IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 11 Ser.9 (November. 2020), PP 57-60
www.iosrjournals.org

Comparative Analysis of Conventional Curettage Adenoidectomy with Endoscopic Microdebrider Assisted Adenoidectomy

Dr. Sanchita Singh[1], Dr. Beni Prasad[2]
[1] *(PG Resident Department of Otorhinolaryngology NIMS University, Jaipur, Rajasthan)*
[2] *(Professor & Head Department Of Otorhinolaryngology NIMS University, Jaipur, Rajasthan)*

Abstract: *To evaluate the efficacy of conventional adenoidectomy with endoscopic microdebrider adenoidectomy and collect intra operative and post operative morbidity data regarding the same.* ***METHOD:*** *A Prospective randomised study conducted on 120 selected cases between age group 5-15yrs with adenoid hypertrophy, were divided into two groups of 60 patients each.Group A patients underwent conventional adenoidectomy surgery and Group B patients underwent endoscopic microdebrider adenoidectomy surgery. Various parameters were taken into consideration like operating time, intra-op blood loss, residual adenoid tissue, collateral tissue damage, post-op pain and recovery time.* ***RESULTS:*** *In this study mean operating time was 24.66 minutes for the group A (range: 17 to 53 minutes) and 34.13 minutes for group B (range: 23 to 65 minutes, p=0.0001). Blood loss was around 27.33 ml (range: 10 to 60 ml) in group A and 19.40 ml (range: 10 to 50 ml) in group B with p value = 0.0135. Post operative collateral damage was found in Group A patients (9.99%) and no cases in Group B. Mean Post operative pain score in Group A was 3.7 and in Group B was 2.4. Post operative mean recovery time was 4.9 days in Group A and 3.7 days in Group B. Adenoidectomy by curette group showed more residual nasopharyngeal adenoid tissue than endoscopic microdebrider assisted adenoidectomy and the difference between two methods was statistically significant .*
CONCLUSIONS: *Endoscopic microdebrider assisted adenoidectomy is a safe and more effective with less post operative pain and recovery time compared to curettage method, with very minimal chances of injury to the surrounding structures during the procedure.*

Date of Submission: 10-11-2020 Date of Acceptance: 25-11-2020

I. Introduction

The adenoid is a mass of lymphatic tissue located behind the nasal cavity, in the roof of the nasopharynx, also known as a pharyngeal tonsil or nasopharyngeal tonsil. The adenoid is part of the Waldeyer's ring of lymphoid tissue which also includes the palatine tonsils, the lingual tonsils and the tubal tonsils. Adenoid tissue growth continues rapidly during infancy and plateaus between 2 and 14 years of age[1] and regresses after 15 yrs of age in most children[1]. It is covered by pseudostratified ciliated columnar epithelium that is plicated to form numerous surface folds. The adenoid produce B cells, which gives rise to IgG and IgA plasma cells. It plays important role in development of "immunological memory"[2] in early childhood. Adenoid receives arterial supply from ascending palatine branch of facial artery,ascending pharyngeal branch of external carotid artery, pharyngeal branch of third part of maxillary artery, thyrocervical trunk[3].Venous drainage is through the pharyngeal plexus draining into the internal juglar and facial veins. Lymphatic drainage is to the upper jugular nodes, retropharyngeal and parapharyngeal nodes. Sensory supply is from sensory branches of glossopharyngeal and vagus nerve[3.] Patients with adenoid hypertrophy develop upper airway congestion and narrowing , leading to nasal obstruction and mouth breathing that leads to craniofacial developmental anomaly which is called as adenoid facies (dull looking face, high arch palate, pinched nostril, overcrowding of teeth). Adenoid hypertrophy confirmed by radiograph of nasopharynx and nasal endoscopy with zero degree endoscope.

