

Clinical Comparative Study of Topical Analgesia with 4% Lignocaine and Intravenous Tramadol for Post-Operative Analgesia After Tonsillectomy

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Abstract

Introduction: Tonsillectomy is one of the most commonly performed surgical procedures, often associated with significant intraoperative bleeding and postoperative pain. The objective was to compare the postoperative analgesic efficacy of topical 4% lignocaine with intravenous tramadol after tonsillectomy surgery.

Methodology: After institutional ethical committee clearance and written informed consent, 60 patients of either sex undergoing tonsillectomy were randomised into 2 groups, one received topical 4% lignocaine (3 cm² gauze soaked in 2ml) and other received intravenous tramadol (2mg/kg). Type of pain was assessed at intervals of 30min for 4hrs and 4th hourly for 24hrs. post operatively by visual analogue scale.

Results: The pain response initiated at 12 hours among group-A respondents (19.2%) increased to 35.8% at the end of 24 hours and group-B respondents (54.9%) at 12 hours increased over the period to 60.3% at 24 hours of duration. The data subjected to statistical students t-test reveals that the mean difference in the pain scores between group-A and group-B during the initiation to the end period under study found to be statistically significant (p<0.01).

Conclusion: Topical 4% lignocaine provided a better postoperative analgesia when compared with intravenous tramadol.

Keywords: Post tonsillectomy pain, Topical Lignocaine, Tramadol.

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Introduction

Tonsillectomy is one of the commonly performed ENT procedure associated with significant intraoperative bleeding and postoperative pain [1]. Pain may impair swallowing which may cause secondary infections, bleeding and dehydration [2]. Management of post tonsillectomy problems includes parenteral or oral analgesic usage with intravenous hydration and antibiotics if necessary [3]. Pain after tonsillectomy is thought to be due to combination of nerve irritation, inflammation and pharyngeal muscle spasm [4]. A noxious stimulus activating afferent C fibers induces long lasting changes in the excitability of dorsal horn neuron [5]. These nociceptive impulses contribute to postoperative pain [6]. To ameliorate this pain, the application of fibrin glue [7,8], steroids, cryo-analgesia, acetaminophen with codeine and local anaesthetics have been reported. The aim of this study is to compare the administration of topical 4% lignocaine and intravenous tramadol to reduce the post tonsillectomy pain.

Materials and Methods:

Upon obtaining the ethical clearance from our tertiary care hospital, this **comparative study** was conducted from January 2020 to December 2020 with 60 patients posted for tonsillectomy surgery of ASA grade I and II. The preoperative evaluation was done and the procedure was explained. A written informed consent was taken.

Inclusion Criteria:

1. Age of patients 8 - 35 years
2. Physical status of ASA I and II posted for elective tonsillectomy
3. Ability to communicate a level of pain with the specified pain scale

Exclusion Criteria:

1. Known hypersensitivity to lignocaine
2. Signs of acute pharyngeal infection – adenotonsillitis, peritonsillitis, peritonsillar abscess
3. Suspected malignant neoplasm

A standard anaesthetic protocol was used for all patients. All the patients received 0.2mg Glycopyrrolate, 2mg/kg Propofol for induction, 2mcg/kg Fentanyl and 0.5mg/kg Atracurium for muscle relaxation. After oral intubation, anaesthesia was maintained with Oxygen, Nitrous Oxide and Sevoflurane. The usual physiologic parameters were monitored during surgery. The patients were randomly assigned into 2 groups. After removal of both the tonsils, group 1 received topical 4% lignocaine (3cm² gauze soaked in 2ml) and group 2 received intravenous tramadol (2mg/kg).

After recovery from anaesthesia, the type of pain was assessed at intervals of 30 minutes for the first 4 hours and 4th hourly till 24 hours postoperatively by visual analogue scale. Rescue analgesia was given with intravenous Paracetamol 10 to 15mg/kg dose. The time to first oral water and solid food intake and incidence rates of nausea and vomiting was evaluated.

Statistical analysis:

The comparison between two groups was tested by applying student t-test and the result is considered statistically significant whenever P value is less than or equal to 0.05.

Results:

Sixty patients in the age group between 8-35 years undergoing tonsillectomy surgery were included in this study.

Table 1: Classification of Respondents by Mean Post-operative recovery (Pain scores)

Time Duration	Response (%)		't' Test
	Group-A (n=30)	Group-B (n=30)	

	Mean	SD	Mean	SD	
½ h	0.0	0.0	31.5	14.4	11.98**
1 h	0.0	0.0	35.4	12.2	18.35**
1 & ½ h	0.0	0.0	39.7	14.0	17.93**
2 h	0.0	0.0	42.6	14.9	18.08**
2 & ½ h	0.0	0.0	47.9	15.3	19.80**
3 h	0.0	0.0	50.5	15.4	20.74**
3 & ½ h	0.0	0.0	53.3	14.4	23.41**
4 h	0.0	0.0	53.6	14.2	23.87**
8 h	0.0	0.0	54.4	14.4	23.89**
12 h	19.2	2.7	54.9	10.8	20.28**
16 h	25.0	5.1	57.4	11.4	16.41**
20 h	25.8	5.0	58.5	11.2	16.86**
24 h	35.8	5.0	60.3	9.7	14.20**

