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Original Research Paper

A Comparative Study for Tramadol Gargle and 2% Lidocaine Plain Solution for the Prevention of Postoperative Sore Throat Following General Anesthesia with Endotracheal Entubation in Patients Undergoing Ceasarean Section

Authors:

Zina Majid Mnati[1] , Mariam Ali Mohammed[2], Husam Kareem Mghames[3], Zulfiqar K. Muhammad Al-Lokhan[4], Ahmed Jomaa Khalaf[4], Ameer Muthana Ahmed[4]

[1] *MBCHB DA FICMS A & IC, Dept. of anesthesia and intensive care unit, Al-Yarmouk Teaching Hospital*
[2] *MBCHB DA FICMS A & IC, Dept. of anesthesia and intensive care unit, Welfare Teaching Hospital*
[3] *MBCHB DA FICMS A & IC, Dept. of anesthesia and intensive care unit, Al Imam Ali general hospital*
[4] *Anesthesia assistant, Dept. of anesthesia and intensive care unit, Al-Yarmouk Teaching Hospital*

Corresponding Author:
Zina Majid Mnati

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ABSTRACT:

Background: The occurrence of postoperative sore throat after General anesthesia has been reported to have an incidence of up to 12%. The highest risk factors for individuals undergoing tracheal intubation include being female, younger age, having previous larynx and trachea illness, longer anesthetic duration, traumatic intubation, and the presence of a blood-stained tracheal tube during extubation. **Aim of study**: To compare the efficacy of tramadol lavage and 2% lidocaine normal solution in treating postoperative sore pharynx following general anesthesia with endotracheal intubation. **Patient and methods**: 90 patient ASA class II, Female, Age between (18-40), scheduled for Cesarean Section C/S requiring General Anesthesia with endotracheal intubation were randomly recruited into 3 groups: group A (tramadol), group B (2%xylocain plain solution), group C (tape water 30cc). Group A received tramadol gargle [100 mg in 30 ml tape water] for 2min, while group B received 2% plain solution lidocaine(2mg/kg) in 30 ml tape water gargled for 2min and group C received 30ml tape water was gargled for 2 min before induction of anesthesia. the incidence and severity of Postoperative sore throat were graded at 0,1,6 hr after surgery using four points -scale. **Result**: the incidence and severity of POST was significantly less in group A(tramadol group) in compared with group B (2% xylocaine plain solution)and group C (tap water) at grade zero,1hr . No statistically significant association (P= 0.108) between study groups and development of postoperative sore throat after six hours
Conclusion: study demonstrated that preoperative gargling with tramadol will decrease the incidence and severity of POST in compared to gargling with 2%xylocain plain solution in patient undergoing cesarean section C/S during general anesthesia with endotracheal intubation in the early postoperative period.

Keywords: post-operative sore throat, tramadol gargling, xylocaine 2% plain solution.

INTRODUCTION:

Pharyngeal injury: This phenomenon may arise when a nasogastric tube is being inserted or while an oropharyngeal or laryngeal mask airway is being placed, especially if a throat pack has been used. On rare occasions, the pharynx or upper esophagus may have a perforation when inserting a nasogastric tube or during challenging tracheal intubation, resulting in intense throat discomfort as the first symptom. The presence of a nasogastric tube during the postoperative phase increases the likelihood of experiencing a sore throat. **Additional variables**: The mucosal membranes of the mouth, pharynx, and upper airway are very responsive to the impact of gases that lack humidity. The desiccating action of anesthetic gases may lead to a sore throat after surgery, and the antisialagogue properties of anticholinergic medicines may also contribute to this symptom. Tracheal tube lubrication is beneficial in minimizing the occurrence, regardless of whether simple or local anesthetic jellies are used. While the use of a face mask or supraglottic airway for airway management reduces the likelihood of a sore throat, it does not totally eliminate the possibility (1). Postoperative sore throat, often known as POST, is a frequently occurring negative outcome after general anesthesia. Usually, the occurrence is more common in patients who have been intubated via the trachea. However, may also happen when a laryngeal mask airway (LMA) is used. Even individuals who are treated with a facemask are still susceptible. However, a painful throat may also include a range of symptoms such as laryngitis, tracheitis, hoarseness, cough, or

