Acta Scientific Otolaryngology (ISSN: 2582-5550)

Volume 6 Issue 3 March 2024

Research Article

A Comparative Study of 50 Cases of Adenoidectomy Demonstrating the Difference in Outcome and Complications on Using Coblation Versus Microdebrider

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Received: January 25, 2024

Published: February 14, 2024

Abstract

Introduction: Adenoidectomy with or without tonsillectomy is one of the most common surgical procedures performed by Ent surgeon, main purpose is to eliminate the nasopharyngeal reservoir of potential respiratory pathogens and to remove cause of obstruction at nasal airway. Adenoids are a nasopharyngeal tissue found in posterosuperior wall of nasopharynx.

Aim: To Compare Safety and Efficacy Between Endoscopic Assisted Coblation Adenoidectomy and Endoscopic Assisted Microdebrider.

Material and Methods: We have done prospective randomized interventional study in 50 patients coming to Ent opd by dividing patient two group of 25 one with coblation and one with microdebrider and we studied various parameter in these patients.

Results: Our study shows mean operative time in coblation assisted was 24.16 min and Microdebrider assisted was 29.84 min. Mean intra operative blood loss was 25.6 ml in Group A and 32.6 ml in Group B Persistence of symptoms after adenoidectomy is same in both methods. The mean recovery period in group A(coblator) was 2.6 +/- 0.5 days and 3.04+/- 0.59 days for group B(debrider).

Conclusion: Our study shows coblation method have less intraoperative bleeding, operative time and less recovery period.

Keywords: Adenoidectomy; Coblation; Microdebrider

Introduction

Adenoids are a nasopharyngeal tissue found in posterosuperior wall of nasopharynx. Adenoids, along with palatine and lingual tonsil, belongs to mucosa associated lymphoid tissue (MALT) [1].

Adenoidectomy with or without tonsillectomy is one of the most common surgical procedures performed by Ent surgeon, main purpose is to eliminate the nasopharyngeal reservoir of potential respiratory pathogens and to remove cause of obstruction at nasal airway

Aims and Objectives

Aims

To Compare Safety and Efficacy Between Endoscopic Assisted Coblation Adenoidectomy and Endoscopic Assisted Microdebrider Adenoidectomy.

Objective

To Compare parameters like Total resection time, intraoperative blood loss, Associated trauma to surrounding structures, postoperative pain recovery period, Post operative symptomatic relief, Clearance of adenoids, Postoperative complication between two techniques.

Materials and Methodology

- **Study design:** Retrospective analytical study
- **Place of study:** The study was undertaken in ENT department of B.J. medical college and civil hospital.
- **Study population:** patient attending ENT OPD with clinical diagnosis of adenoid hypertrophy and above grade 3 on nasal endoscopy.
- **Study period:** 1.5-year July 2022 TO December 2023
- **Sample size:** 25 patients in each group.

Inclusion criteria

- Age group of 3-18 years with symptoms of adenoid hypertrophy such as snoring, mouth breathing, earache.
- Adenoid hypertrophy confirmed by radiological investigation and diagnostic nasal endoscopy.

Exclusion criteria

- Age less than 3 years
- Previous history of surgery for adenoidectomy
- Neuromuscular and craniofacial abnormality
- Patients with submucous cleft palate or cleft palate,
- Cervical spine anomalies are excluded from the study.

Investigation

- All routine investigation
- x ray skull soft tissue nasopharynx lateral view
- Diagnostic nasal endoscopy intraoperatively

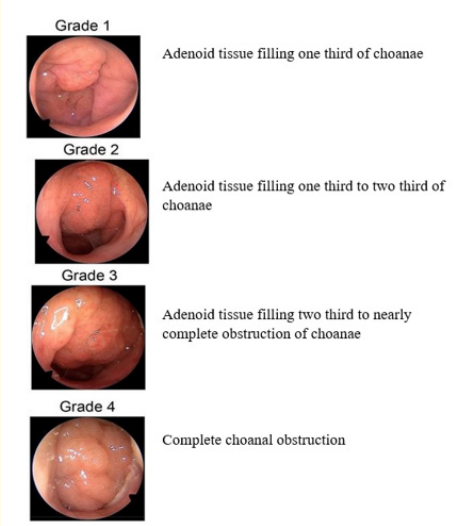

Figure 1: Image of nasal endoscopy of adenoid hypertrophy.

