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Original Research Article

A comparative study between coblation adenoidectomy and conventional adenoidectomy

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ABSTRACT

Background: The objective of the study was to compare the advantages and results between coblation adenoidectomy and conventional adenoidectomy by curettage.
Methods: The study was conducted in Stanley medical college, Chennai (a tertiary care centre) from June 2013 to June 2016. Fifty patients were studied who underwent adenoidectomy. Twenty five patients underwent conventional adenoidectomy by curettage and rest by nasal endoscopy assisted coblation adenoidectomy. Following outcomes were evaluated: pain score on first day, days reporting pain, analgesic days, school absenteeism, endoscopic adenoid grading and intraoperative bleeding.
Results: Patients who underwent coblation adenoidectomy showed better results during follow up with lesser complications.
Conclusions: Coblation adenoidectomy is a better technique when compared to conventional technique of curettage.

Keywords: Coblation, Adenoidectomy, Curettage

INTRODUCTION

Adenoidectomy is one of the commonest surgery done world wide. It is most commonly done along with tonsillectomy and myringotomy according to the indications. Chronic adenoiditis or adenoid hypertrophy affects pediatric population significantly. Chronic otitis media with or without effusion, recurrent sinusitis, obstructive sleep apnoea, cranio facial developmental problems are some of the sequlae of adenoid hypertrophy.[1] Conventional curettage technique of adenoidectomy has several disadvantages including recurrence of the disease and complications like bleeding.[1-7] Coblation is a relatively new tool to do adenoidectomy with better results and lesser complications.[4-8]

Aims of study

1) To study the advantages of coblation adenoidectomy in comparison with conventional adenoidectomy.
2) To compare post-operative pain, bleeding, and complications.

METHODS

This is a comparative study done in Stanley medical college, Chennai (a tertiary care centre) from June 2013 to June 2016. Fifty patients were enrolled in this study among which twenty five patients underwent conventional adenoidectomy by curettage. Other twenty five patients underwent nasal endoscopy assisted coblation adenoidectomy. All patients in the study were having comparable demographics and no significant

differences in coagulation profile.[9,10] We included patients who underwent adenoidectomy alone. The study included patients aged 4-14 years old with adenoid hypertrophy grade III and grade IV. Patients with recurrent adenoiditis with persistent anterior and post nasal discharge, patients with symptoms of adenoid hypertrophy like snoring, mouth breathing, obstructive sleep apnoea, with features of adenoid facies, patients with features of otitis media with effusion, chronic suppurative otitis media –mucosal disease, atelactatic ear, recurrent sinusitis were evaluated for adenoid hypertrophy[21]. Patients also underwent myringotomy with grommet insertion in addition, if required.

Patients with age less than 4 or greater than 14, adenoid hypertrophy grade I and II, patients with cleft palate, coagulation disorders, sinonasal polyposis, patients who underwent adenotonsillectomy, choanal atresia, tumors of nose and nasopharynx, thornwald's cyst and cervical instability (Down's syndrome) are excluded.[9,10]

The blood investigations done are Hb, total count, differential count, erythrocyte sedimentation rate, bleeding time, clotting time, platelet count, prothrombin time, absolute partial thromboplastin time, blood grouping and Rh typing.

Urine albumin, sugar and deposits tests are done. X-ray chest PA view and x-ray skull and soft tissue nasopharynx lateral view are done. Diagnostic nasal endoscopy is done for the patients.[11]

Patients are evaluated by clinical examination, radiological examination and diagnostic nasal endoscopy to assess the size of adenoid.[1,2,11,12] Nasal obstruction was clinically evaluated by cold spatula test.

Table 1: Clemens clinical grading of adenoid size.

Grade	Description
I	Adenoid tissue filling 1/3 of the vertical portion of the choanae
II	Adenoid tissue filling from 1/3 to 2/3 of the choanae
III	From 2/3 to nearly complete obstruction of the choanae
IV	Complete choanal obstruction

Endoscopic assessment of adenoid

Preoperative endoscopic assessment of adenoid is done as outpatient procedure for cooperative children. Before nasoendoscopy nose is packed with 4% xylocaine with 1 in 1000 adrenaline soaked cotton patties. Nasal endoscopy is done with 2.7 mm Hopkins Karl Storz endoscope. The size of the adenoid has been graded using Clemens grading system. For non-cooperative children x-ray neck with soft tissue lateral view with neck neutral position was done to confirm adenoid hypertrophy.[12] Endoscopic grading was done during surgery in these children.[11]

Endoscopic picture of adenoid

The following images (from Figures 1 to 4) shows various grades of adenoid hypertrophy.

