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A Comparative Study on the Efficacy of Lignocaine with Adrenaline and Ropivacaine for Post-Tonsillectomy Pain Relief

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Abstract

Background: Post-operative pharyngeal pain is one of the major problems with tonsillectomy. Thus, Adequate analgesia is crucial in the immediate post-operative period, which enables the patients to speak and swallow normally. Though there are various routes to administer the anesthetic agents, intraoperative peritonsillar injection of local anesthetics is one of the preferred techniques.

Aim: The present study was conducted to determine the effectiveness of lignocaine with adrenaline versus ropivacaine in controlling post-operative pain and intraoperative blood loss.

Methods: The study was conducted at Karuna Medical College, Kerala India, in which patients undergoing tonsillectomy for standard indications were included in the study. The patients were randomly divided into two groups- group L and group R. The anesthetic agent was then injected into the peritonsillar region. Group L received lignocaine and group R received Ropivacaine. Intraoperative blood loss and pain during swallowing, speech, and rest were assessed using a visual analogue scale at 4, 8, 12, and 24-hours post-surgery.

Results: The Lignocaine group showed slightly higher pain levels during swallowing, speaking, and at rest compared to ropivacaine at various intervals. Mean pain scores were significantly lower in Group R, at 4-, 8-, 12-, and 24-hours post-surgery, with p-values <0.05. Additionally, ropivacaine demonstrated superior pain control, particularly during speech and swallowing. No significant correlations were observed between age, gender, or indications, and pain levels.

Conclusion: Both ropivacaine and lignocaine with adrenaline can be used as effective local anesthetics in achieving post-operative pain control after tonsillectomy. Ropivacaine provides significantly better postoperative pain control compared to lignocaine with adrenaline in patients undergoing tonsillectomy.

Conflicts of Interest: The Authors declare no conflicts of interest.
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Introduction

Tonsillitis is the inflammation of the tonsils, -the lymphoid tissues found at the back of the throat-. It may be acute or chronic in presentation and usually due to viral or bacterial infection for acute tonsillitis and recurrent episodes of acute inflammation or persistent infection in chronic tonsillitis. The clinical presentation of tonsillitis includes sore throat, difficulty swallowing, fever, and swollen lymph nodes. In extreme cases, complications can be found such as peritonsillar abscess, where pus is collected beside the tonsil and has

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to be operated on (1, 2). The diagnosis of tonsillitis is mostly clinical, yet sometimes laboratory tests may have to be applied to differentiate the cause between viruses and bacteria. For instance, the estimation of mean platelet volume (MPV) is useful in differentiating between cases of tonsillitis with or without the peritonsillar abscess because alterations of MPV can be secondary indicators of the underlying processes of inflammation (2). Pathophysiology of the condition is related to how the immune system reacts against infections that may result in hypertrophy of the palatine tonsils. This hypertrophy is typically graded through clinical grading scales, and the Brodsky scale is one such grade that bases tonsil size according to visibility during examination (3, 4). In children, obstructive sleep apnea goes along with chronic tonsillitis through the obstruction caused by enlarged tonsils in the airway. Thus, in clinical investigations, it is important to consider the size of the tonsils (5, 6). Recent studies have shown that vitamin D levels can be implicated in the pathogenesis of chronic tonsillitis. Lower serum vitamin D levels have been associated with larger tonsil sizes and increased expression of vascular endothelial growth factor (VEGF) in tonsillar tissues, suggesting that vitamin D deficiency may contribute to worsening inflammatory processes associated with tonsillitis (7). This difference in the microbiome of the tonsils has been reported in children with chronic tonsillitis, which can alter the immune response and, therefore, the severity of the disease (8). Furthermore, some pathogens like Group A Streptococcus may be diagnosed using a throat culture or rapid antigen detection tests. Immunologically, the clinical significance of tonsillitis is established due to the role played by tonsils in the immunological defense of the body against harmful agents. The presence of certain immune markers such as elevated ASO titers might indicate recent streptococcal infection, and it is the most common cause of acute tonsillitis (9, 10). Management of tonsillitis varies with the severity and frequency of recurrence. For acute bacterial tonsillitis, antibiotics are usually administered, whereas chronic cases may require surgical intervention, including tonsillectomy. It has been shown that tonsillectomy reduces the recurrent character of tonsillitis significantly, thereby improving the quality of life in such patients (11). Indications in pediatric populations include recurrent tonsillitis or obstructive sleep apnea. There is evidence that such children show a significant diminishment of symptoms and sleep improvement (12). Of course, complications, like postoperative pain and bleeding, are the downsides before opting for surgery. However, long-term outcomes of tonsillectomy, including a chance of regrowth of tonsils and revision surgeries, are yet to be established (13). Figure 1 shows the mechanism of blockage of pain sensation post-operatively by lignocaine and ropivacaine.

