

Advantages of Tonsillectomy done under Local Anesthesia compared to General Anesthesia in Adults

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ABSTRACT

Background/Objectives: Tonsillectomy using local anesthesia (local tonsillectomy) is a safe and effective alternative to general anesthesia in the healthy cooperative teenage or adult patients. Blood loss, morbidity, complications and patient satisfaction were better in some studies with tonsillectomies done under general anesthesia.

Design: Comparative case series analysis study of two groups of patients who underwent tonsillectomies under local and general anesthesia during the study period of 57 months from March 2007 to December 2011.

Materials and methods: Overall 1,349 cases of tonsillectomies done for chronic tonsillitis were included under the study. Three hundred and sixty-seven cases operated under general anesthesia and 982 cases operated under local anesthesia were compared. The parameters compared were duration of surgery, blood loss and the mean pain visual analog score.

Results: Significant difference in duration of surgery, blood loss during surgery and visual analog scale (VAS) pain scores were seen in the two groups with local anesthesia scoring over general anesthesia.

Conclusion: Tonsillectomy under local anesthesia is a good alternate for the procedure under general anesthesia with limited resources and in cooperative adults.

Keywords: Tonsillectomy, Local anesthesia, General anesthesia, Scalpel cautery method.

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INTRODUCTION

Tonsillectomy is one of the most frequently performed procedures in the Department of Otolaryngology.¹ Chronic tonsillitis is the most common indications for tonsillectomy followed by peritonsillar abscess and sleep apnea syndrome.^{2,3}

In India, chronic tonsillitis remains the most common indication and the dissection method of tonsillectomy is considered the most common and safest method widely practiced.⁴ The classical dissection snare tonsillectomy has been modified over the years and alternate procedures like electrocautery, laser, coblation, bipolar scissors tonsillectomy and radiofrequency ablation have been introduced.⁵

Tonsillectomy using local anesthesia (local tonsillectomy) is a safe and effective alternative to general anesthesia in the healthy cooperative teenage or adult patient.⁶ In India most of the tonsillectomies are done under general anesthesia but cases under local anesthesia are also widely practiced because of economic considerations and long waiting lists.⁴

It is widely accepted that local tonsillectomy needs lesser time, lesser blood loss and lesser costs to the patient.⁶ In our study, we have performed 1,114 tonsillectomies under general and local anesthesia and the results in term of duration, blood loss and pain were compared. All these surgeries under local anesthesia were performed in cooperative adults. Postoperative opinion of many patients revealed they were satisfied by the procedure and would recommend and choose local anesthesia again.

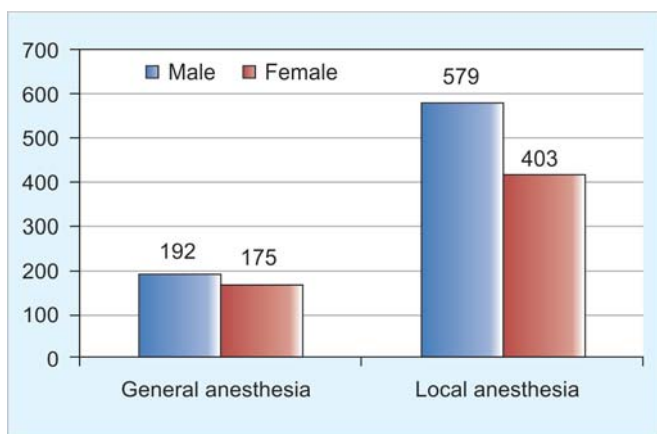
MATERIALS AND METHODS

This is a comparative case series analysis study of two groups of patients who underwent tonsillectomies under general and local anesthesia. Overall, 1,349 tonsillectomies done for chronic tonsillitis were included under the study with 367 cases done under general anesthesia and 982 cases done under local anesthesia. The cases were operated during the study period of 57 months from March 2007 to December 2011. Ethical committee clearance was obtained from the institution.

The study included 771 males and 578 females. General anesthesia group had 192 males and 175 females with the youngest being 18 years female and the oldest being 47 years male. Local anesthesia group included 579 males and 403 females with the youngest being 19 years male and the oldest being 47 years female. Patients younger than 18 years, tonsillectomies done for other indications than chronic tonsillitis were excluded from the study (Graph 1).

