoidectomy with endoscopic adenoidectomy. The groups were matched before study. The indications of adenoidectomy were variable but the main indication was sleep apnea in both groups, accounting for 19 cases (47.5 %). Following the accurate steps of adenoidectomy, it was taken only 5-10 minutes, but the true estimate of operating time includes, preparations, setting of instruments and packing and lastly securing hemostasis. The prolongation of operating time about 17 minutes in the endoscopic assisted method is because of more setting time, endoscopic visualization and step by step removal of adenoid tissue. This study reported a gradual decrease in operating time from first to last case as experience improved. Our findings are in contrast to study conducted by Stanislaw et al on 90 patients and power-assisted adenoidectomy and adenoid curette adenoidectomy and found similar results as present study [10]. Another study conducted by Feng Y. et al on 34 patients to compare the outcomes of powered-assisted adenoidectomy with adenoid curette adenoidectomy reported powered adenoidectomy had shorter surgical time, and less blood loss than curette adenoidectomy [11].

In present study a total of forty subjects aged between the age of 4-18 years and

requiring adenoidectomy for variable symptoms were enrolled from outdoor department and from ward by simple random sampling and divided into two groups of twenty individuals each. The mean age of patients was 9.25 ± 2.4 years in Group A and 9.89 ± 2.1 years in Group B. Among all of the 40 patients sleep disturbance is found most commonly in 19 patients (47.5%) which is followed by nasal obstruction, present in 10 patients (25%) which is followed by otological symptoms, present in 6 patients (15%) and lastly 2 patients (5%) presented with discharge. History or presence of epistaxis was not recorded in any of the patients in both groups. A similar study conducted by Rakeh Datta on 60 patients aimed to evaluate endoscopic powered adenoidectomy as an alternative to curette adenoidectomy and reported that endoscopic technique was safe and effective with less collateral damage and less blood loss but it takes more time [12].

In the present study the operative time in Conventional adenoidectomy and Endoscopic –assisted adenoidectomy was 22.01 minutes and 39.12 minutes respectively. This difference was statistically significant (P value < 0.05). The post-operative fiber-optic nasal endoscopy done for look at the residual adenoid tissues displayed that resection was very nearly complete in Group B whereas 4 patients (20%) of Group A had residual adenoid tissues. This difference

was statistically significant (P value < 0.05). The fiber-optic nasal endoscope also assessed the associated trauma during procedure, in Group A 3 patients (15%) had trauma, all are minor and associated with the uvula and posterior pharyngeal wall whereas in Group B trauma shown in 4 patients (20%), out of then 3 patients had minor septal mucosal injuries while 1 patient had major injury and required anterior nasal packing. Similarly, 4 patients in present study were underwent conventional adenoidectomy and had remnants and out of them two were symptomatic during postoperative follow up. The criterion used for adenoid tissue which cause nasal obstruction was the tissue consisting more than 40% area of the nasopharynx [13].

Velopharyngeal dysfunction resulting in hyper nasal speech without nasal regurgitation reported in 2 patients (10%) of Group A and 3 patients (15%) of Group B, all were temporary resolved spontaneously within a period of one week. However, we did not find any statistically significant difference in these (P value > 0.05). A study conducted by Koltai PJ et al shows similar result as present study and reported that during endoscopic adenoidectomy, the nasopharynx was seen clearly and remnants of the adenoid tissue were removed under direct vision. It concluded that endoscopic technique was more accurate [14].

Infection occurred in 2 patient (10%) of each Groups. Retained swab complicated 1 patient (5%) was seen in Group A but none in Group B. Symptoms resolved in all the cases of Group B whereas two cases in Group A (10%) continued to had symptoms. However, we did not find any statistically significant difference in these (P value > 0.05). The overall complication rate reported in Group A was 50% whereas in Group B it was 40% [15]. The merit of endoscopic method includes its role in patients with cleft palate and other

craniofacial anomalies because it decreases risk of velopharyngeal dysfunction. In present study there were 5 adult patients and all underwent endoscopic adenoidectomy because adenoid tissue in adults have histological differences from that seen in children, it is being reactive rather than inflammatory and adenoidectomy by endoscopic method is safe and reliable [16].

Conclusion

We concluded from the present study that Endoscopic assisted adenoidectomy method is safe, effective and accurate than curette adenoidectomy. We found complete removal of remnants in Endoscopic assisted adenoidectomy but also had several demerits including need of specialized equipment and experience and more operating time. The endoscopic assisted adenoidectomy was better method for the choanal adenoids which extending into the nasal cavity and for recurrent cases along with cases of craniofacial anomalies and sub-mucosal cleft palate which needs partial resection.

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