

**Original research article****A clinical study of effect of peri-tonsillar infiltration of ropivacaine and adrenaline on post-tonsillectomy pain**<sup>1</sup>Nikethan G, <sup>2</sup>Abhishek MP, <sup>3</sup>Nikesh Kumar Singh, <sup>4</sup>Kiran M Naik<sup>1</sup>Consultant, Department of ENT, Taluk hospital, Kollegal, Karnataka, India<sup>2</sup>Senior Resident, Department of ENT, CIMS, Chamarajanagar, Karnataka, India<sup>3</sup>Senior Resident, Department of ENT, Patna Medical College and Hospital, Patna, India<sup>4</sup>Professor and Head, Department of ENT & HNS, Adichunchanagiri Institute of Medical Sciences, Belluru, Karnataka, India**Corresponding Author:**

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**Abstract**

This prospective study was conducted in the Department of Otorhinolaryngology and Head and Neck Surgery. A sample size of 30 patients which satisfied the inclusion criteria were included in the study. Dissection tonsillectomy was done in all the cases. Ropivacaine (0.75%) with Adrenaline (1:200000) was locally infiltrated on the right side (R-side) in the Peritonsillar region before the surgery and in the Tonsillar fossa after the surgery. The left side was considered as the control side.

Patients were followed up on 1st and 7<sup>th</sup> post-operative days for the measurement of post-operative pain. For the assessment of post-operative pain, Visual Analogue Scale was used (VAS). For patients undergoing Adenoidectomy with Tonsillectomy, swabs and suctioning bottles are collected separately before Tonsillectomy.

On 1st post-operative day, pain on the right side was significantly lower compared to the left side (p value <0.0001), however the reduction of pain scores on right side compared with that of the left side was not significant (p value=0.536) on the 7<sup>th</sup> post-operative day.

**Keywords:** Tonsillectomy, peri-tonsillar infiltration, ropivacaine, adrenaline, intra-operative bleeding, post-operative pain

**Introduction**

The palatine tonsil is a sub-epithelial lymph node with prominent germinal centres concerned in the production of lymphocytes and plasma cells, penetrated by branching crypts from the medial surface, the lateral surfaces being separated from the pharyngeal wall by a distinct capsule of condensed connective tissue. Tonsils are immunologically reactive organs with specific antibody and band "t" cell activity in response to a variety of antigens. Tonsils being covered by the mucous membrane common to the oropharynx may become inflamed as part of a general pharyngitis, usually concurrent with an acute respiratory infection <sup>[1]</sup>. About 7.5% of people have sore throat in any three month period and 2% of people visit a doctor for tonsillitis each year <sup>[2]</sup>. The typical cost when done as an inpatient in the United States is US\$4,400 as of 20133. Acute cases can be treated conservatively with antibiotics and analgesics <sup>[1]</sup>. Tonsillectomy is the only certain cure for chronic tonsillitis <sup>[1]</sup>. Tonsillectomy is a surgical procedure in which both palatine tonsils are fully removed from the back of the throat <sup>[4]</sup>. The procedure is mainly performed for recurrent throat infections and obstructive sleep apnea (OSA) <sup>[4]</sup>. The surgery has been described since at least as early as 50 AD by Celsus <sup>[5]</sup>. Tonsillectomy is one of the most common surgical procedures in children in the United States. More than 530000 procedures are performed annually in children younger than 15 years <sup>[6]</sup>. The tonsillectomy rate is 0.53 per thousand children and 1.46 for combined tonsillectomy and adenoidectomy <sup>[7]</sup>. Pain is the most common symptom and hemorrhage is most common complication following tonsillectomy. Pain following the procedure is significant and requires continued hospital stay. Pain will usually persist approximately two weeks following surgery. Post-operative pain seems to be more in adults compared to children <sup>[8]</sup>.