Methodology

All patients were divided in two groups 25 of each

- Group A: Endoscopic coblator assisted adenoidectomy
- Group B: Endoscopic microdebrider assisted adenoidectomy.

Here, all 50 patients of last 1.5 year treated with powered instrument with assistance from endoscope for adenoid hypertrophy were included in study. All procedure were done in endotracheal intubation with general anaesthesia.

All patients have been discharged within 2 days of surgery depending on general condition. Written consent from parents of patients has been taken for using data in research works.

Surgical technique

In endoscopic coblator technique after doing preparation, rose position given. coblator wand connected to console after attachment of suction and irrigation port. Then adenoids are assessed by 0-degree endoscope The inferior edge of adenoid and opening of eustachian tube identified. Always begin ablating the adenoid tissue at inferior edge [4].

Figure 2: Intraoperative endoscopic view of coblator adenoidectomy.

In endoscopic microdebrider technique

After doing preparation, rose position given. Soft palate retracted with infant feeding tube debrider blade connected to console after attachment of suction and irrigation port. Then adenoids are assessed by 0-degree endoscope The inferior edge of adenoid and opening of eustachian tube identified. Always begin debriding the adenoid tissue at inferior edge [4].

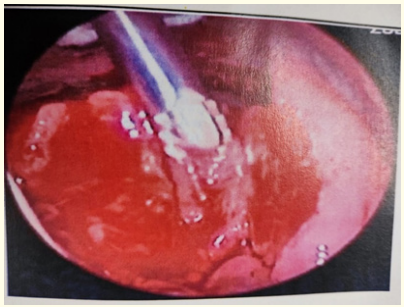

Figure 3: Intraoperative endoscopic view of debrider.

Observation and Results

Table 1: Age distribution in two different methods.

Age range (YEARS)	GROUP A (n = 25)	GROUP B (n = 25)
0-5	8(32.0%)	5(20.0%)
6-10	10(40.0%)	12(48.0%)
11-15	7(28.0%)	7(28.0%)
16-20	0(0.0%)	1(4.0%)

Our study shows majority of patients (10 patients out of 25) in group A were between 6-to-10-year age, and majority patients (12 patients out of 25) in group B. among 50 patients 41(82%) were male and 9 (18%) were female, suggest male predominance.

Sex distribution

Table 2: In coblator assisted method (group A).

Sex	Number (%) (n = 25)
Male	21(84%)
Female	4(16%)

Table 3: In microdebrider assisted method (group B).

Sex	Number (%) (n = 25)
Male	20(80%)
Female	05(20%)

Chief complaint

Table 4: Distribution according to presenting complaint.

Presenting complaints	Number (%) (n = 50)
Nasal obstruction	48(96%)
Mouth breathing	40(80%)
Snoring	30(60%)
Throat pain with odynophagia	30(60%)
Earache	3(6.0%)

Outcomes

Table 5: Average duration of surgery.

Type of surgery	Average duration (Mean +/-standard deviation)
Coblator (Group A)	24.16+/- 5.07 min
Microdebrider (Group B)	29.84+/- 5.82 min

The p value is <0.05 as t =3.97(independent t test).

Table 6: Average blood loss of surgery.

Type of surgery	Average blood loss (Mean +/-standard deviation
Coblator (Group A)	25.6+/- 5.64 ml
Microdebrider (Group B)	32.6+/-6.14 ml

The p value is <0.05 as t = 4.193 (independent t test).

Table 7: Intra operative trauma to surrounding structure during instrumentation in both group.

Site of trauma	Group A	Group B	Total (n = 50)	P value (chi square test
Lip	0(0%)	0(0%)	0(0%)	-
Gums	0(0%)	0(0%)	0(0%)	-
Anterior pillar	1(4%)	2(8%)	3(6%)	0.45 (not significant
Uvula	1(4%)	1(4%)	2(4%)	0.45 (not significant

Table 8: Post operative pain recovery period.