difficulty swallowing. After the surgery, it is most likely that the symptoms are due to damage to the lining of the airway, leading to inflammation. This damage might have been caused by procedures such as laryngoscopy and suctioning, or by the irritating effects of foreign objects such the endotracheal tube, LMA, or oral airway (2, 3). The sites of mucosal injury would obviously vary depending on the airway device. For instance, endotracheal intubation can result in injury to any portion of the pharynx as well as injury to the larynx and trachea. The placement of an LMA is likely to cause injury to the mucous membrane in the upper part of the throat, specifically in the area above the vocal cords. On the other hand, using a facemask with an oral airway should only result in injury to the back of the throat, assuming that no other injury occurred due to suctioning or other airway procedures. (2, 3). Reducing the diameter of endotracheal tubes leads to a significant reduction in the occurrence of postoperative sore throat (POST) (8). Extensive study has been focused on the design of tube cuffs. The dimensions, pressure/volume properties, and configuration of the cuff have all been associated with tracheal mucosal damage and the resulting postoperative sore throat (POST) (4, 5). Tramadol is a man-made compound that closely resembles codeine and acts in two different ways. Tramadol activates the μ receptor and, to a lesser degree, the δ- and κ-opioid receptors. Similar to tricyclic antidepressants, tramadol also stimulates the suppression of pain in the spinal cord by reducing the reabsorption of norepinephrine and serotonin. (6) Additionally, tramadol is estimated to be 1/5 to 1/10 as powerful as morphine. Tramadol decreased the minimum alveolar concentration (MAC) of isoflurane in rats in a naloxone-sensitive manner (7) Intravenous tramadol effectively relieved post-thoracotomy pain (8). Tramadol's analgesic doses may cause less respiratory depression due to its nonopioid receptor-mediated effects, and may have minimal impact on gastrointestinal motor function (9).

Aim of study:

The objective is to examine the effectiveness of two distinct techniques in treating postoperative sore throat after general anesthesia with endotracheal intubation in patients having cesarean delivery.

PATIENTS AND METHODS:

This study is prospective randomized double blind clinical trial was conducted at Baghdad teaching hospital, medical city, Baghdad, Iraq, which started in 1'st of February 2018 to 30'th of September 2018.

Inclusion Criteria's:

1. Age 18_40years.
2. Patient of ASA class II
3. Weight BMI < 35kg/m^2.

Exclusion criteria:

1. Patient refusal.
2. History of allergy to studied drug.
3. History of preoperative sore throat.
4. History of asthma.
5. Mallampati grades >2.
6. HX of tonsillectomy.

After approval of the local ethical committee, and the consent was obtained from all patients before included them in the study. A detailed history was taken from each patient's clinical examination was performed pre operatively**. Anesthetic Protocol**: All patients prepared properly to the operation, wide bore IV cannula inserted, sedative premedication was not given to patient. All patient received 50mg ranitidine,10mg metoclopramide. The patients were assigned at random to three groups of similar size (30 patients each). The anesthetist responsible for administering the research medicines and performing laryngoscopy and intubation was assigned to the study groups. **Group (A):** Patients were asked to gargle for 2min with 30ml tap water containing tramadol hydrochloride 100mg. **Group (B):** Patients were asked to gargle for 2min with 30ml tap water containing 2% xylocaine plain solution. (2mg/kg). **Group (C):** Patients were asked to gargle for 2min with 30ml tap water only. the monitors including (pulse rate (PR), non-invasive BP, SPO2, electrocardiogram (ECG), end tidal CO2 (ET CO2). Anesthesia was induced with 0.5 mg /kg ketamine, propofol up to 2mg/kg, and tracheal intubation (with size 6.5 ID endotracheal tube) was facilitated with a muscle relaxants suxamethonium 100mg (1 mg /kg). Anesthesia was maintained with halothane 0.6_1. % in 100% oxygen. Neuromuscular blockade was maintained with a muscle relaxant rocuronium (0.6mg\kg) And analgesia was maintained by IV paracetamol 1000mg for all patients. After the procedure, the patient's oropharynx was suctioned gently with little use of instruments. The remaining neuromuscular blockade was reversed by administering 2.5mg of neostigmine and 1.2mg of atropine. Each patient's trachea was extubated after they regained spontaneous breathing and demonstrated the capacity to follow vocal commands or maintain a head raise for 5 seconds. Following extubation, every patient was sent to the recovery room for further observation and monitoring of their vital signs. Patients were assessed for the occurrence of discomfort during swallowing as an indication of postoperative sore throat or throat pain, after patients were completely conscious, before being discharged to the ward. Patients were educated on the four-point classifications of postoperative throat discomfort, as shown in Table 1