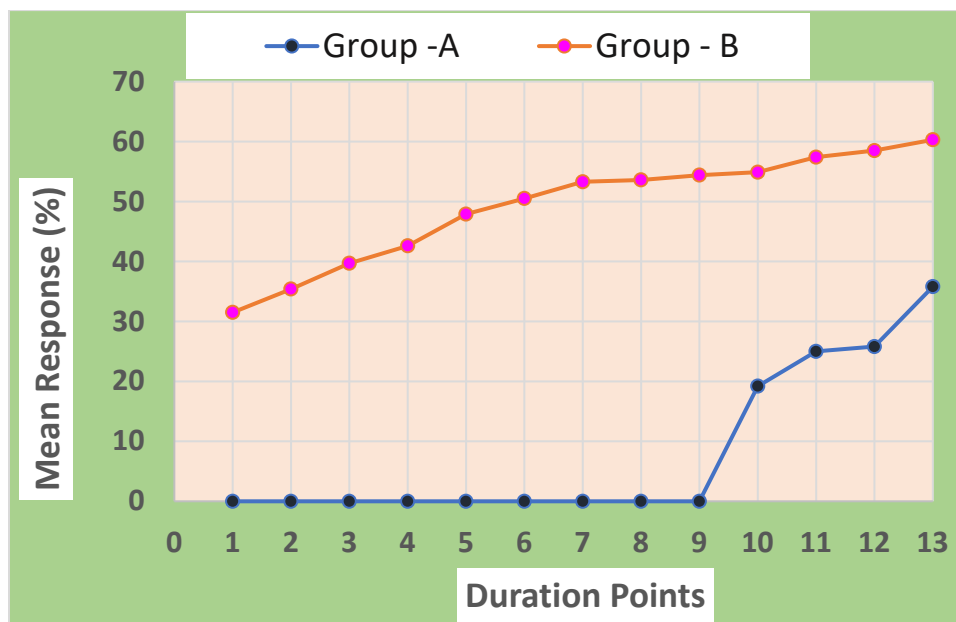
**Significant at 1% level,

t (0.05,78df) = 2.58

The above table depicts the Classification of Respondents by Mean Post-operative recovery (Pain scores) among group-A and group-B. The result establishes that none of the respondents had pain response among group-A till the time duration of 8 hours. However, 31.5 % of respondents from group-B had pain at 1/2 hour followed over the increase in duration of time up to 8 hours being 54.4% respondents with incidence of pain. 31(31.5%).

The pain response initiated at 12 hours among group-A respondents (19.2%) increased to 35.8% at the end of 24 hours. Further, With respect to group-B respondents mean pain response noticed with 54.9% at 12 hours increased over the period to 60.3% at 24 hours of duration.

The data subjected to statistical students t-test reveals that the mean difference in the pain scores between group-A and group-B during the initiation to the end period under study found to be statistically significant (p<0.01).



Discussion:

Pain is a subjective and complex expression. Measurement of pain depends on personal experience, perceptual abilities, anxiety level and the ability to describe the type and degree of pain based on some frame of reference [9]. Postoperative pain following tonsillectomy results in poor oral intake therefore many attempts have been made to decrease the pain post tonsillectomy. It is usually caused by inflammation, nerve irritation and spasm of exposed pharyngeal muscles. The pain persists until the muscle becomes covered with mucosa which is usually 14-20days after surgery. Pain has been traditionally treated with opioid analgesics and NSAIDs, however these agents are associated with increased risk of respiratory depression and postoperative bleeding respectively [10]. Tramadol is a centrally acting opioid analgesic acting on mu-receptors responsible for anti-nociceptive effect, also inhibits the reuptake of norepinephrine and serotonin thus hampering the transmission of pain in CNS and spinal cord. Lignocaine is absorbed rapidly from mucosal surfaces and has been found to be useful for control of pain following tonsillectomy [11]. Local infiltration of the local anaesthetics to tonsillar fossa resulted in complications due to inadvertent intravenous injection, whereas topical application is safe and simple to perform. Topical application of lignocaine decreases pain by pharmacological blockade of sensory pathways thereby preventing nociceptive impulses from reaching the spinal tract [12]. In our study we have compared the analgesic effect of topical 4% lignocaine and intravenous tramadol. The mean pain scores in group 2 were significantly higher ($p < 0.01$) at different time duration postoperatively, as compared to the scores in group 1 and the incidence of postoperative nausea and vomiting was higher in group 2. Thus proving topical application of 4% lignocaine to be effective in relieving postoperative pain following tonsillectomy.

Duration of lignocaine as a topical analgesic agent was seen to exceed its normal pharmacological duration as a local anaesthetic.

Conclusion:

Postoperative pain following tonsillectomy surgery is a significant problem leading to decreased oral intake and thus dehydration, increasing patient anxiety and lengthening hospital stay. According to the results inferred in our study, topical 4% lignocaine provides a better analgesic effect especially in the first 48 hours compared to intravenous tramadol.

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