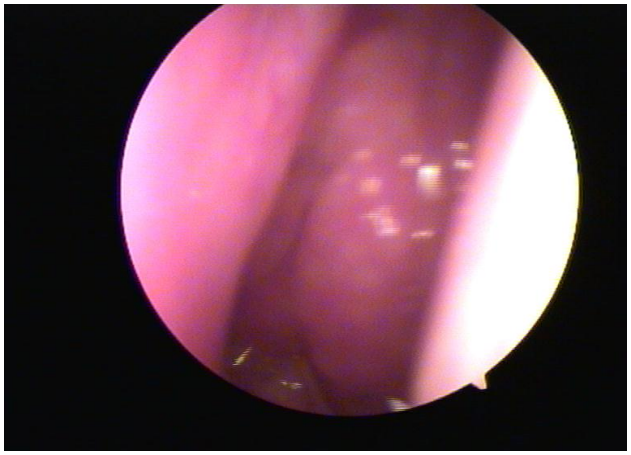

Figure 1: Grade I adenoid hypertrophy.

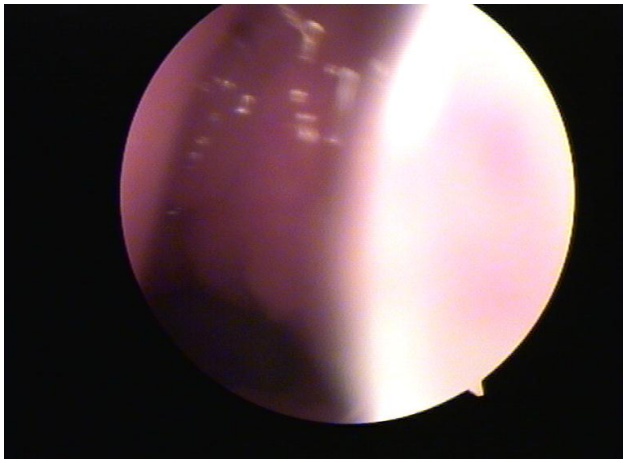

Figure 2: Grade II adenoid hypertrophy.

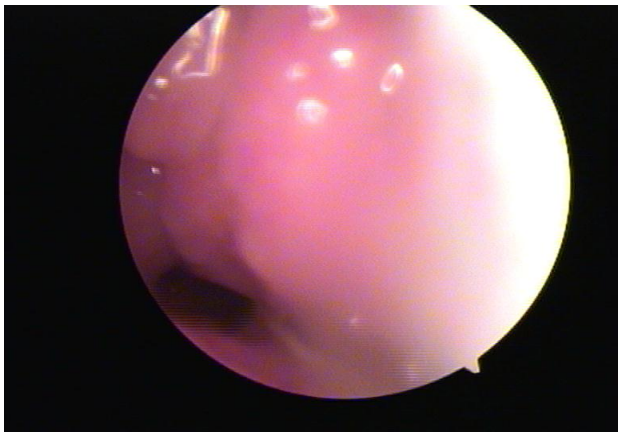

Figure 3: Grade III adenoid hypertrophy.

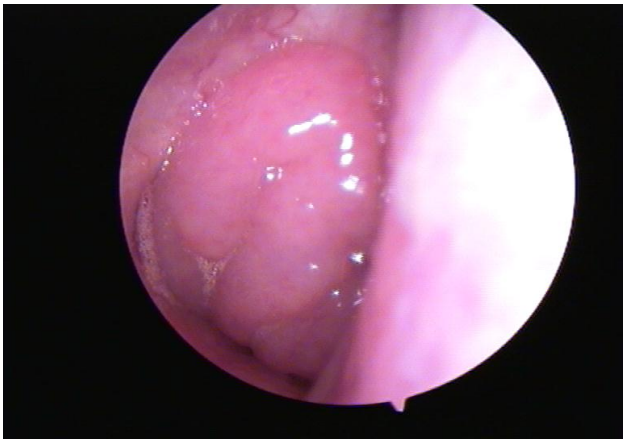

Figure 4: Grade IV adenoid hypertrophy.