Table 1 Four-point scale:

1. No sore throat.
2. Mild sore throat
3. Moderate sore throat
4. Severe sore throat

Statistical Analysis:

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 25. The data is provided in terms of the mean, standard deviation, and ranges. The data is categorized and provided in terms of frequencies and percentages. The age of study groups was compared using a two-tailed Analysis of Variance (ANOVA). The statistical connection between study groups and the development of postoperative sore throat was assessed using Pearson's Chi-square test. A P-value below 0.05 was deemed significant.

RESULTS:

The total number of study patients was 90. All of them were undergone elective caesarean section under general anesthesia. Before induction, 30 patients were received tramadol gargle (Group A), other 30 patients were received xylocaine 2% plain solution gargling (Group B) (for prevention of postoperative sore throat), and the other 30 patients received 30 cc tab water gargle (Group C).

Age:

Study patients age was ranging from 18 – 40 years old with a mean of 28.22 years and standard deviation of ± 7.35 years. We noticed that there was no statistically significant difference (P= 0.066) in mean of age between study groups as shown in table (2).

Table 2: Comparison in age between study groups

Study Group	Age (Years) Mean ± SD	P - Value
A	**28.43 ± 7.81**	**0.066**
B	**25.82 ± 5.16**	
C	**30.41 ± 9.08**	

Postoperative sore throat:

At zero time: The comparison between study groups by postoperative sore throat complain at zero time is shown in figure (1) and table (3). In this study, 93.3% of patients in control group (Group C) were complained from postoperative sore throat at zero time with a significant association (P= 0.003) between study groups and development of postoperative sore throat at zero time.

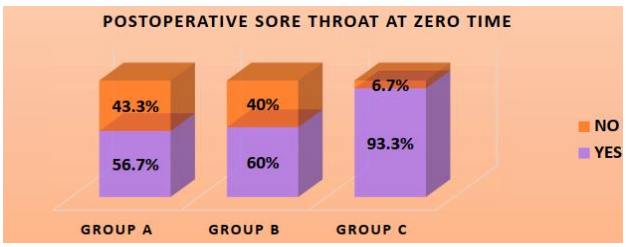

Figure 1: Postoperative sore throat at zero time according study groups

Table 3: Comparison between study groups by postoperative sore throat complain at zero time

Study Group	Postoperative sore throat at zero time		Total (%) n= 90	P-Value
	Yes (%) n=63	No (%) n= 27		
A	17 (56.7)	13 (43.3)	30 (33.3)	0.003
B	18 (60.0)	12 (40.0)	30 (33.3)	
C	28 (93.3)	2 (6.7)	30 (33.3)	

After one hour: The comparison between study groups by postoperative sore throat complain after one hour is shown in figure (2) and table (4). We noticed that 86.7% of patients in control group (Group C) were complained from postoperative sore throat after one hour with a significant association (P= 0.028) between study groups and development of postoperative sore throat after one hour.