Table 1 : The soft tissue shadow seen in the X- ray was quantified and the size of the adenoids in relation to the size of nasopharynx were graded by Cohen and Konak(1985)[4.] X ray nasopharynx grading of adenoid hypertrophy based on Adeno-nasaopharynx ratio (A/N Ratio)–

GRADE	ADENOID(%)	HYPERTROPHY
Grade I	0-50%	Mild
Grade II	50-75%	Moderate
Grade III	75-100%	Severe

The grade of adenoid hypertrophy using the scale described by Clemens and McMurray(1998)[5] based on nasal endoscopy, where –

- Grade I has adenoid tissue filling 1:3 the vertical height of the choana .
- Grade II up to 2:3 the vertical height of the choana .
- Grade III from 2:3 to nearly all but not complete filling of the choana.
- Grade IV with complete channel obstruction.

Table 2 : Grading for anatomical structures in contact with adenoid tissue was given by Parikh et al. (2006)[6] based on nasal endoscopy-

GRADES	Structures in contact with adenoid tissue
I	None
II	Torus tubarius
III	Torus tubarius and vomer
IV	Torus tubarius ,vomer and soft palate

Adenoidectomy is one of the most common worldwide performed otolaryngological procedures in children[7]. The widely used conventional adenoidectomy method was first described and performed by the Danish physician Wilhelm Meyer (1824-1895). This is blind procedure and is described since 1885. Canon et al popularized endoscopic assisted adenoidectomy (EAA) by calling it "A natural progression of endoscopic technology to allow a more complete adenoidectomy"[8.] The conventional method is still the most commonly followed all over the world[9.]

II. Method

A comparative prospective study was conducted on 120 patients of age group 5 to 15 years with adenoid hypertrophy. Diagnosis was made on the basis of X- ray soft tissue nasopharynx and Diagnostic Nasal Endoscopy. All the patients were randomized in two groups of 60 each. Group A patients underwent conventional curettage adenoidectomy (CA), using St. Clair Thompson adenoid curette with guard and Group B patients underwent endoscope assisted microdebrider adenoidectomy (EMA),using a 0 degree 2.7 mm rigid nasal endoscope (4 mm for older children).The endoscope is passed through the nose and the microdebrider with irrigating blades of 45 degree angle through the oral cavity . Various intra-operative and post-operative parameters were taken into consideration for comparing the two methods, and they are – intra operative time, intra-operative blood loss, residual adenoid tissue, post operative pain and recovery time. All the data obtained is compared in each groups and the mean in the two groups is statistically analyzed using, chi square tests and paired t tests. For significance, the p value <0.05 was considered statistically significant one. All patients including their parents are counseled about the nature of study and an informed consent is taken.

III. Result

Two third patients were males (66.66%) and remaining one third were females (33.33%) . Maximum patients were between age group of 5 – 8 years (55%) of age. Patients presented with multiple symptoms, all the 120 patients had mouth breathing and second most common symptom was nasal obstruction in 64 cases (53.33%). Others were pain in throat in 50 cases (41.66%), hearing loss in 32 cases (26.66%), snoring in 19 cases (15%) and hyponasal voice in 13 cases (10%). Every patient had one or more of these above mentioned complaints. The time taken for the procedure in Group A (CA) ranges from 17 to 53 mins with a mean time of 24.66 minutes and in Group B (EMA) the time taken ranges from 23 to 65 mins with a mean time of 34.13 mins. The difference in the time taken by the two procedures was found to be statistically significant.(p value = 0.0001). The mean intra operative blood loss in Group A (CA) was 27.33 ml and in Group B (EMA) was 19.40 ml and the difference was significant ,(p value= 0.0135). To look for residual adenoid tissue, resection was 0-10% in 93.33% cases in Group B (EMA) . In 20% cases of Group A (CA) had more than 20 percent residual adenoid tissue. In 18 cases (30%) around 10-20 percent adenoid tissue was remnant. In Group B, 4 cases (6.66%) had between 10-20 percent residual adenoid tissue and no case had more than 20 percent residual tissue. The difference was significant (p value=0.000). There were 4 cases (6.6%) in Group A where the adenoid curette, abraded the normal healthy mucosa from the post nasal septal wall and in 2 cases (3.33%) the mucosa over torus tubaris was found to be injured. In Group B, there was significant injury or damage to the nasopharynx, (p value = 0.000). The post operative pain score in Group A(CA) , ranges from 2 to 5 with a mean value of 3.7 and in Group B (EMA) ,the range was from 1 to 4 with a mean value of 2.4 . The difference in pain score in the two methods was found to be significant (p value=0.0001). The post operative recovery time in Group A (CA) cases ranges from 3 to 7 days with a mean value of 4.93 days and in Group B(EMA) the range was from 2 to 6 days with a mean value of 3.06 days. The difference in the post operative recovery time in the two methods was found to be significant. (p value =0.0001).