Lignocaine, also known as lidocaine, and ropivacaine are among the most important local anesthetic agents used in clinical practice for pain relief. The mechanism of action of these drugs is based on the blockade of sodium channels required to generate and transmit action potentials through nerve fibers. This drug prevents the entry of sodium, thereby preventing the action potentials from reaching the central nervous system from the peripheral tissues. Lignocaine has a rapid onset of action and short duration, lasting 30 to 60 minutes when used without a vasoconstrictor and up to 90 minutes if used along with a vasoconstrictor like adrenaline. This fact is also essential for their use in the clinical management of patients- they do have a better safety profile. Though lignocaine is a very potent drug, accidental intravascular injection, and overdose with it may lead to systemic toxicity, although careful dosing and monitoring during administration diminish this possibility (14-16). This is of extreme benefit for acute conditions such as surgery where maximum relief from pain would

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need to be established instantaneously. The pharmacology behind lignocaine does much more than the basic interference with sodium channels. Apart from this, lignocaine possesses anti-inflammatory actions, which also amplifies the analgesic activity even further.

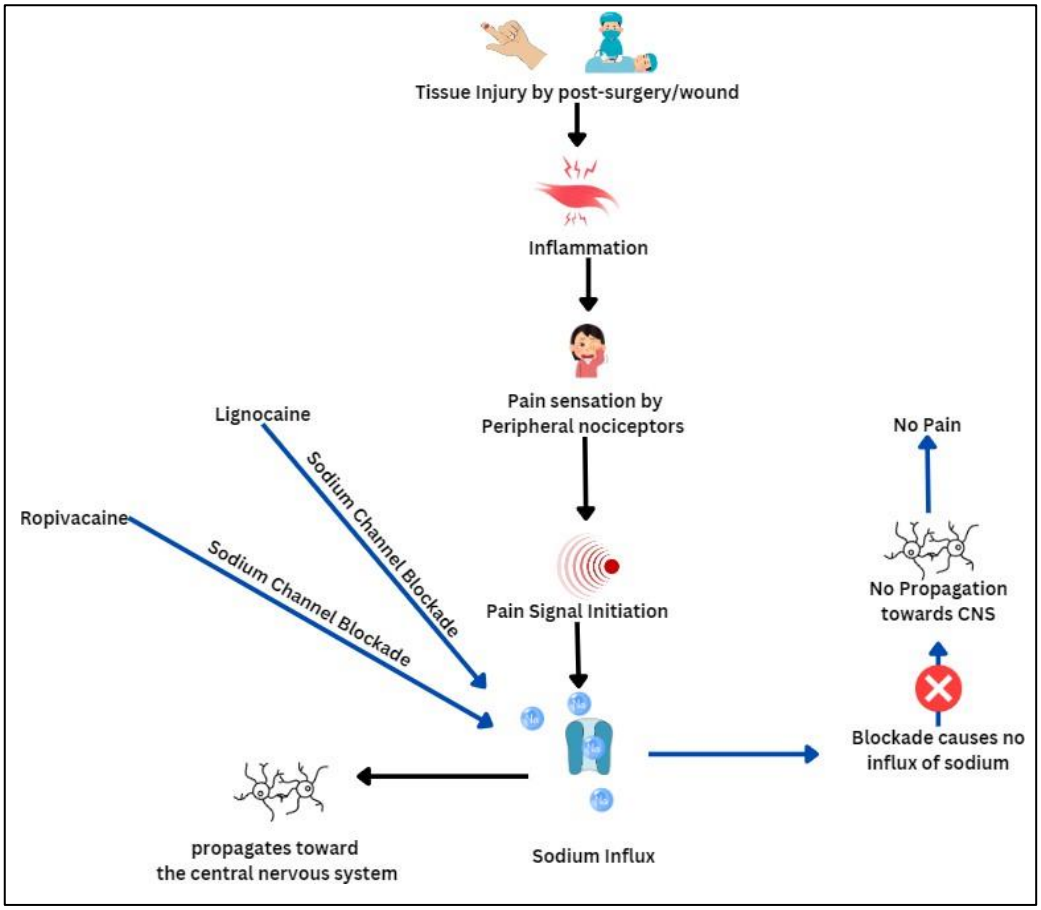

Figure 1: Mechanism of LA (Lignocaine and Ropivacaine) in blocking pain in post-surgical cases.