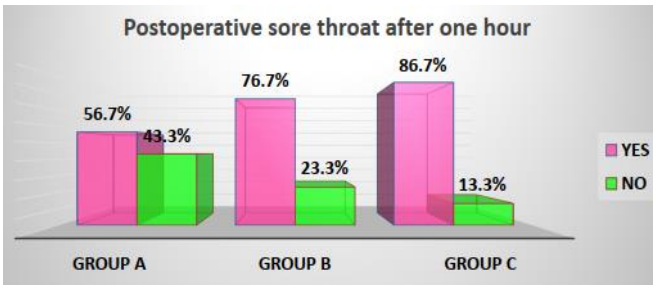

Figure 2: Postoperative sore throat after one hour according to study groups

Table 4: Comparison between study groups by postoperative sore throat complain after one hour

Study Group	Postoperative sore throat at zero time		Total (%) n= 90	P-Value
	Yes (%) n=66	No (%) n= 24		
A	17 (56.7)	13 (43.3)	30 (33.3)	0.028
B	23 (76.7)	7 (23.3)	30 (33.3)	
C	26 (86.7)	4 (13.3)	30 (33.3)	

<u>After six hours</u>: The comparison between study groups by postoperative sore throat complain after six hours is shown in figure (3) and table (5). No statistically significant association (P= 0.108) between study groups and development of postoperative sore throat after six hours.

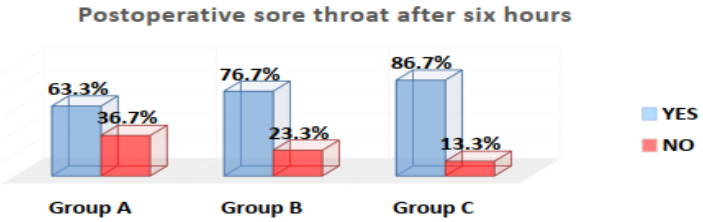

Figure 3: Postoperative sore throat after six hours according to study groups

Table 5: Comparison between study groups by postoperative sore throat complain after six hours

Study Group	Postoperative sore throat at zero time		Total (%) n= 90	P-Value
	Yes (%) n=68	No (%) n= 22		
A	19 (63.3)	11 (36.7)	30 (33.3)	0.108
B	23 (76.7)	7 (23.3)	30 (33.3)	
C	26 (86.7)	4 (13.3)	30 (33.3)	

<u>Severity of Postoperative Sore Throat after Six Hours</u>: The comparison between study groups by severity of postoperative sore throat after six hours is shown in figure (4) and table (6). In comparison between groups B and C, we noticed that 38.5% of patients in control group were complained from moderate sore throat with a significant association (P= 0.017) between xylocaine 2% plain solution and severity of postoperative sore throat after six hours. No statistically significant differences (P ≥ 0.05) were shown between groups A and C and between groups A and B regarding severity of postoperative sore throat after six hours.

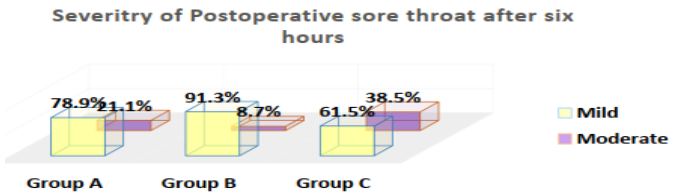

Figure 4: severity of postoperative sore throat after six hours according to study groups

Table 6: Comparison between study groups by severity of postoperative sore throat after six hours

Study Group	Severity of Postoperative sore throat after six hours		Total (%)	P - Value
	Mild (%)	Moderate (%)		
Between groups (A & C)	n= 31	n= 14	n= 45	
A	15 (78.9)	4 (21.1)	19 (42.2)	0.33
C	16 (61.5)	10 (38.5)	26 (57.8)	
Between groups (B & C)	n= 37	n= 12	n= 49	
B	21 (91.3)	2 (8.7)	23 (46.9)	0.017
C	16 (61.5)	10 (38.5)	26 (53.1)	
Between groups (A & B)	n= 36	n= 6	n= 42	
A	15 (78.9)	4 (21.1)	19 (45.2)	0.243
B	21 (91.3)	2 (8.7)	23 (54.8)	