Table 3: Result of outcome of the two methods of adenoidectomy are :

Parameter	Conventional adenoidectomy by curettage(CA)	Endoscopic microdebrider adenoidectomy(EMA)	Remarks
Accuracy	+	+++	
Primary bleeding (ml)	27.33	19.40	p<0.05
Collateral damage	++	-	p<0.05
Completeness in removal	30%	93.33%	p<0.05
Post-op pain score	3.7	2.4	p<0.05
Recovery time (days)	4.93	3.7	p<0.05
Intraop time (mins)	24.66	34.13	p>0.05

IV. Discussion

The surgical techniques used, have considerable influence on the intra operative bleeding, completeness of the resection, collateral damage, post operative pain and the recovery time. Conventional method of adenoidectomy is done with the help of adenoid curette. The limitation of this method is , that it is a blind technique that may lacerate the choanae, torus tubaris and the nasopharyngeal mucosa or may leave behind adenoid tissue, particularly around the Eustachian tube orifices. We prospectively studied patients, who underwent endoscope assisted microdebrider adenoidectomy and reviewed its merits and demerits and compared it to the conventional curettage adenoidectomy method, on the basis of various parameters. In our study the increase in operative time in the EMA technique was probably due to extra set-up time for the instruments, pre and post op endoscopic visualization, bit by bit complete removal of the adenoid tissue and the time consumed in achieving haemostasis. Also the overall operative time was more because endoscopy was performed pre-operatively and post-operatively for the purpose of the study. Col. R Datta et al[10] and Renuka A. Bradoo et[11] reported higher intraoperative time following endoscopic microdebrider adenoidectomy which was similar to our study. Likewise, in a study by C. Ravishankar et al[12] EMA took more time than the CA adenoidectomy methods. Intra-operative blood loss was found to be less in endoscopic microdebrider adenoidectomy(19.40ml) when compared with the conventional method (27.33ml). Residual adenoid tissue and injury to the surrounding structures was more in CA method, that lead to more bleeding. Stanislaw et al[13] in their study reported, significant reduction in blood loss after endoscope assisted microdebrider adenoidectomy than with curettage method which was similar to our study. The extent of resection following conventional adenoidectomy is usually incomplete. The result shows that resection is nearly complete in 93.33% cases of group B (EMA). This was comparable to the study by Datta et al[10] and Singh S et al[14] who have reported excellent completeness and adequate depth of resection by endoscopic microdebrider adenoidectomy, similar to our study. Our result was also supported by a study done by C. Ravishankar et al[12], where only 20% residual tissue was left behind by EMA technique. The two methods differed significantly in the amount of adenoid tissue left behind. Following adenoidectomy there is a risk of trauma to Eustachian tube opening which leads to subsequent scarring an Eustachian tube dysfunction. In our study the torus tubaris region was injured in 6.6% cases and choanal mucosa was injured in 10% cases following curettage adenoidectomy. There was no significant collateral damage following endoscopic micrdebrider adenoidectomy. C. Ravishakar et al[12] and Col. R Datta et al[10] reported that, precision of the endoscopic microdebrider adenoidectomy method, prevents damage to the adjacent vital structures than CA which supported our study. For evaluating postoperative pain score a six point faces pain scale for grading the degree of pain is used. The post-operative pain in endoscope assisted microdebrider adenoidectomy group (2.4) was found less than the conventional method (3.7) .Col. R Datta et al[10] and Singh S et al[14] also reported similar results that supported our study. Patient's recovery after surgery was measured in terms of time required to return to his/her normal diet and activities. We adopted a subjective method and let the parents or patients decide when he/she felt normal by asking the questions about "returning to normal routine activities" after the surgery in post operative follow up. The mean recovery period in the EMA method was found to be shorter (3.7days) than conventional adenoidectomy(4.9days) in our study. Dutta et al[10] and Singh S et al[14] reported the recovery time after CA method was more than EMA method which was in favour of our study ,these differences were statistically significant and results were in support of our findings.

