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Suction diathermy adenoidectomy: audit of current practice in a tertiary care hospital

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ABSTRACT

Background: Adenoidectomy is conventionally performed using adenoid curette as a blind procedure. Suction diathermy adenoidectomy is a technique of ablating the adenoid tissue using thermal energy and removing it by suction. This audit aims to study the efficacy and complications of this technique in a tertiary care center.
Methods: Retrospective analysis of hospital database was conducted. Twenty-seven patients who underwent suction diathermy adenoidectomy were identified and hospital records studied. Parents were contacted and enquired regarding improvement in child's symptoms.
Results: No instances of postoperative complications identified. All except 2 parents were completely satisfied with the improvement in their child's symptoms. Two children had occasional mouth breathing.
Conclusions: Suction diathermy adenoidectomy is a feasible alternative to conventional adenoidectomy with few complications and minimal rate of recurrence.

Keywords: Suction diathermy, Adenoidectomy, Coblation

INTRODUCTION

Adenoidectomy is a commonly performed surgery in children. The main indications are nasal obstruction with persistent mouth breathing, obstructive sleep apnea, and glue ear. It is traditionally performed by curettage, but this technique is a blind procedure and is associated with complications such as bleeding and potential for residual tissue. Currently the standard of care for adenoid surgery is excision under direct vision. This has significantly reduced recurrent or residual disease. This can be achieved by coblation, microdebrider or suction diathermy adenoidectomy.

Suction diathermy adenoidectomy is a procedure that uses thermal energy generated by electric current to ablate adenoids which is removed using suction.[1] This procedure was described in 1997 and the technique has the advantage of complete tissue removal with reduced blood loss.[1,2] However, this happens to be a procedure performed in a minority of patients with only few studies published. Studies in the Indian scenario are sparce, with one reported paper which is a technical note.[3]

The objective of our audit was to assess the efficacy of suction diathermy adenoidectomy in the removal of adenoid tissue, post-operative complications and overall medium term improvement in patient symptoms.

METHODS

This is a retrospective study. This audit was performed in a tertiary care centre for otolaryngology in India (People Tree Hospitals, Bangalore). The audit project was cleared

by institutional ethics committee (People Tree Hospitals IEC). A hospital database search was carried out and details of all adenoidectomies performed using suction diathermy between April 2016 and March 2019 was collected and tabulated. Inclusion criteria were patients under 18 years who underwent adenoidectomy as a primary surgery by suction diathermy. The patients excluded from the study were syndromic children and revision surgeries. Details of patient, indication for procedure, details of post-operative period were noted.

All patients had suction diathermy adenoidectomy performed by the same consultant. The patient was placed in Ross position; Boyle Davis mouth gag was applied. The soft palate was retracted using 2 infant feeding tubes introduced through nose and brought out through oral cavity. The surgery was performed by visualizing the adenoid using a mirror in all cases, complete removal of adenoid and haemostasis achieved using suction diathermy, the size of the wand was 10F and diathermy wattage was 32. Complete visualization of choana on both sides was the end point of adenoid removal. A layer of antibiotic ointment was applied over the nasopharynx after removal of adenoid in all cases. The patients were discharged after 24 hours. Postoperative antibiotics were given for 5 days and patients were followed up at 7 days and 1 month.

The patients or their parents were telephoned and questioned regarding current symptoms if any and improvement in mouth breathing. A scoring system was used to grade the mouth breathing postoperatively. A score of 0 was used for a response of no mouth breathing, 1 for mouth breathing that is occasional and 2 for mouth breathing always. Microsoft Excel 2010 was used for tabulation of data and analysis of results.

RESULTS

A total of 27 children who underwent suction diathermy adenoidectomy were identified in our search of hospital database. Electronic notes were available for all the patients. All patients had suction diathermy adenoidectomy performed by the same consultant.