**Methodology**

- Data was collected from patients, satisfying the inclusion criteria, presenting to the Otorhinolaryngology outpatient department.
- All patients underwent routine and special investigations.
- Written informed consent was taken from all patients undergoing Tonsillectomy and Adenotonsillectomy.
- Ropivacaine (0.75%) with Adrenaline (1:200000) was locally infiltrated on the right side (R-side) in the Peri-tonsillar region before the surgery and in the Tonsillar fossa after the surgery. The left side

was considered as the control side.

- Intraoperative blood loss was estimated by weighing the swabs used before and after surgery (1gm=1ml) and adding it to the total volume of blood collected in respective suction bottles separately on both the sides.
- For the assessment of post-operative pain Visual Analogue Scale was used (VAS).
- Patients were followed up on 1<sup>st</sup> and 7<sup>th</sup> post-operative days.
- Occurrence of post-operative bleeding and pain was noted and recorded for analysis.
- For patients undergoing Adenoidectomy with Tonsillectomy, swabs and suctioning bottles were collected separately before Tonsillectomy.

**Statistical analysis**

The study includes data from intra-operative and post-operative period which will be analyzed using Chi square test and Student t test technique as found appropriate and comparison of each technique used for achieving haemostasis will be determined.

**Inclusion criteria**

- Patients of all age groups and sexes.
- Patients undergoing tonsillectomy for:
  - Chronic tonsillitis and chronic adenotonsillitis.
  - Recurrent episodes of acute tonsillitis.
  - Hypertrophic obstructive tonsils with apnea, snoring or Odynophagic symptoms.

**Exclusion criteria**

Patients undergoing tonsillectomy for:-

- Unilateral styloid process removal.
- Unilateral Glossopharyngealneurectomy.
- Patients allergic to Ropivacaine and other local anaesthetics.

**Results**

**Table 1:** Comparison of Mean post-operative pain scores between Right and Left sides

	POD1		POD7	
	Mean	Std. Deviation	Mean	Std. Deviation
Right	7.07	.868	.53	.507
Left	8.33	.711	.60	.563

Pain was evaluated using a visual analogue scale with scores ranging from 1 to 10. On post-operative day 1, pain on the right side averaged around 7.07 and on the left side, it averaged around 8.33. On the 7<sup>th</sup> post-operative day, pain on the right side averaged around 0.53 and pain on the left side averaged around 0.60.

**Table 2:** Comparison of Mean post-operative pain scores between the two sides on 1st and 7th post-operative days separately

	Mean	N	Std. Deviation	95% Confidence Interval of the Difference		t	Df	Sig. (2-tailed)
				Lower	Upper			
RPOD 1	7.07	30	.868	-1.646	-.888	-6.836	29	.000
LPOD 1	8.33	30	.711					
RPOD 7	.53	30	.507	-.284	.151	-.626	29	.536
LPOD 7	.60	30	.563					

From the above analysis, it can be said that, there is a significant decrease in pain on the right side compared to the left side (p<0.0001) on 1st post-operative day. On the 7th post-operative day the decrease in pain on the right side compared with that of the left side is not significant (p=0.536).

**Discussion**

In our study, all the 30 cases were given peri-tonsillar infiltration of ropivacaine with adrenaline on the right side and the left side was considered as control side. It was found that the percentage of the cases having blood loss >100 ml was more on the left side compared to that with right side.

Ashank Mishra *et al.*, in 2016 conducted a study with ropivacaine in periodontal surgery and found that, ropivacaine significantly reduced blood loss due to its vasoconstrictive properties. The above study also supports our result that peri-tonsillar infiltration of ropivacaine with adrenaline is effective in reducing intra-operative bleeding<sup>[9, 10]</sup>.

## Conclusion

From our study it can be derived that the peri-tonsillar infiltration of Ropivacaine (0.75%) with Adrenaline (1:200000) is:

1. Effective in the management of post-tonsillectomy pain in the initial days after surgery although same cannot be said on the 7<sup>th</sup> post-operative day.

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