



ADENOIDECTOMY BY CRUETTAGE AND MICRODEBRIDER TECHNIQUES: A COMPARATIVE PROSPECTIVE STUDY

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ABSTRACT

Introduction: Adenoids, which is part of the immune system and part of the Waldeyer Ring helps in protecting the body from virus and bacteria. Hypertrophy of adenoid occurs due to infections or allergies. In the presence of Adenoids, there is airway obstruction which leads to breathing problems, ear infections or other complications which result in snoring and/or sleep apnea at night. Adenoidectomy can be performed by various methods which include Coblation, bipolar coagulation under endoscopic vision, conventional crurettage cold steel technique or using a Microdebrider. **Materials and Methods:** A comparative, randomized trial of patients aged 5 to 14 years undergoing adenoidectomy was conducted. Patients were randomized to undergo either Crurettage adenoidectomy (Group A – 75 cases) or Microdebrider-assisted adenoidectomy (Group B – 75 cases). **Observations and Results:** A total of 70 boys and 80 girls were included in the study. The amount of residual disease was much lesser in Group B as compared to Group A. The surgery was done a bit quicker in Group B as compared to Group A whereas the amount of blood loss was almost the same. The pain after surgery was almost the same in the first 8 hours but it significantly dropped in Group B after 24 hours. **Conclusion:** Although the amount of blood loss was found to be similar in both groups, the pain scores after surgery and residual disease was much lesser in Group B as compared to Group A. Although nasal endoscopes are fast becoming basic tools, powered instrumentation like microdebriders are not common. The need for special equipment and the cost of the procedure have to be borne in mind. Thus, we conclude that if cost is not a factor the use of a Microdebrider is safer and more effective.

KEYWORDS: Chronic Adenoiditis; Microdebrider Adenoidectomy; Crurettage Adenoidectomy.

INTRODUCTION

Adenoid removal, also called adenoidectomy is a surgery to remove the enlarged adenoid gland. Adenoids are glands which is located above the roof of the mouth and behind the nose. It looks like a small lump of tissue that mostly affects young children. Adenoids, which is part of the immune system and part of the Waldeyer Ring helps in protecting the body from virus and bacteria. Hypertrophy of adenoid occurs due to infections or allergies. The Adenoid gland becomes swollen and enlarged or chronically infected as it helps in protecting the body from bacteria and viruses.

In the presence of Adenoids, there is airway obstruction which leads to breathing problems, ear infections or other complications which result in snoring and/or sleep apnea at night. Long-term nasal drainage, sinus infections and bleeding from the nose can also be seen. The enlarged adenoid gland also affects the recurrence of ear infections and chronic fluid in the middle ear which results in temporary hearing loss. This can cause failure

to thrive in neonates and also stunt the growth curve in younger children. Adenoidectomy is most commonly seen between the ages of 1 and 7. By the end of 7, the adenoid gland reaches its largest size before regressing^[1] and they are then considered a vestigial organ in adults.

Adenoidectomy can be performed by various methods which include Coblation, bipolar coagulation under endoscopic vision, conventional crurettage cold steel technique or using a Microdebrider.

Adenoidectomy forms a valuable treatment in the management of SDB (Sleep Disordered Breathing), Chronic Rhinosinusitis, middle ear pathologies like Serous Otitis Media and Chronic Adenotonsillitis.

According to Canon et al, Endoscopic Assisted Adenoidectomy [EAA] is a natural progression of endoscopic technology which allows for a more complete form of adenoidectomy. In their study, they

used a crurettage transoral adenoidectomy with endoscopic removal of enlarged residual adenoids.^[2]

Microdebriders are the safe, excellent, and thorough technique for endoscopic nasal surgery which provides the atraumatic dissection with minimal bleeding that enables lesser surgical time and faster postoperative healing.^[3]

Koltai and his fellow members researched and published the use of microdebrider for adenoidectomy using the visualization method by a laryngeal mirror. When both the above- said methods are combined and when the endoscopic assisted powered adenoidectomy gets performed, the advantages of both the techniques should get pooled.^[4]

Adenoidectomy is being performed in regular practice for a very long time now and the oldest literature available dates back almost a 100 years ago.^[5] As time progressed, the methods have also changed and newer technologies have evolved.

MATERIALS AND METHODS

Study design & Population

A comparative, randomized trial of patients aged 5 to 14 years undergoing adenoidectomy was conducted. Patients were randomized to undergo either Crurettage adenoidectomy (Group A) or Microdebrider-assisted adenoidectomy (Group B). All patients presenting with classical features of Adenoid Hypertrophy (high arched palate, crowded teeth, snoring, mouth breathing) with or without Tonsillar hypertrophy were evaluated. The study was conducted at a terminal hospital in Rural India over a period of 18 months.

Sampling technique

A simple sampling method was used. 75 patients were taken up for Microdebrider method and 75 patients for the crurettage method. Patients were included in their chronological order of attending ENT OPD and they were numbered separately.

Inclusion criteria

- Age between 5 and 14 years.
- Adenoid hypertrophy based on an X-Ray lateral view irrespective of the percentage of occlusion of the Nasopharynx.

Exclusion Criteria

- Bleeding disorders.
- Immunocompromised status.
- Acute episode of URTI.
- Space occupying lesion of the Nose and nasopharynx.

Preoperative Assessment

A complete examination for local and general causes was performed. Surgical profile for fitness for General

Anaesthesia was also done. Baseline diagnostic nasal endoscopy was taken for both groups before surgery.