Radiological assessment

X ray skull lateral view soft tissue (Figure 5) is taken in children to see the extent of adenoid hypertrophy.

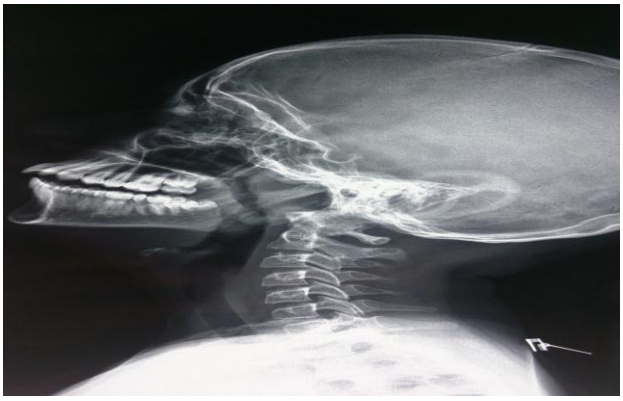

Figure 5: X-ray adenoid.

After surgery the following outcomes were evaluated: pain score on first day, days reporting pain, analgesic days, school absenteeism, postoperative endoscopic grading and intraoperative bleeding. Pain intensity was graded by ten point visual analogue scale where 0 was no pain and 10 was maximum pain.[6] Intraoperative bleeding was assessed by swab weighing technique in conventional technique.[1,5,7,8] First sterilized ribbon guaze weighed and kept constant at 20 gram. After surgery the soiled guaze used for nasopharynx packing was weighed. The difference in weight was converted into milliliter by dividing with 1.055, specific gravity of blood. For coblation technique we use known volume of saline used for irrigation and in suction apparatus and subtract from the final volume in the suction apparatus jar at the end of surgery.

Statistical analysis was performed by Mann whitney test to evaluate the mean difference. t-test was used for evaluating statistical significance. P<0.05 is considered significant.[9,10]

Surgical procedure

General anaesthesia is administered via orotracheal cuffed tube which is placed in the midline of the lower lip and taped securely.

Patient is placed in Rose's position. An appropriate sized Boyle-Davis mouth gag is carefully inserted and then suspended on a bipod stand.

Adenoidectomy by curettage

Curettage done using St. Clair Thompson curette transorally. Hemostasis achieved by nasopharyngeal packing.

Coblation adenoidectomy

Equipment: Power level was set to 7-8 for coblation and 3 for coagulation. A paediatric nasal endoscope was used along with a video camera for direct visualization of the nasopharynx.[11]

Procedure: The nasal cavities are examined with zerodegree 2.7 mm endoscope and size of the adenoid identified and the extent to be coblated was assessed. The precise wand was chosen that could reach all areas of nasopharynx. When the wand was almost touching the adenoid avoiding direct contact, coblation was done by foot pedal. Care was taken not to injure the uvula, soft palate or surrounding structures. Nasopharynx was examined with endoscope to ensure complete removal of all adenoid tissue. The absence of any bleeding or mucosal damage was confirmed. The coblation wand was used to coagulate any bleeder if found.

Figure 6: The coblation wand tip.

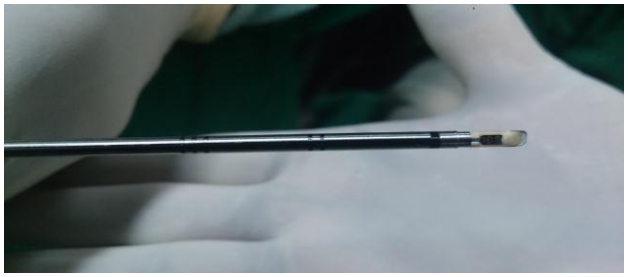

Figure 7: The underside of the wand showing the shield electrode.

The following images (from Figures 8 to 11) of adenoidectomy are taken from surgeries of various patients included in the study.

Figure 8: Shows relatively bloodless operating field during coblator adenoidectomy.

