Endoscopicaly assisted microdebrider adenoidectomy versus conventional curettage adenoidectomy

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Abstract

Background: Adenoidectomy by conventional method is an old procedure. Several new techniques discovered in this field as an electronic molecular resonance, suction diathermy, microdebrider, endoscopy, and laser**.**

Objectives: to assess advantages of endoscopic assessed microdebrider adenoidectomy over the conventional method intra and post-operative.

Patients and methods: 218 patients were scheduled for adenoidectomy were divided into two groups) underwent conventional curettage, group B (106 patients) underwent endoscopic assessed microdebrider. Follow up for 2 weeks ended by endoscopic evaluation.

Results: This study included 218 patients (110 males and 108 females) aged 2 years till 14 years, divided randomly into two groups group A 112 patients group B 106 patients. This study reported statistically longer time of operation in group B than group A (13.7 for group B ± 3.5 versus 3.5 ± 1.3). Blood loss was statistically more in group A ((26.7 ± 7.5 for group A versus 17.9 ± 5.2). Adenoid tissues remnants in group A were statistically higher than group B (27.4 % ± 11.6 for group A versus 1.7% ± .86). Regarding pain it was significantly lower in group B in the six day (4.2 ± 1.2 for group A versus 2.3 ±.5).

Conclusion: endoscopic assessed adenoidectomy is significantly better than conventional adenoidectomy regarding blood loss, post-operative remnantsand post-operative pain.

Key words: conventional, endoscopic,adenoidectomy, microdebrider

Introduction

Adenoidectomy is one of the most common surgical operations performed for children, combined in most cases with tonsillectomy and/or ventilation tube insertion (**Hall and Lawrence 1998, Hall and Lawrence 2002, Benito et al., 2006).**

Adenoidectomy by conventional method is an old procedure, first described by Wilhelm Meyer, in 1969 (**Thornva,1969**). Various indications for these procedures such as:obstructive sleep apnea, adenoid hypertrophy, recurrent otitis media and otitis media with effusion (**Murray et al.,2002, Tarantino et al.,2004**). Several new techniques discovered in this field as an electronic molecular resonance, suction diathermy, microdebrider, endoscopy, and laser (**Walker,2001, Sorin et al.,2004**). Each method has its own advantages and disadvantages regarding operative time,intraoperative blood loss, complications as;post-operative pain and complete removal of the adenoid tissue (**Shin andHartnick,2003, Ozkiriş,2013**).

Adenoid curettage is still the most common procedures used all over the world (**Van et al.,2011**).

Earlier studies reported recurrence rates between 8% and 40% which dropped to <1% in the new Techniques, but increasing expertise and cost are the major difficult why some of the newer techniques are not commonly used (**Ezzat.,2010**).

Microdebrider used with endoscopes for adenoidectomy. And successful results have been reported regarding complete removal of adenoid tissue under vision, and restoration of nasopharyngeal patency **(Becker,2000).**

Patients and methods

This study included 218 patients (110 males and 108 females) were scheduled for adenoidectomy during the period from January 2017 to February 2019. Their ages ranged from 2 to 14 years. Inclusion criteria were; sympatomatic adenoids hypertrophy,or adenoid hypertrophy associated withchronic tonsillitis or complicated with OME. All procedures and patient care were done at the ENT Department, Qena University Hospital, and South Valley University. Patients enrolled in this study were divided into two groups. Group A (112 patients) underwent conventional curettage adenoidectomy, while Group B (106 patients) underwent endoscopically assisted microdebrider adenoidectomy.

Surgical Technique: All procedures performed were carried under general anesthesia.If there is associated chronic tonsillitis or otitis media with effusion, adenoidectomy is done first followed by tonsillectomy, myringotomy and ventilation tubes application.

The size of adenoidswas assessed using Intraoperative nasal endoscopy and graded according to Clemens and McMurray scale (**Clemens et al.,1998**) which is**:**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 choanal obstruction..

Group A:the patients were placed in the Rose position .Boyle-Davis mouth gag was applied; the palate was palpated to exclude a sub mucosal cleft. Using St Clair Thompson adenoid curette, adenoidectomy was done. Homeostasis was done by applying a nasopharyngeal pack. The pack was kept for few minutes and then removed.

Group B: the patient's position was as for a standard functional endoscopic sinus surgery.The posterior choanae and nasopharynx were assessed using a 0°, 2.7 mm rigid endoscope or a 4-mm scope in older children. Removal of adenoid tissue was done with microdebrider under endoscopic vision, from proximal to distal with care not to injure the torus tubarius. The tissues were removed at the site of the oscillating blade only, and the blade was kept under vision all the time using the scope. Saline irrigation was used when required. Follow up of all patients post-operative for two weeks.