Lignocaine blocks the pro-inflammation mediators being released and therefore lowers total inflammatory response from the insult of surgical trauma (17, 18). On the contrary, ropivacaine is a newer local anesthetic with numerous advantages over lignocaine, particularly in its pharmacokinetic profile. Ropivacaine possesses a longer duration of action and thus can be administered for long term analgesia in post-operative pain management. Similarly, it has proven to be highly effective for analgesia in a variety of surgeries wherein a longer duration of action would be beneficial like dental procedures and orthopedic surgeries. The choice between lignocaine and ropivacaine is frequently based on the clinical situation, duration of analgesia desired, side effects of the drugs, and patient's medical condition. For instance, for short procedures where there is a pressing need for immediate pain control, lignocaine will be preferred. However, for longer procedures or those for which postoperative analgesia is needed for much longer periods, ropivacaine may be advantageous. It acts by blocking voltage-gated sodium channels similar to lignocaine. Nevertheless, ropivacaine is less lipophilic compared to lignocaine; this may be another contributing factor to its lower systemic toxicity and the occurrence of fewer side effects, primarily motor block, making it a better choice for some clinical applications. This applies especially to regional anesthetic uses, where very high volumes of local

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anesthetics are administered. Lower systemic toxicity favored its application in regional anesthetic applications (19, 20). Their analgesic efficiency may be further enhanced by the use of adjuvants or other methods. Indeed, lignocaine, with magnesium, makes pain relief superior in various kinds of surgery; the practice of multimodal strategies optimizes outcomes regarding analgesia (21). More recently, intravenous lignocaine infusions have become popular to minimize postoperative pain and opioid use; this further shows how versatile lignocaine is as a pain management agent in various protocols (22, 23).

Clinically, lignocaine has also shown substantial potency in per-incisional injection perioperative for pain control during the postoperative period. This has been quite effective in pediatric populations where the patients undergo procedures such as tonsillectomy in which the analgesic properties of lignocaine can improve the recovery experience significantly (24). Our study was to compare the effectiveness of intraoperative local infiltration of lignocaine with adrenaline, and ropivacaine in reducing primary hemorrhage and postoperative pain.

Methods

This study received ethical approval from the institute's ethical committee (IRB No-KMC/IHEC/09/2024). Patients undergoing tonsillectomy for standard indications were included upon providing written informed consent. For patients under 18 years of age, consent was obtained from their parent or legal guardian. Participants were randomized using the lot method into two groups before entering the operating theater. Group 1 (L) received 2% lignocaine with adrenaline in a 1:100,000 composition, while Group 2 (R) received 0.2% ropivacaine. Patients with a history of cardiac, hepatic, renal, or pulmonary comorbidities, hypersensitivity to local anesthetics, oropharyngeal malignancies, suspected lymphoma, or recurrent quinsy were excluded from the study. The overall research design has been shown in Figure 2.

Procedure: Two days before surgery, hypersensitivity to lignocaine and ropivacaine was evaluated. To minimize observational bias, the surgeon and anesthesiologist were blinded to the local anesthetic used. After endotracheal intubation, patients were positioned in rose position with throat packing and a Boyle Davis mouth gag supported by Draffin's bipod and McGuire's plate. Local anesthetic was administered to the upper pole area and peri-tonsillar space (2.5 ml per side) after aspiration, using a 21-gauge, 1.5-inch needle. The efficacy of the injection was verified by observing mucosal bulge or medial displacement of the tonsil.

Tonsillectomy was performed five minutes after administration of the anesthetic using a standard surgical technique. Hemostasis during surgery was achieved using saline pressure packing, ligature, or electrocautery, as needed. Intraoperative blood loss (IBL) was graded based on swab count, suction canister volume, and resuscitation measures. Operating time was defined as the period from incision to complete hemostasis. Intravenous paracetamol, calculated according to body weight, was administered postoperatively. Post-surgery, patients were advised to remain nil per orally for four hours, followed by a cold liquid diet for 24 hours. Pain during swallowing, speaking, and at rest was assessed at 4, 8, 12, and 24 hours post-tonsillectomy. Pain was measured using age-appropriate tools. For patients older than 12 years, the Visual Analogue Scale (VAS) was used (Figure 3).

For children younger than 8 years, the Wong-Baker Faces Scale was employed to assess pain levels during swallowing, speaking, and at rest. Data collected on patient demographics, intraoperative blood loss, operating time, and pain scores were analyzed using statistical software.

Descriptive statistics were used to summarize the data, while inferential statistics determined

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differences between groups. Continuous variables, such as pain scores and operating times, were analyzed using t-tests or Mann-Whitney U tests based on data distribution. A p-value of <0.05 was considered statistically significant.