Figure 9: Shows precise removal of adenoid tissue using coblator wand.

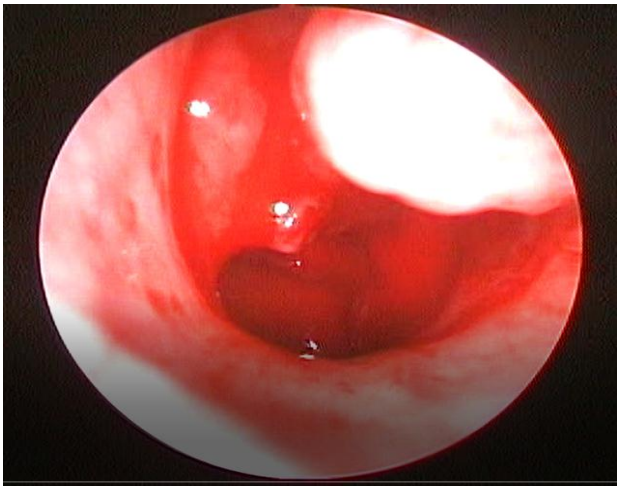

Figure 10: Showing remnant adenoid tissue following conventional adenoidectomy.

Figure 11: Showing the coblator wand reaching the superior part of adenoid tissue leaving minimal chance for remnant tissue.

RESULTS

Patients in coblation adenoidectomy showed very little intraoperative bleeding -2.5 ml mean but conventional curettage had a mean of 32.7 ml blood loss. Post-operative pain and requirements of analgesics have no significant difference between both groups. School absenteeism is more or less same in both the group. Postoperative endoscopic grading of adenoid showed significant difference. There were significant residual adenoid seen in the superior part and also laterally near Eustachian tube orifice in curettage adenoidectomy. No patient had neither primary nor secondary hemorrhage. Three patients in conventional adenoidectomy group required second surgery during the study period because of recurrence of symptoms like snoring and mouth breathing. Second surgery was done by coblation. No patient had any other complications.

Table 2: Mean and SD of subjective and objective treatment outcomes in comparative study between conventional adenoidectomy vs. coblation adenoidectomy.

	Conventional n=25		Coblation n=25		P value
	Mean	SD	Mean	SD	
Intraop bleeding	32.7	7.8	2.5	2.52	<0.05
I day pain score	7.2	1.5	7.15	1.42	>0.05
Days with pain	6.52	1.24	6.25	1.42	>0.05
Days with analgesics	4.52	1.14	4.26	1.28	>0.05
School absenteeism	3.25	0.92	3.15	0.88	>0.05
Post op adenoid grading	1.6	0.46	0	0	<0.05

DISCUSSION

Many methods of endoscopic assisted adenoidectomy have come which includes endoscopic assisted curettage adenoidectomy, endoscopic assisted power shaver (microdebrider) adenoidectomy, endoscopic assisted suction coagulation (liquefaction) adenoidectomy and endoscopic assisted blakesley adenoidectomy.[3,5,8]

The advantages of endoscopic assisted adenoidectomy are easy assessment of the size of the adenoid mass and improvement in the accuracy of adenoidectomy via transoral route. Under endoscopic guidance the adenoid wand can be accurately placed at the superior border of the adenoids. This positioning allows the complete transoral removal of the main bulk of the adenoid. The adenoid mass which extended to the choanae can also be completely removed. Injury to the Eustachian tube orifice can also be avoided by using endoscope. Bleeding points can be visualized directly and can be cauterized under endoscopic guidance. The only disadvantage is it is a time consuming procedure. The complications are lesser in the hands of person trained in using coblation. The most important endpoint of endoscopic-assisted coblator adenoidectomy compared to curettage adenoidectomy is the complete adenoidectomy is possible and hence least chance of recurrence.

CONCLUSION

The advent of endoscopes made a significant impact in adenoidectomy. Endoscopic assisted adenoidectomy is a natural progression of this technology to allow a more complete adenoidectomy. From this we conclude that the overall advantages of coblation adenoidectomy, compared with cold curettage, are the decrease in intra- and post-operative bleeding, better safety, precision of adenoid removal and less injury to adjacent tissues.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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