DISCUSSION:

Post-operative sore throat [POST] associated with the endotracheal tube may be attributed to aseptic inflammation, edema, congestion, and discomfort. NMAD antagonists are believed to reduce the occurrence and intensity of POST due to their pain-relieving and anti-inflammatory properties. The study demonstrated that gargling with 100mg of tramadol for five minutes before endotracheal intubation has greater advantages compared to gargling with a 2% xylocaine plain solution and a control group (which gargled with tap water) in preventing post-operative sore throat caused by endotracheal intubation immediately after the procedure and one hour later. In this research, it was shown that 93.3% of patients in the control group (Group C) reported experiencing postoperative painful throat immediately after the surgery. There was a significant correlation (P= 0.003) between the different study groups and the occurrence of postoperative sore throat immediately after 1 hour. It was observed that 86.7% of patients in the control group (Group C) reported experiencing postoperative painful throat within one hour. There was a significant correlation (P= 0.028) between the study groups and the occurrence of postoperative sore throat after one hour. There was no statistically significant correlation (P= 0.108) seen between the study groups in relation to the severity of postoperative sore throat after six hours.

This research used a direct questioning strategy, focusing less on the discomfort experienced at the operation site. In addition, the accurate assessment of the degree of postoperative sore throat may have influenced the observed results in this research. The research revealed that the impact of age on the occurrence of postoperative throat discomfort was not statistically significant, as shown by a p-value of 0.066. In the research conducted by Higgins et al. (10) .It was shown that there was a significant association between age and postoperative sore throat discomfort. The p-value was less than 0.05. Our research found no significant correlation between age (18-40 years) and the development of post-operative throat pain, contrary to the common belief that older patients are more prone to experiencing this discomfort. Another potential mechanism by which tramadol may reduce postoperative pain could be its local anesthetic effect, as demonstrated in various studies. For instance, AK Bay et al. found that applying a 5% tramadol solution topically to the tonsillar fossa provided effective analgesia after tonsillectomy (11), Similarly, Tekelioglu et al. discovered that applying tramadol and ketamine topically to the tonsillar fossa for 5 minutes after tonsillectomy resulted in reduced postoperative pain (12). Additionally, Kargi et al. showed that local infiltration of a 5% tramadol solution was comparable to a 2% lidocaine solution in relieving pain during tendon repair surgery of the hand (13). Thus, by drawing upon previous research on NMDA antagonists, Canbay et al (14) and Shrestha et al (15) discovered that preoperative gargling with either 40mg or 50mg of ketamine, respectively, effectively decreased the occurrence and intensity of postoperative sore throat (POST) after endotracheal intubation, which aligns with the findings of our own study. Zhu et al. demonstrated that the local administration of ketamine effectively suppresses the inflammatory response. This is attributed to the presence of NMDA receptors in both the central nervous system and peripheral neurons (16). Magnesium sulfate, another NMDA antagonist, exhibits anti-inflammatory properties by reducing the levels of inflammatory mediators such as histamine and leukotriene (17). It has been proven to effectively reduce the severity of postoperative sore throat (POST) according to a study conducted by Gupta et al (18), Their research revealed that preoperative nebulization of magnesium resulted in a decreased occurrence of POST. The research conducted by Agarwal et al (19), shown that the effectiveness of using dispersible aspirin gargle in combination with benzamine hydrochloride gargles was successful in reducing postoperative sore throat (POST). It was discovered that gargling with aspirin and benzamine hydrochloride may decrease the occurrence of postoperative sore throat (POST).

CONCLUSION:

Study demonstrated that preoperative gargling with tramadol will decrease the incidence and severity of POST in compared to gargling with 2% xylocaine

plain solution in patient undergoing cesarean section C/S during general anesthesia with endotracheal intubation in the early postoperative period.

we recommended for using both tramadol and xylocaine gargling preoperatively for reduction of postoperative sore throat following general anesthesia with endotracheal intubation.

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