V. Conclusion

An ideal adenoidectomy should attain direct visualization, ease of procedure, minimal blood loss, suitable cost, cure symptoms and complete adenoid resection. Using the endoscopic microdebrider technique , the adenoid tissue removal was complete and more often to the appropriate depth, also the amount of residual tissue has been reported to be high in curettage method [15]. To summarize, the endoscopic microdebrider adenoidectomy method is found to be a safe tool for the adenoidectomy surgery, by scoring extra points in terms of less residual tissue, controlled bleeding, accurate tissue removal, minimum collateral damage, less post

operative pain and less recovery time, the limitations of this method is in terms of the expensive instrument setup and surgical expertization . The conventional surgical technique with adenoid curette is a blind procedure, but it is cost effective, easy to handle and readily available in all ENT setup. By introduction of endoscope there is direct visualization, hence less chance of the injury to the surrounding structures. Hence, endoscope assisted microdebrider adenoidectomy needs to be acknowledged as a safe alternate to conventional adenoidectomy.

Bibliography

[1]. Llewellyn RS, De S, Clarke RW. Indications for adenotonsillectomy in the under-5s: have they changed? British Association for Paediatric Otolaryngology 2007. London.
[2]. Ali NJ, Pitson DJ, Stradling JR. Snoring, sleep disturbance, and behaviour in 4–5 year olds. Arch Dis Child 1993; 68(3): 360–6.
[3]. Hill W. On some causes of backwardness and stupidity in children. BMJ 1889; 2: 771–2.
[4]. Villa MP, Ianniello F, Tocci G, et al. Early cardiac abnormalities and increased C-reactive protein levels in a cohort of children with sleep disordered breathing. Sleep Breath 2012; 16(1): 101–10.
[5]. Clemens J, McMurray JS, Willging JP. Electrocautery versus curette adenoidectomy: comparison of postoperative results. Int J Pediatr Otorhinolaryngol. 1998;43:115– 122. [PubMed]
[6]. Sanjay R Parikh Validation of a New Grading System for Endoscopic Examination of Adenoid Hypertrophy, 2006 Nov;135(5):684-7.
[7]. Curtin JM. The history of tonsil and adenoidectomy surgery. Otolaryngol Clinic North Am. 1987;20:417-9.
[8]. Cannon CR, Replogle WH, Schenk MP (1999) Endoscopic assisted adenoidectomy. Otolaryngol Head Neck Surg 121(6): 740–744
[9]. Van Den Akker EH, Hoes AW, Burton MJ, Schilder AGM. Large international differences in(adeno) tonsillectomy rates. Clinical Otolaryngology and Allied Sciences 2004;29(2) : 161-64.
[10]. Med J Armed Forces India. 2009 Oct; 65(4): 308–312.
[11]. Clinical Rhinology : An International Journal , May – August 2011;4(2):75-78
[12]. International Journal of Otorhinolaryngology and Head and Neck Surgery Ravishakar C et al. Int J Otorhinolaryngol Head Neck Surg. 2018 Mar;4(2):559-564
[13]. August 2000 Archives of Otolaryngology - Head and Neck Surgery 126(7):845-9
[14]. DOI: 10.1001/archotol.126.7.845
[15]. Singh S. Padiyar B.V, Sharma N.Dubai Med J 2019;2:41–45
[16]. Havas T, Lowinger D. Obstructive adenoid tissue: an indication for powered-shaver adenoidectomy. Arch Otolaryngol Head Neck Surg. 2002;128:789–791. [PubMed].

Dr. Sanchita Singh, et. al. "Comparative Analysis of Conventional Curettageadenoidectomy with Endoscopic Microdebrider Assisted Adenoidectomy." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(11), 2020, pp. 57-60.