GROUPS	GROUP A	GROUP B	P-VALUE
RECOVERY DAYS	2.6+/-0.5	3.04+/- 0.59	<0.05 (t = 2.93)

P < 0.05 indicates statistically significant difference between coblator group and microdebrider group

RECOVERY DAYS *all values are expressed in mean+/-SD.

Table 9: Completeness of removal of adenoid.

	Group A	Group B
Residual adenoids at 1 month	2	4

The association by chi square suggest here p value of 0.384 (p not <0.05) which is not significant.

Table 10: Postoperative complication.

	Group A (25)	Group B (25)	Total (n = 50)
Nasal bleed	1(4%)	5(20%)	6(12%)
Oral bleed	2(8%)	2(8%)	4(8%)
Synechiae	0	1(4%)	2(2%)
Velopharyngeal insufficiency	1(4%)	0	1(2%)
Atlantoaxial dislocation	0	0	0%
Eustachian tube scarring	0	2(8%)	2(4%)

Discussion

We were, here studied 50 patients to compare coblation vs microdebrider technique for adenoidectomy.

Our study show majority of patient in both group A&B are between 6 -10 years of age (22 out of 25). Among 50 patients 41(82%) are male show male preponderance in study.

Our study shows mean operative time in coblation assisted was 24.16 min and Microdebrider assisted was 29.84 min ($p < 0.05$) which is significant difference. Similar result seen in single blinded randomized controlled trial done by Chris Mularczyk, David l. walker [7] which showed mean operative time in coblation assisted was 5.50 min and microdebrider with touch up electrocautery assisted was 9.47 min. our result contrast the study conducted by jakaransingh which states intraoperative time taken by microdebrider is significantly less than coblation method in single blind randomized study [5] also Stainslaw., *et al*. which suggest that microdebrider was 20% faster than non-power assisted adenoidectomy [6].

Mean intra operative blood loss in our study was 25.6 ml in Group A and 32.6 ml in Group B($p < 0.05$) which show statistical significance of less intraoperative bleeding on coblator associated adenoidectomy than microdebrider. similar result seen by study conducted by Jaskaran Singh at Sri Guru Ram Das Institute of health sciences and research [5]. Mularczyk., *et al*. [7] shows statistically significant difference between group for intraoperative blood loss ($p < 0.001$) with coblation method less blood loss than microdebrider.

Persistence of symptoms after adenoidectomy are mainly due to amount of residual tissue left post operatively. In our study comparison in case of 1 month post operative symptomatic relief and residual adenoid show no statistically significant difference in both techniques. Similar result seen in Jaskaran Singh., *et al*. [5] study. Direct visualization with endoscope helps in both techniques. Result of atilla [8], datta [9] study suggest higher incidence of residual adenoid tissue after 3 months of surgery.

Mean operative pain duration in our studies show significant difference in both groups. The mean recovery period in group A(coblator) was 2.6 +/- 0.5 days and 3.04+/- 0.59 days for group B (microdebrider). Similar results were results seen in Mularczyk., *et al*. study [7] and Jaskaran Singh., *et al*. study [5]. No much difference in post operative complication for both the groups suggesting that both tools have minimal post operative complication with no long term sequalae.

Conclusion

Endoscopic Coblator assisted adenoidectomy and Microdebrider assisted adenoidectomy are accurate and precise technique for complete removal of adenoid tissue under direct vision with no residual tissue left with least chances of trauma to the surrounding structures and minimal post operative complications with no long term sequalae.

The endoscopic coblation adenoidectomy is superior to the endoscopic microdebrider method in terms of

- Less intra-operative time
- Less intra-operative blood loss
- Less post-operative pain recovery days

High cost of equipment. replacement cost of blades and expertise in technique and lack of resected tissue for histopathological examination are limiting factors of Microdebrider assisted adenoidectomy.

Declaration

- **Fundings:** Done in government run hospital with using all government resources this study done. No external funding required.
- **Conflict of Interest:** No conflict of interest declared by any authors
- **Consent:** Written consent from parents of the patients for using data of patients has been taken
- This study was approved by institutional ethical committee.

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