Assessment Parameters: Tocompare between the conventional curettage adenoidectomy and endoscopically assisted microdebrider adenoidectomy several operative postoperative parameters were assessed.

Operative Assessment Data:

1-operative time: Intra-operative time in minutes was a assessed using stop watch, starting from application of the mouth gag till its removal or till the beginning of another procedure like tonsillectomy or myringotomy.

2-blood loss: The amount of blood included was calculated by subtracting the amount of saline used for irrigation from the total collected fluid volume.

3-Completeness of removal: Assessed by nasal endoscopy after two weeks of performing the procedure in both groups. Any adenoids remnant was recorded regarding size and site.

Postoperative Assessment Data

1-Post-operative pain: Early post-operative pain which was measured 2 days post-operative (after exclusion of patients who underwent tonsillectomy) assessed by a visual analogue scale (VAS). A score of one means "no pain", while a score of ten is "maximal pain **(Bradley and Galer, 1996).**

2-Follow up: Patients were asked to come back for Follow up at 2 days, 6 days, and 2 weeks after surgery. In the first and second visit Symptomatic assessment was done, after 2 weeks endoscopic assessment was done.

Statistical Analysis: Sample size was 218 patients. A comparison between the two groups was then carried. This was done based on the operative and postoperative values previously mentioned for assessment. Data will be analyzed usingStatistical Package for Social Sciences (SPSS) software program (version 20). -Qualitative variable will be recorded as frequencies and percentages and will be compared by chi-square test.- Quantitative measure will be presented as means ± standard deviation (SD) and will be compared by student t- test. P value < 0.05 will be significant

Results

This study included 218 patients (110 males and 108 females) there age groups ranged from 2 years till 14 years. These patients were scheduled for adenoidectomy either alone or with tonsillectomy or with myringotomy and application of ventilation tubes; according to the presentation.

For all patients 33(15.1%) patient presented with adenoid hypertrophy alone, 71patients (32.6%) presented with adenoids with chronic tonsillitis, and 114 patients (52.3%) presented with adenoids and otitis media with effusion (table 1).

Table: 1 Demographic data for all patients included in the study

Group	Conventional (group A)	106(48.6%)
	Endoscopic (group B)	112(51.4%)
Subgroups	Adenoids	33(15.1%)
	Adenoids+choronic tonsillitis	71(32.6%)
	Adenoids +otitis media with effusion	114(52.3%)
Sex	Males	110(50.5%)
	Females	108(49.5%)
Age		6.3±2.2

This study was age and sex matched. Group A (conventional adenoidectomy) included 112 patients 58 males and 54 females, group B included 106 patients (52 males and 54 females) with no statistical difference (table 2)

According to sex no statistical significant difference between group A and group B (table 2).

Table: 2 Demographic data for conventional and endoscopic group

Variable	Conventional NO. 112		Endoscopic NO. 106		P value
adenoid	15		18		
Adenoids+ ch tonsillitis	35		36		
Adenoids+ OME	62		52		
Age					
Adenoids	6.9 ± 2.2		6 ± 2.3		.3
Adenoids + Tonsillitis	6.6 ± 2.3		5.8 ± 1.9		.5
Adenoids + OME	6.8 ± 2.1		5.9 ± 2.2		.8
Sex	Male	Female	Male	Female	
Adenoids	6	9	8	10	.8
Adenoids + Tonsillitis	20	15	16	20	.3
Adenoids + OME	32	30	28	24	.8

Intraoperative results

This study reported longer time of endoscopic adenoidectomy than that of conventional method with mean ± SD (13.7 ± 3.5 for group B versus 3.5 ± 1.3 for group B) with p value .000 which is highly statistical significant (table 3, figure 1).

As regard blood loss conventional adenoidectomy was accompanied with much more intraoperative blood loss than endoscopic one with mean± SD (26.7 ± 7.5 for group A versus 17.9 ± 5.2) with highly statistical p value (table 3, figure 1).

After two weeks of performing the operations, endoscopic follow up of all patients to detect remnants of adenoid tissues reveled:more adenoid remnants in conventional method than endoscopic one. Adenoid remnants in conventional type were(27.4± 11.6) for conventional method versus 1.7% ± .86 in endoscopic type with highly statistical significant difference (table 3, figure 1).