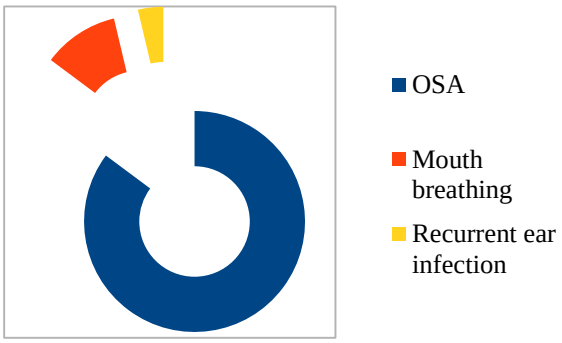

Figure 1: Suction diathermy adenoidectomy indications.

Age of the patients at the time of surgery ranged from 3 to 13 years, with mean age being 6 years. The indication for surgery was obstructive sleep apnea in 23 children, chronic nasal obstruction and mouth breathing in 3 children and one child had surgery for recurrent ear infections (Figure 1).

All patients underwent primary suction diathermy adenoidectomy. Of these, three patients underwent adenoidectomy alone, 3 underwent adenoidectomy with submucous diathermy and lateralisation of inferior turbinates, remaining 21 patients underwent adenoidectomy with tonsillectomy (Figure 2).

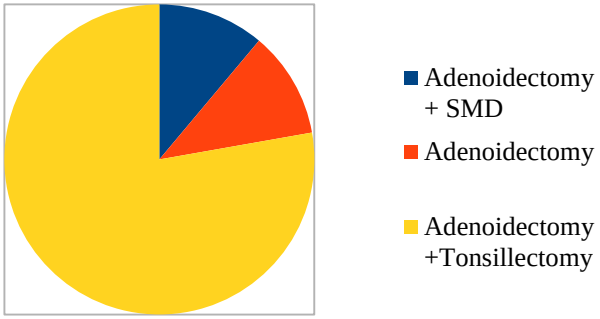

Figure 2: Distribution of adenoidectomy and any adjunct procedures

None of the patients had postoperative bleeding. There was no pain related to adenoidectomy in any of the patients. The follow up period for the included patients ranged from 3 months to 3 years. On questioning regarding symptoms post-surgery, most of the patients (25 out of 27) had no mouth breathing or nasal discharge with score 0, two patients had occasional mouth breathing with score 1 and one of these had occasional nasal discharge. One of the patients who had occasional mouth breathing had deviated nasal septum on repeat postoperative endoscopy. He was advised septoplasty at 16 years of age if symptom persists. The other was not keen for re-evaluation as residual symptoms were only mild.

DISCUSSION

The most common indication for adenoidectomy in our series was obstructive sleep apnea. None of the children had post-operative complications following suction diathermy adenoidectomy. All children had a significant improvement in symptoms following the procedure.

A case series of 118 children who underwent suction diathermy adenoidectomy concluded that the technique proved safe and rapid with mild blood loss (<15 ml) and mean surgical time 10.5 mins regardless of the adenoid size with 96% of parents reporting satisfaction with the procedure and improvement in their child's breathing.[4] Our study too showed that most parents (92.6%) were

satisfied with the procedure and reported significant improvement in child's symptoms with only 2 parents reporting occasional mouth breathing and nasal discharge.

The reported complications of adenoidectomy including post-operative haemorrhage is very less with suction diathermy adenoidectomy.[4-7] In our case series, none of the patients had postoperative haemorrhage. The other reported complications include neck pain, postoperative neck stiffness and velopharyngeal insufficiency.[2] In a prospective study of 68 children undergoing adenoidectomy under direct vision using a suction-diathermy ablation technique compared with an historical control group of 58 children undergoing curettage adenoidectomy over a period of 2 years, showed that using suction diathermy for adenoidectomy was associated with significantly less blood loss ($p<0.001$) and was equally good in reducing nasal symptom score with no recurrences and no instances of nasopharyngeal stenosis.[5]

Table 1: Comparison of different studies of adenoidectomy by different techniques.