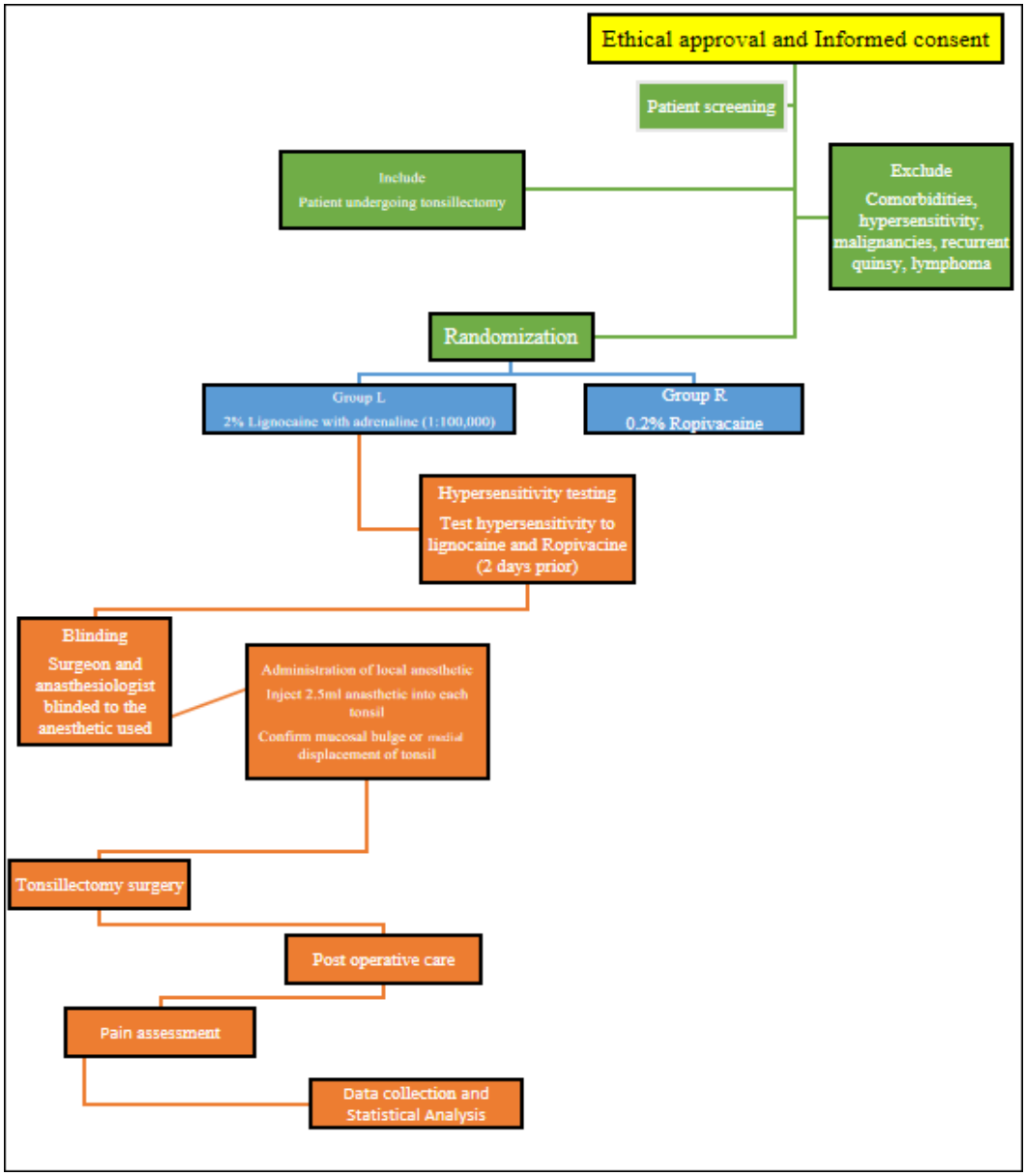

Figure 2: Research Design of this study

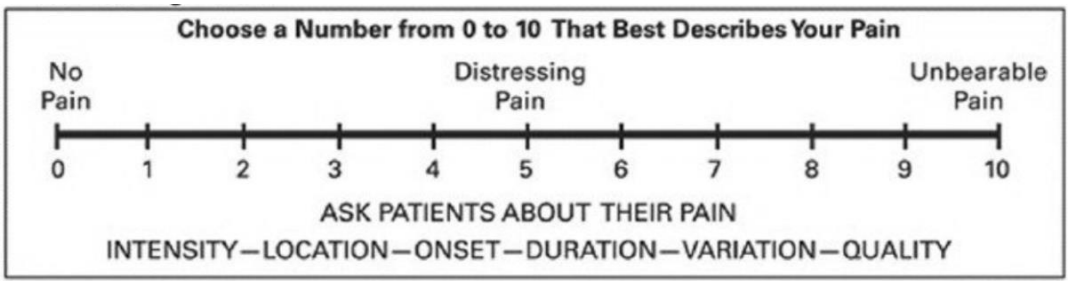

Figure 3: Visual Analogue Scale

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Results

A total of forty-eight patients who underwent elective tonsillectomy were included in the study. Twenty-three patients were in group L and 25 patients in group R (Figure 4). The mean age of the study population was 10.79 years (Standard deviation of 3.78). Figure 6 shows a comparison of the mean age and standard deviation (SD) between two groups of patients: those who received lignocaine with adrenaline (Group L) and those who received ropivacaine (Group R). In Group L, the mean age of patients is approximately 11.65 years, with a standard deviation of 4.39 years, indicating that the ages in this group show a wider spread around the mean. In contrast, Group R has a mean age of 10 years, with a standard deviation of 3.01 years, reflecting a narrower range of age variation compared to Group L. This suggests that patients in Group L were, on average, slightly older and exhibited greater age diversity compared to those in Group R.

Chronic tonsillitis was the most common indication for tonsillectomy in our study (Figure 5). Figure 4 shows the gender distribution in Group L (patients receiving lignocaine with adrenaline) and Group R (patients receiving ropivacaine).

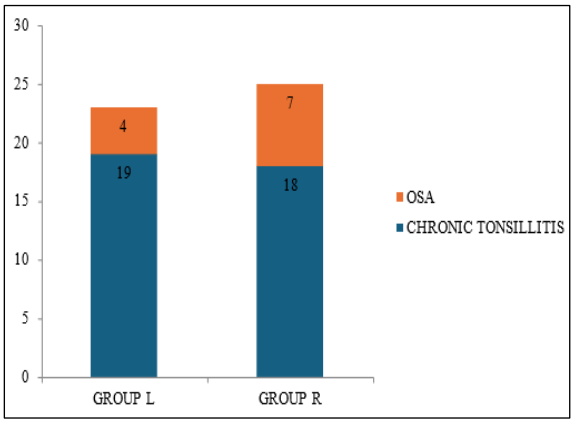

Figure 4: showing indications for tonsillectomy in the two groups.

Group L includes twelve males and 11 females, while Group R comprises 13 males and 12 females. This indicates a balanced gender representation in both groups, with males slightly outnumbering females in each group. The distribution is identical, demonstrating that gender does not significantly differ between the two groups.