Table 3.Comparisons between conventional adenoidectomy and endoscopic one intra and post-operative

Variable	Conventional Adenoidectomy (A)	Endoscopic adenoidectomy (B)	P value
Duration	3.5 ± 1.3	13.7 ± 3.5	.000*
Blood loss	26.7 ± 7.5	17.9 ± 5.2	.000*
Post endoscopy adenoid remnants	27.4% ± 11.6	1.7% ± .86	.000*

Regarding pain it was assessed after two days, it was (6.5 ± 1.1) for conventional versus (6.5 ± 1.1) for endoscopic with no statistical significant difference, on the other hand; assessment of pain after6 days reveled that pain is more sever in conventional than

that of endoscopic type with mean± SD (4.2 ± 1.2 for group A versus 2.3 ± .5) with highly statistical significant difference (table 4, figure 1).

Table 4: comparision between coventional adenoidectomy and endoscopic regarding pain

Variable	Conventional Adenoidectomy (A)	Endoscopic adenoidectomy (B)	P value
Pain after 2 days	6.5 ± 1.1	6.5 ± 1.1	.5
Pain after 6 days	4.2 ± 1.2	2.3 ± .5	.000*

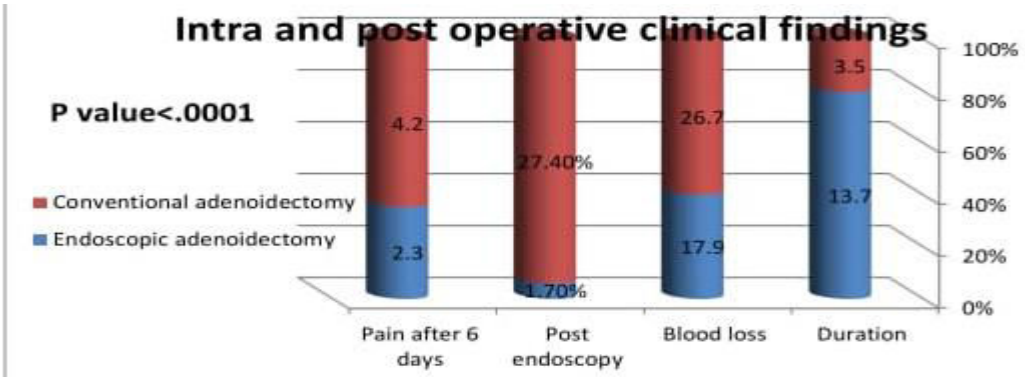

Figure 1: Comparison between intraoperative and postoperative results of both groups

Discussion

Conventional curettage may be associated with complications as it is blind technique; injury to pharyngeal musculature or eustachian tube orifice and, incomplete removal are the common complications (**Cannon et al.,1999, Havas and Lowinger,2002**), Incomplete removal may lead to peritubal obstruction, hyperplasia of adenoid tissue remnants, and site for bacterial reservoirs.Endoscopicassisted microdebrider adenoidectomy came into existence Adenoidectomy in young children should be under vision, easy performed, short operating time,with minimal blood loss, suitable cost, rapid cure of symptoms and complete adenoid resection without complications.

This study reported longer duration of operation in endoscopic than conventional adenoidectomy this is in agreement with Singh et al who reported that time of conventional operation and its blood loss is three times more than endoscopic one (**Singh et al.,2019**) but five studies reported operative time in meta-analysis showed that endoscopic assisted adenoidectomy was shorter time than conventional one **(Bradoo et al.,2016).**

As regard blood loss this study showed more blood loss in conventional procedure than endoscopic one this is in agreement with Singh et al (**Singh et al.,2019**).Other studies

done by **Heras and Koltai 1998**, **Koltai et al.,2002**, **Rodriguez et al., 2002**,and **Murray et al., 2002**who reported less total blood loss and operative time in endoscopic-assisted technique. **Bradoo et al.,2016** showed that intraoperative blood loss is the same in both methods.

Results of this study showed more adenoid remnants in conventional method(27.4% ± 11.6) than endoscopic one, similar to results done by **Stanislaw et al., 2000**,**Havas and Lowinger,2002,Datta et al,.2009**,**Ezzat,2010, Hussein and Al-Juboori,2012**, with an incidence of 39%,39%, 30%,14.5%, and 20%, respectively.

Al-Mazrou et al., 2009,Regmi et al., 2011,Viorel, 2011, and Capaccio et al., 2016reported missed adenoid tissue in conventional curettage.

Pain score after two days of the operation in both groups showed no statistical significant difference but in the six day there was significant decrease in pain score in endoscopic group than conventional one similar to resulrs reported by **Datta et al.,2009,Somani et al.,2010.**

Conclusion endoscopic assessed adenoidectomy has several advantages than conventional type, it has less blood loss, less post-operative remnants, less post-operative pain, and it is the best choice for children

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