Study	Wynn et al[4]	Sethi et al[10]	Skilbeck CJ et al[6]	Walker P et al[5]	Datta R et al[12]	Bidaye R et al[13]	Present study
Technique	Suction diathermy	Suction diathermy	Suction diathermy	Suction diathermy	Microdebrider	Coblation	Suction diathermy
No of subjects	118	140	1411	68	60	60	27
Hemorrhage	<15 ml blood loss	2 patients had post-op bleeding (1.6%)	Nil	Less intraoperative blood loss	Increased intraoperative hemorrhage	Less intraoperative bleeding	Nil
Result /improvement in symptoms	96% improvement in symptoms	No recurrence	1.7% needed revision surgery	No recurrence/ complications	Faster recovery, less collateral damage	reduced blood loss, no post-operative residual tissue	92.6% parent satisfaction

A study which compared adenoidectomy techniques with postoperative neck pain did not show any significant increase in pain with electrocautery.[8] In our study too, none of the patients had increased pain related to adenoidectomy. However, our limitation is that few of the patients underwent tonsillectomy along with adenoidectomy which made the assessment of adenoidectomy pain difficult. The rate of regrowth or recurrence of adenoid is significantly lower in suction diathermy adenoidectomy compared to curette adenoidectomy.[9,10] Another complication of the procedure is pharyngeal infection. Some patients experience a bad odor after the procedure. In our series, all patients received post- operative oral antibiotic and intraoperative local application of antibiotic ointment to tackle this complication. None complained any odor at 7th postoperative day.

The removal of adenoids is complete in this technique with minimized risk of damage to surrounding tissues as it is done under vision.[11] Other techniques of adenoidectomy under vision include microdebrider assisted and coblation assisted adenoidectomy. The former technique of adenoidectomy ensures complete tissue removal and reduced operative duration but has the disadvantage of increased intraoperative bleeding.[12] Coblation is associated with reduced blood loss and complete tissue removal but the equipment is expensive. When compared with coblation and microdebrider, suction diathermy is less expensive.[5,13,14] The diathermy wand can be connected to any cautery machine in the operating room which makes it a cost effective technique. In a country where cost is an overriding concern, suction diathermy adenoidectomy is a very good alternative with excellent results and can be performed safely in secondary or tertiary care centres.

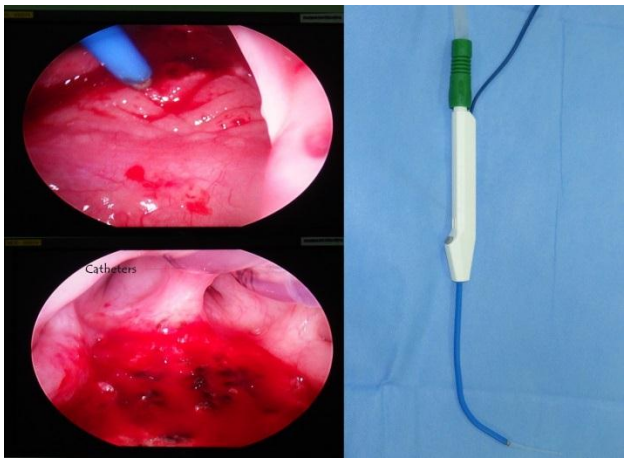

Figure 3: Technique of suction diathermy adenoidectomy, pre and post-operative pictures with the suction diathermy coagulator.[15]

Limitation

The main limitation of this audit is the lack of control group. We have instead compared to previously

published studies as standard. An ideal study would be to compare the three main modalities of adenoidectomies (suction diathermy, microdebrider and lastly coblation) for easy of removal, blood loss, complications and cost.

CONCLUSION

Suction diathermy adenoidectomy is a feasible alternative to conventional curette adenoidectomy. The removal of adenoid tissue is complete with minimal rate of recurrence and very few complications. It is also a cost effective technique and suitable for use in most secondary and tertiary care hospitals.

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

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