Although chronic tonsillitis remains the primary indication in both groups, Group R has a higher number of patients with obstructive sleep apnea compared to Group L. This highlights slight variations in the distribution of medical conditions between the two groups.

Figure 5 compares the pain levels in two groups, L (Lignocaine) and R (Ropivacaine), at different time intervals post-tonsillectomy for three conditions: pain during swallowing, pain during speaking, and pain at rest. For pain during swallowing, the L group reported slightly higher pain scores at 4 hours (7.0511 vs. 7.0486) and 8 hours (5.58 vs. 5.551) compared to the R group. At 12 hours, the pain scores remained similar (4.5889 vs. 4.5594), and at 24 hours, the L group showed marginally lower pain (3.7689 vs. 3.7804). For pain during speaking, the L group had slightly lower pain scores at 4 hours (6.7067 vs. 6.7213) and 8 hours (5.3467 vs. 5.3293) than the R group. Similarly, at 12 and 24 hours, the L group experienced marginally higher pain relief compared to the R group (4.5778 vs. 4.5489 at 12 hours, and 3.3533 vs. 3.3357 at 24 hours). For pain at rest, the scores were identical between the two groups at all time points, with minor fluctuations. At 4 hours, the R group showed slightly higher pain (6.3287 vs. 6.2933). The difference remained minimal at 8 hours (4.7192 vs. 4.7044), 12 hours (3.8797 vs. 3.8733), and 24 hours (2.8888 vs. 2.9356).

The mean intraoperative bleeding during tonsillectomy grade was 2.04(S. D-0.63) and 2(S.D- 0.64) in group L and group R respectively with P value of 0.4 in the student t-test. The pain during swallowing after tonsillectomy significantly reduced in both the groups over the first 24 hours. The mean pain score after 4 hours of surgery was 7.39 in group L and 6.92 in group R. After 24 hours, the

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average pain score was 4.30 and 3.84 in group L and group R, respectively. The addition of ropivacaine was found to be statistically significant in reducing pain during swallowing in the post-operative period (Table 1).