Twenty-three patients were operated using newer tissue welding method, three using harmonic scalpel, seven using coblation method were also excluded. All apprehensive patients were operated under general anesthesia and the rest under local anesthesia. A detailed history was taken and the procedure of surgery was explained to the patients with written consent. A week long antibiotics orally were given to reduce the acute infection in the tonsil if present. All cases were taken for surgery 1 week after antibiotics.

The procedures were done under local and general anesthesia under dissection scalpel cautery method by a



Graph 1: Sex distribution in general and local anesthesia group

single surgeon. Baseline investigations which included full blood count, coagulation values (clotting time, bleeding time) and electrocardiography (ECG) were analyzed. Patients with systemic diseases like hypertension, thyroid toxicity, asthma, diabetes, heart disease, hemorrhagic tendency, neurological disease and allergy to local anesthesia or adrenaline were excluded.

General anesthesia was given with oronasal or orotracheal intubation in 367 cases. In the 982 cases operated under local anesthesia 1% lidocaine and adrenaline 1:2,00,000 was used. In the local group premedication with atropine 0.6 mg and pentazocine 50 mg IV diluted in 10 cc of distilled water were given half an hour before surgery. All patients received four puffs of 7.5 mg/metered dose of lidocaine spray 15% (100% w/w) immediately before local infiltration. Equal amounts of local anesthesia (7-10 ml on either side) were infiltrated to the upper middle and lower pole of the tonsils and to the posterior arch (Figs 1 and 2).

Nine hundred and eighty-two patients (579 males, 403 females) were infiltrated by 1% lidocaine:adrenaline 1:2,00,000. Lidocaine infiltration dose was calculated as 5 mg/kg BW. The time from infiltration of the tonsil to the time of grasping the tonsils without pain was taken as time of onset of action of the local anesthetic. It was immediate for 1% lidocaine. Subcapsular removals of the tonsils with bipolar cautery of the small bleeders were done and larger bleeders were ligated by 3-0 silk threads (Figs 3 and 4).

Operative time for general anesthesia was taken from the time of induction to the time of getting back the swallowing reflex. In local anesthesia it was taken from the time of infiltration to the time the patient sat up and gargled the throat. In local tonsillectomy after the surgery the patient was made to sit and clear his throat with warm diluted H₂O₂ and povidine-iodine (Figs 5 and 6).

Intraoperative bleed was measured by calculating difference in weight of blood-soaked guaze pieces before and after surgery plus the amount of blood collected in the suction jar. The weight of the saline sucked in was deducted



Fig. 1: Fifteen percent local anesthesia spray being used and Rose position given