Intervention

After the complete diagnosis, patients were assigned in chronological order in groups viz Crurettage or microdebrider assisted. All surgeries were performed under General Anaesthesia in the Operation Theatre by the same Surgeon and the patients were admitted one day before surgery. They were monitored for 48 hours after surgery and then discharged to go home for further follow up after 1 week.

Procedure of Crurettage Adenoidectomy

Each patient was taken under General Anaesthesia and placed in Rose position. Adenoids were palpated with the tip of the fingers and cruretted out using a St. Clair Thompson Adenoid Crurette with and without cage. The process was done multiple times till there is clearance of the area and the posterior part of septum along with both Eustachian Tube orifices were seen. A post nasal examination was done to confirm the clearance of the disease. Post nasal pack was placed and hemostasis was achieved.

Procedure of Microdebrider assisted Adenoidectomy

Each patient was taken under General Anaesthesia and placed in supine position with head end elevated by 15°. Using a 0° endoscope in one nasal cavity and a straight microdebrider at 2500 rpm in the other nasal cavity, the adenoids were visualized. In tougher cases, a curved microdebrider was used from the oral cavity. The microdebrider was used to crurette the adenoid tissue neatly from below upwards. Post nasal pack was placed and hemostasis was achieved.

OBSERVATIONS AND RESULTS

Overall completion of adenoid removal was assessed by nasal endoscopy at the end of the procedure in both groups. Residual adenoid with less than 20% was considered as Grade 1 [complete removal], 20- 50% as Grade 2 [partial removal] and residue with greater than 50% as Grade 3 [sub-optimal removal].

A total of 70 boys and 80 girls were included in the study.

Table 1: Gender-wise Distribution.

	GROUP A	GROUP B
MALE	41	29
FEMALE	34	46
TOTAL	75	75

Table 2: Amount of Residual disease.

RESIDUAL	GROUP A	GROUP B
<20%	58	68
20-50%	6	4
>50%	11	3

The amount of residual disease was much lesser in Group B as compared to Group A. This can be attributed to the fact that the surgery is being performed under vision in Group B.

Table 3: Time taken and amount of blood loss during surgery.

	GROUP A	GROUP B
Time taken	11 minutes	9 minutes
Blood loss	15 ml	14 ml

The surgery was done a bit quicker in Group B as compared to Group A whereas the amount of blood loss was almost the same.

Table 4: Pain scores after surgery.

Post Operative pain after surgery (VAS Scale)	GROUP A	GROUP B
4 hours	7	6
8 hours	6	6
24 hours	5	3
48 hours	5	2

The pain after surgery was almost the same in the first 8 hours but it significantly dropped in Group B after 24 hours.

DISCUSSION

Adenoids were first described by the Danish physician, Meyer.^[6] He explained his technique of posterior rhinoscopy in his paper "Adenoid Vegetation in the nasopharyngeal cavity" in which he described how to diagnose adenoid hypertrophy and he suggested that one can remove the adenoid tissue with the help of a ring knife.

Instruments and the techniques for the treatment of adenoidectomy have evolved from the techniques first described by Cornelius Celsus in the first century A.D.^[7] and Paul of Aegiba in 625 A.D.^[8] Pioneers of tonsillectomy and adenoidectomy have developed novel techniques and instruments to increase the speed of the procedure, especially in the pre-anesthesia era, and to decrease intra-operative complications and postoperative morbidity.

Our study aims to compare the crurettage curettage method with the help of a newer endoscopic powered technique. This comparative study was done with randomization to enable thorough comparison. Those two groups were also matched in age, surgery type and indications. There is an increase in the trend worldwide to treat adenoidectomy in isolation rather than combining it with adeno-tonsillectomy.^[9]

The role of adenotonsillectomy for SDB in children has been identified which is a common indication for surgery.^[10] Holt et al. observed significant tympanogram abnormalities on postoperative day 1 according to the control group in their study wherein they evaluated the

middle ear pressures of 22 subjects following tonsillectomy using tympanometry.^[11] Elnashar et al. identified adenoid residuals in 95.45% of the cases following curettage adenoidectomy.^[12] Unlu et al. determined a pathologic decrease in the rate (75%) of least one middle ear pressure on the first postoperative day in pediatric patients who underwent adenoidectomy or adenotonsillectomy with the curettage method.^[13] Adenoidectomy, a technique in which nasopharyngeal lymphoid tissue is removed, was first described as curettage (conventional) adenoidectomy in 1885.^[14]

Collateral damage following adenoidectomy surgery is uncommon however there will always be a fear of trauma to the eustachian tube opening which leads to scarring and dysfunction of eustachian tube. The torus tubaris region was partially injured in two groups of curettage adenoidectomy. There was an incidence of nasal mucosal injuries in Group B.

Adenoidectomy surgery is a well-tolerated procedure. The post-operative pain in the powered adenoidectomy group was lesser than crurettage method.

The only drawback seen in the Microdebrider group was that the cost of surgery went up by 4 times. The reason for this can be drawn back to the fact that the instrument is expensive to begin with and the maintenance is higher.

CONCLUSION

Although the amount of blood loss was found to be similar in both groups, the pain scores after surgery and residual disease was much lesser in Group B as compared to Group A. Microdebrider assisted adenoidectomy is a safe and reliable technique. It provides complete and accurate removal, lesser injuries to collaterals, and a rapid recovery period. Although nasal endoscopes are fast becoming basic tools, powered instrumentation like microdebriders are not common. The need for special equipment and the cost of the procedure have to be borne in mind. Thus, we conclude that if cost is not a factor the use of a Microdebrider is safer and more effective.

CONFLICT OF INTEREST: Nil.

AUTHORSHIP: Equal contribution by all authors.

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