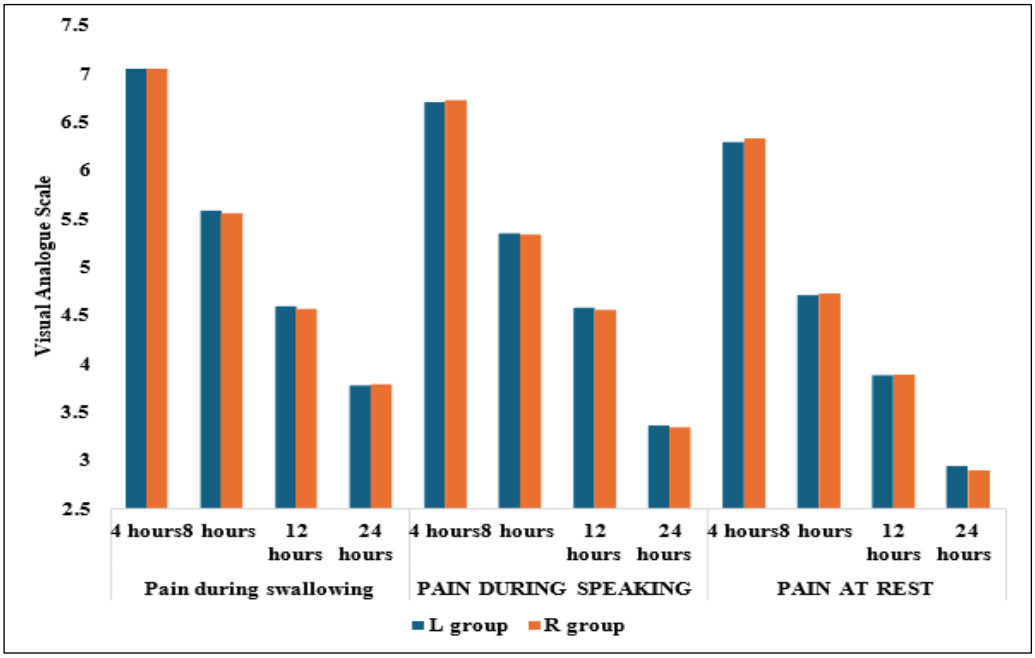

Figure 5: VAS of the patients from 4th hour to 24th hour in each group

Table1: showing pain during swallowing in the two groups.

Time of evaluation	Mean value of group L	Mean value of group R	P Value*
4 Hours	7.39	6.92	0.007
8 hours	5.95	5.44	0.006
12 hours	5.26	4.6	0.001
24 hours	4.30	3.84	0.01

*P value obtained by student t-test and is statistically significant if value is <0.05

The pain during speaking also showed a similar trend as that of pain during swallowing in both the groups. Ropivacaine was found to be more effective in encouraging speech in the first 24 hours' post-surgery (Table 2).

Table 2. Showing pain during speaking in both the study groups.

Time of evaluation	Mean value of group L	Mean value of group R	P Value*
4 Hours	7.47	6.72	0.003
8 hours	6.39	5.24	0.042
12 hours	5.52	4.40	0.040
24 hours	4.21	3.36	0.033

*P value obtained by student t-test and is statistically significant if the value is <0.05.

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The average pain value at rest was less than during speaking or swallowing in both the groups. The difference in the mean value at 4 hours' post-surgery was more significant, indicating that addition of ropivacaine may achieve better pain control (Table 3).

Table 3. shows the average pain level at rest in the study groups.

Time of evaluation	The mean value of group L	Mean value of group R	P Value*
4 Hours	7.08	6.28	0.006
8 hours	5.78	4.68	0.046
12 hours	4.86	3.72	0.033
24 hours	3.56	2.84	0.002

*P value obtained by student t test and is statistically significant if value is <0.05.

Table 4 shows the Pearson correlation coefficients and their corresponding p-values to assess the relationships between age, gender, indication, and various measures of pain (pain during swallowing, speaking, and at rest) over time intervals (4, 8, 12, and 24 hours).

Table 4. Bivariate correlation of the factors with respect to age, gender, and indication

Factors		Parameter	Age	Gender	Indication
Age		Pearson Correlation	1	-0.064	-0.261
		P-value	-	0.663	0.073
Gender		Pearson Correlation	-0.064	1	0.027
		P-value	0.663	-	0.856
Indication		Pearson Correlation	-0.261	0.027	1
		P-value	0.073	0.856	-
Pain during swallowing	**4 hours**	Pearson Correlation	-0.128	-0.163	-0.118
		P-value	0.387	0.268	0.426
	8 hours	Pearson Correlation	-0.079	-0.011	-0.039
		P-value	0.593	0.941	0.791
	12 hours	Pearson Correlation	-0.035	0.005	-0.005
		P-value	0.811	0.975	0.971
	24 hours	Pearson Correlation	-0.076	0.268	0.022
		P-value	0.61	0.065	0.88
Pain During Speaking	**4 hours**	Pearson Correlation	0.143	-0.044	-0.203
		P-value	0.333	0.766	0.167
	8 hours	Pearson Correlation	0.072	-0.039	-0.16
		P-value	0.626	0.791	0.278
	12 hours	Pearson Correlation	0.074	0.028	-0.135
		P-value	0.616	0.853	0.362
	24 hours	Pearson Correlation	0.214	0.039	-0.16
		P-value	0.143	0.79	0.279
	4 hours	Pearson Correlation	0.086	-0.045	-0.106
		P-value	0.56	0.764	0.473