Fig. 2: Infiltrative anesthesia 1% lidocaine given

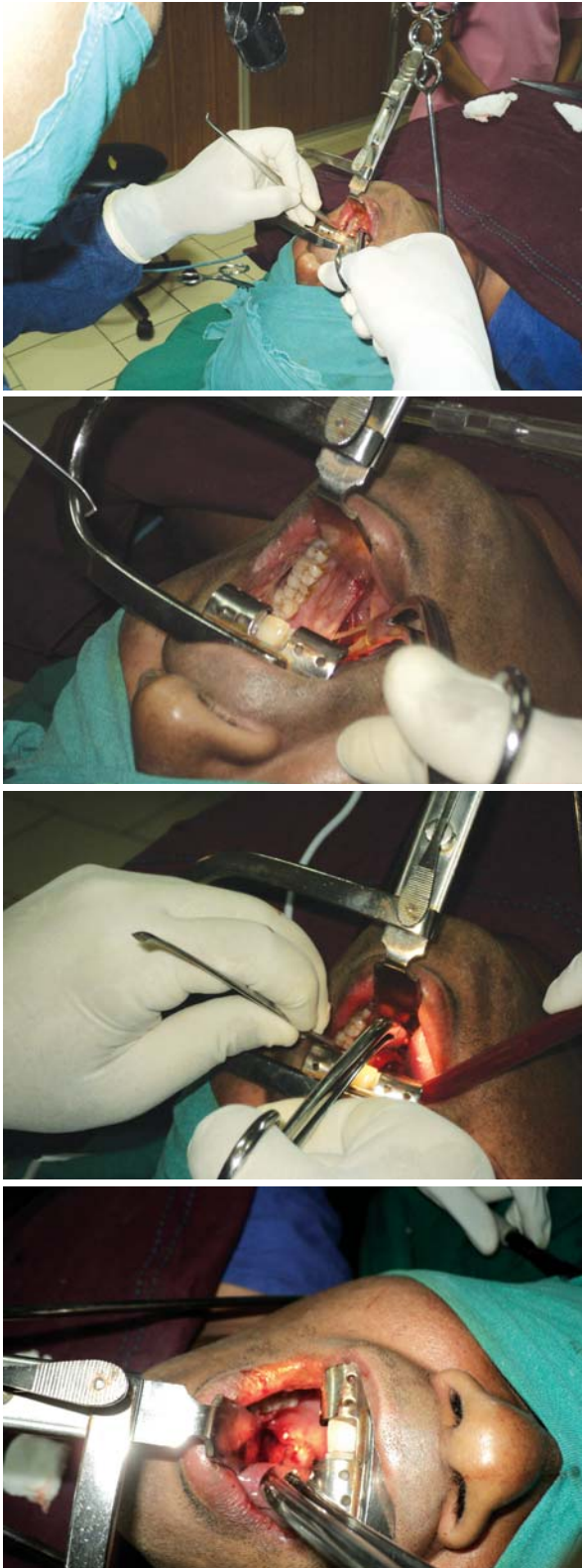


Fig. 3: Dissection snare method of tonsillectomy being done

from the total. Pain sensations were measured by visual analog scale (VAS) at 6, 10, 18 and 24 hours after surgery and the average recorded (Graph 2).

RESULTS

No unusual complications were reported in the study. Hypersensitivity to lidocaine was not seen in any of the



Fig. 4: Tonsils being snared out and bipolar cautery being used

patients. In general anesthesia group mean duration of surgery in males was 50.06 minutes, in females 50.10 minutes, mean age in males was 21.37 years, in females was 21.54 years, mean blood loss in males was 44.43 ml, in females 43.36 ml.

The VAS scores in males were 4.69, 4.11, 3.876 and 3.612 at 6, 10, 18 and 24 hours respectively. While the VAS scores in females were 4.589, 4.294, 4.083 and 3.794 at 6,

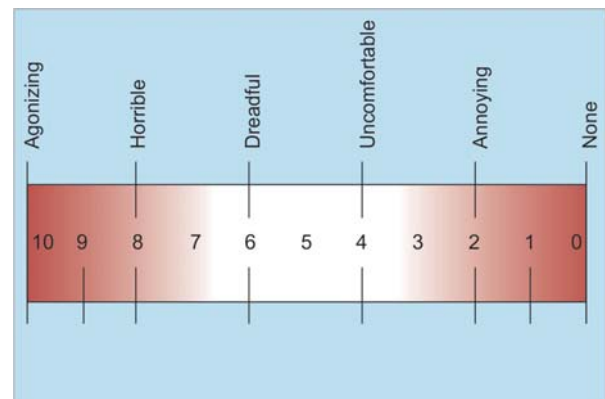


Fig. 5: Hydrogen peroxide and betadine gargling being given immediately after surgery

10, 18 and 24 hours respectively. In local anesthesia group mean duration of surgery in males was 35.34 minutes, in females 35.269 minutes, mean age in males was 25.14 years, in females it was 26.25 years, mean blood loss in males was 29.86 ml, in females 30.16 ml.



Fig. 6: Instruments used for local tonsillectomy



Graph 2: Visual analog scale

The VAS scores in males were 1.7, 3.155, 3.09 and 3.612 at 6, 10, 18 and 24 hours respectively. While the VAS scores in females were 1.69, 3.165, 3.106 and 3.586 at 6, 10, 18 and 24 hours respectively. A significant reduction in duration of surgery and blood loss was seen in local anesthesia group compared to general anesthesia group. Also significant low VAS scores were seen in local anesthesia group compare to general anesthesia group (Table 1).

Postoperative nil by mouth was maintained for only 2 hours in local tonsillectomy while 6 hours strictly for tonsillectomy under general anesthesia. All the local anesthesia patients were discharged on 2nd postoperative

Table 1: Average scores of various parameters and their significance values

		Average age (yrs)	Duration of surgery (min)	Blood loss at surgery (ml)	VAS			
					6 hrs	10 hrs	18 hrs	24 hrs
General anesthesia (n = 334)	Males 192	21.37	50.06	44.43	4.69	4.11	3.876	3.612
	Females 175	21.54	50.10	43.36	4.589	4.294	4.083	3.794
	Total 367	21.455	50.08	43.93	4.637	4.197	3.97	3.69
Local anesthesia (n = 780)	Males 579	25.140	35.34	29.86	1.70	3.155	3.09	3.612
	Females 403	26.25	35.269	30.16	1.69	3.165	3.106	3.586
	Total 982	25.67	35.30	30.006	1.697	3.16	3.101	3.6
Total (1,349)								

day and all the general anesthesia cases were discharged on the 3rd postoperative day.