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Pain at Rest	**8 hours**	Pearson Correlation	0.183	-0.011	-0.019
		P-value	0.213	0.939	0.898
	12 hours	Pearson Correlation	0.256	0.103	0.056
		P-value	0.079	0.488	0.706
	24 hours	Pearson Correlation	0.248	0.123	0.123
		P-value	0.089	0.403	0.405

The correlations between the main factors (age, gender, and indication) show that age has a weak negative correlation with the indication (-0.261, p=0.073), which is not statistically significant. Similarly, gender shows negligible correlations with both age (-0.064, p=0.663) and indication (0.027, p=0.856), with no significance in either case. For pain during swallowing, correlations with age, gender, and indication are weak and not statistically significant across all time intervals. The highest correlation, -0.128 (p=0.387), occurs at 4 hours for age, but it remains insignificant. For pain during speaking, correlations with age, gender, and indication are also weak. The strongest positive correlation, 0.214 (p=0.143), occurs at 24 hours for age, but it is not statistically significant. For pain at rest, weak positive correlations are observed with age across all time intervals, with the strongest being 0.256 (p=0.079) at 12 hours. However, none of the correlations for pain at rest reach statistical significance.

Discussion

Pain in the laryngopharyngeal region is an often-overlooked complain following tonsillectomy. The factors leading to pain development are exposed nerve endings of branches of the vagus and glossopharyngeal nerves in the oropharynx, tissue inflammation and oedema arising from mechanical or thermal injury during surgery, and tissue injury while securing intraoperative airway. All these collectively contribute to the spasm of the muscles of pharynx and larynx. The result is intense pain in movements which require the action of these muscles, such as swallowing and speaking (6). An adequate pain control in the post-operative period encourages the patients to return to normal daily activities soon after surgery. Proper oral intake has been shown to reduce the incidence of secondary hemorrhage (7). There are several methods to achieve analgesia after tonsillectomy, which include continuous intra-venous infusion of analgesics, topical application in the form of sprays or gargles, and local infiltration of anesthetic agents into peritonsillar space or tonsillar fossa (8,9). The timing and agent used for local infiltration is still a conundrum and the opinions may vary among surgeons and anesthesiologists. Studies have shown that local injection into the tonsillar fossa after removal has a better pain control post-surgery (10). At the same time, some advocate the importance of these anesthetic agent intraoperatively to get a clean surgical field and suggest such local infiltrate should be used few minutes before placing the incision in tonsillectomy.

The commonly used drugs for local injection are lignocaine, ropivacaine, bupivacaine, levobupivacaine and less commonly lornoxicam and dexmedetomidine has also been used (11).

Lignocaine hydrochloride is an amide local anesthetic agent which acts by membrane stabilization and blockage of sodium channel thereby preventing depolarization of the nerve. Its acts on the nerve endings close to the site of injection, leading to inhibition of conduction of impulses through the nerve endings. This property can be made use in achieving pain control post tonsillectomy. The addition of

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adrenaline enhances the vasoconstriction in the region and thereby reduces primary hemorrhage (12). Ropivacaine is also an amide anesthetic agent which as sodium ion influx inhibition. Ropivacaine at lower concentrations has been shown to have a predominant sensory anesthesia than motor block (13). Lignocaine with adrenaline has a rapid onset vasoconstrictive action can reduce the intra operative blood loss during the procedure and the long acting ropivacaine can take care of post-operative pain management. Our study has shown that the use of ropivacaine did not have much effect on controlling primary hemorrhage. However, the average IBL grade was lower in the ropivacaine group.

Lignocaine with adrenaline has been shown to reduce post tonsillectomy dysphagia. Contrary to the findings of Özkiriş et al., we did not observe a statistically significant difference in intraoperative blood loss between lignocaine with adrenaline and ropivacaine ($p = 0.4$) (22). This suggests that while lignocaine's vasoconstrictive properties may contribute to reducing intraoperative bleeding, other factors, such as timing of infiltration and surgical technique, might play a more critical role in achieving optimal hemostasis. In achieving analgesia during post-operative period, ropivacaine showed superior control over lignocaine use. Studies have revealed an increased incidence of secondary hemorrhage with local peritonsillar injection of lignocaine. Our study further supports the effectiveness of ropivacaine in controlling postoperative pain, particularly during swallowing and speaking, as demonstrated by significantly lower pain scores at all assessed intervals compared to lignocaine with adrenaline ($p < 0.05$). These findings align with studies by Bhatnagar et al. and Nasser et al., which highlighted the superior analgesic effects and safety profile of ropivacaine in tonsillectomy patients (14, 16). Additionally, our results reinforce the importance of ropivacaine's longer duration of action in pediatric patients, making it a more reliable choice for postoperative pain management. In our study the incidence of secondary hemorrhage was very small with one patient in each group.

In a study by Bhatnagar et al, the administration of 0.2ml/kg of 0.75% ropivacaine was found to be effective in reducing post-operative pain when compared with a control group who were received no intra peritonsillar infiltration (P value of <0.05) (14). A study conducted by Giannoni et al. showed that addition of clonidine with ropivacaine can have better control in pain management than single agent use of ropivacaine (15). Nasser et al in their study comparing the effectiveness of ropivacaine versus bupivacaine in controlling post tonsillectomy pain concluded that ropivacaine was the suitable agent because of its efficacy and safety as compared to bupivacaine (16). A similar conclusion was also found in a study done by Akoglu et al. The cardiotoxicity associated with ropivacaine is less than bupivacaine (17).

In a double-blinded randomized trial by Arikan et al, the post-operative pain during swallowing on post-operative days 1, 2,5, and 6 were significantly less than the placebo group. The study also found that there were no significant differences in the intraoperative bleeding and surgical time among the two groups (18). Gautham et al. compared the role of local infiltration of ropivacaine, bupivacaine, and topical application of sucralfate with a control group in post tonsillectomy pain. Their study showed that all these three agents were effective in pain management and the mean pain score was less in ropivacaine group (19). Arykan et al. also suggested that the pre-incisional peritonsillar ropivacaine infiltration can significantly reduce post-operative pain both at rest and swallowing (20).

In a similar study by Apostolopoulos et al., where they compared the effect of ropivacaine and lignocaine in patients undergoing tonsillectomy under local anesthesia. They concluded that ropivacaine group required

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more time to reach the surgical anesthesia levels, but post-operative pain control was better with ropivacaine group (21).

Özkiriş et al. compared the efficacy of lidocaine with adrenaline, bupivacaine with adrenaline and ropivacaine in controlling intra operative blood loss and post tonsillectomy pain relief. Accordingly, ropivacaine and bupivacaine with adrenaline showed similar pain control results, and lignocaine was more effective in reducing intra operative bleeding (22). Our study highlights the significant advantage of ropivacaine in postoperative pain control over lignocaine with adrenaline, despite no notable difference in intraoperative blood loss. These findings suggest that anesthetic selection in tonsillectomy should prioritize prolonged postoperative pain relief, particularly in pediatric patients. Future studies with larger sample sizes and a control group could further elucidate the interplay between anesthetic choice, timing, and surgical outcomes. We would like to point out a small sample size and absence of a control group as the limitations of our study.

Conclusion

The therapeutic significance of this study is that it actually proves that ropivacaine is a better local anesthetic than lignocaine with adrenaline for postoperative pain relief in patients who have undergone tonsillectomy. It significantly lowers pain levels during swallowing, speaking, and at rest during the critical first 24 hours after surgery, thus improving comfort and recovery in patients. This is especially relevant for improving the quality of life early after surgery as less pain would help in better oral intake, speech, and overall patient satisfaction.

In addition, this proves that ropivacaine provides good analgesia but does not further increase blood loss during surgery or introduce other hazards. Hence, this would be a safe and effective substitute for traditional local anesthetics. Because of its longer-lasting effect and better analgesic potency, using ropivacaine is likely to reduce the consumption of systemic analgesics, and reduce reliance on pain management with opioids and other pain medications, thus reducing the side effects of these medications.

This clearly indicates a step forward in integrating ropivacaine into the clinical usage of surgery in tonsillectomy, offering patient-centered, faster recovery and better postoperative care.

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None to declare.

Conflicts of Interest

The authors declare no conflicts of interest.

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Ethics

Institutional human ethical committee clearance was obtained before data collection (IRB No- KMC/IHEC/09/2024) All research methods and investigational procedures are in accordance with Declaration of Helsinki 1975 (raised in 2013).

Authors Contributions

Conceptualization, AJ, and VA.; methodology AJ, VA, and NPA; investigation, AJ, VA, NPA, SK, and GS.; resources, AJ, VA, and GS.; data curation, VA, NPA, SK, and GS; writing original draft preparation, AJ, VA, and GS.; writing—review and editing, NPA and SK.

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