DISCUSSION

Palatine tonsils are lymphatic tissues of the digestive tract epithelium and are present on the lateral wall of the throat that compose the bulk of the so called Waldeyer's lymphatic ring.^{7,8} They are covered by stratified nonkeratinous epithelium, which is an extension of the oral pharyngeal tissue.^{7,8} The epithelium forms about 30 deep crypts that invaginate into the parenchyma in which the lymph nodes are found with the germ centers responsible for B-lymphocyte production.^{7,9}

Also found are debris of epithelial cells desquamations, alive and dead lymphocytes, as well as bacterium may be present in the crypts.¹⁰ The tonsils are enclosed by fibrous and dense capsule, separating them from the deeper connective tissue.^{7,8} Tonsils arise from the second pair of pharyngeal pouches, where the endodermis bears the covering epithelium and the mesenchymal structures give origin to the lymphoid tissue.¹¹

Tonsillectomy is one of oldest surgical procedures, described for about 2000 years, by Celso Cornelio in 50 AD.^{1,12} Worthington in 1907 described modifications in technique and first described tonsillar dissection.^{1,12} Whillisy and Pybus in 1910 described Guillotine cutter method of tonsillectomy^{1,12} and Sluder in 1911 described the Sluder-Ballenger's technique of tonsillectomy.¹³ Waugh described the modern method of tonsillectomy by dissection and snare method at the end of 20th century by modifying the Worthington technique.^{14,15}

The purpose of tonsillectomy is the complete removal of the palatine tonsils with minimal blood loss while avoiding unnecessary trauma to adjacent tissue.¹⁶ Despite the fact that advances in modern general anesthetic techniques have lessened risks, but it has increased the cost of surgery.¹⁶ Tonsillectomy using local anesthesia (local tonsillectomy) is a safe and effective alternative to general anesthesia in the healthy cooperative teenage or adult patient.⁶ Blood loss, morbidity, complications and patient

satisfaction were reviewed and compared with tonsillectomies done under general anesthesia.⁶ With local anesthesia the operation required less time, produced less intraoperative hemorrhage and was less costly.¹⁶ However, there was no significant difference in the incidence of postoperative complications or morbidity.¹⁶ Post-tonsillar hemorrhage is a dreaded life-threatening complication for a tonsillectomy procedure.⁶ In a retrospective study by Bredenkamp et al, including 64 tonsillectomies done over 7 years, the average blood loss was 42 ml in the local tonsillectomy group, compared with 198 ml in the general anesthesia group.⁶

Pain is the most significant obstacle to the rehabilitation of a patient following tonsillectomy.⁴ Inadequate analgesia causes poor oral intake, which leads to lassitude, delayed recovery of the patient.⁴ Various strategies for the management of post-tonsillectomy pain have been proposed like infiltration of local anesthetic in the tonsillar fossa,^{17,18} intramuscular nonsteroidal anti-inflammatory drugs,¹⁹ narcotics and oral analgesics.²⁰ Application of sucralfate as a protective barrier following tonsillectomy has been found to promote healing with significant pain reduction in the postoperative period.²¹ Use of transcutaneous electric nerve stimulation (TENS) for post-tonsillectomy pain has shown promising results.²²

McClairn et al in their study on 73 patients found local tonsillectomies to be of significantly less duration, less costly, less intraoperative hemorrhage and no significant difference in postoperative hemorrhage or patient acceptance.¹⁶ Kennedy et al in their study on 237 patients found higher incidence (15%) of postoperative bleeding under general anesthesia compared to (3%) under local anesthesia.²³ Also reduced cost, lesser operative time and pain were seen in local anesthesia group.

CONCLUSION

In our study local tonsillectomy required less time, produced less intraoperative hemorrhage and was less costly. We did not see any significant difference in the incidence of postoperative complications or morbidity. We conclude that

local tonsillectomies have high patient acceptance in adult population and are associated with minimal morbidity and complications. Furthermore, they are cost-effective and can be taken as a day care surgery in setups with economic considerations.

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