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Effect of Licophar Pills on the Postoperative Sore Throats in Patients Undergoing Cataract Surgery with Laryngo-Pharyngeal Mask Implantation: A Randomized Clinical Trial

Mohammad Alipour (MD)[1], Vida Jahanian (MD)[1*], Zahra Momtaz Kaffash (Ph.D)[1], Elham Bakhtiari (MD)[2], Abolfazl Akbari (MD)[3]

[1]*Anesthesiology department, Medical faculty, Mashhad University of Medical Sciences, Mashhad, Iran.*
[2]*Assistant professor, Eye Research Center, Mashhad University of Medical sciences, Mashhad, Iran.*
[3] *Student research committee, faculty of medicine, Mashhad university of medical sciences, Mashhad, Iran.*

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ABSTRACT

Introduction: The use of a laryngeal mask airway is associated with complications, such as a sore throat. This study aimed to evaluate the effect of taking the licophar pill on reducing sore throat due to laryngeal mask implantation in cataract surgery candidates.

Methods: In this study, 241 patients over 18 years of age with cataract surgery and ASA I or II were randomly divided into the intervention and control groups. The intervention group received one licophar pill half an hour before surgery; however, the control group received nothing. The sore throat severity was measured 12 ,6 ,3 ,1, and 24 h after surgery using the Visual-Analogue Scale (VAS). The data were analyzed in SPSS software (version 16).

Results: Out of 241 patients, 120 cases received licophar pills. There was no significant difference between the two groups in terms of gender; however, the mean age was lower in the control group. On the other hand, the rate of sore throat was significantly higher in the control group, compared to the intervention group. In addition, postoperative pain scores in the intervention vs. control group 12 ,6 ,3 ,1, and 24 h were 1.454) 0.466) vs. 1.298) 0.383 ,(3.359) 3.842) vs. 0.275 ,(3.056) 3.280 1.102)) vs. 0.890) 0.200 ,(2.580) 2.694) vs. 2.271) 2.074), and 0.574) 0.108) vs. 1.429 1.714)), respectively. Moreover, 103 and 40 patients in the intervention and control groups reported no pain (VAS=0), respectively, 1 h after surgery.

Cocclusion: The present study showed that the use of licophar lozenge half an hour before surgery has a significant effect on reducing postoperative sore throat.

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Introduction

Licorice or liquorice (Glycyrrhiza glabra L.) is a flowering plant of the bean family Fabaceae that grows as a weed. Licorice is used for multiple conditions, including gastritis, peptic ulcers, respiratory infections, and tremors in traditional Persian and Chinese medicine (1). A vast range of beneficial compounds, nearly 400 major bioactive com pounds, are found in its roots and rhizome (2,3). The chief component of G. glabra species is the triterpenoid saponin compound (Glycyrrhizicacid or Glycyrrhizin) which is about 35 times sweeter than sucrose. Previously, the anti-inflammatory and anti-oxidative features of licorice extract and its compounds (Glycyrrhizic Acid, Liquiritin,

***Corresponding author:** Vida Jahanian, Anesthesiology department, Medical faculty, Mashhad University of Medical Sciences, Mashhad, Iran.*
***E-mail:** vida_197900@yahoo.com*
***Tel:** 9153051156*

and Liquiritigenin) were shown (4, 5). Several medications derived from licorice are found in Iran, such as D-Reglis, Mentazin, and Shirinnoush. Licophar is one of the licorice-derived formulations with anti-inflammatory features, which makes it appropriate for the treatment of sore throats and coughs with mucoactive features. Most of them are used in the pill form, except for Shirinoush, which is found as a syrup (2,3).Licophar suckable tablet is found in the form of a 700 mg herbal lozenge tablet. It contains 53.2 mg of dried root extract of Glycyrrhiza glabra, 1.11 mg of eucalyptus globulus essential oil, and 0.145 mg of red pepper tincture (based on 12.3 mg of glycyrrhizin per tablet).

Since it contains sugar, it should be used with caution in diabetic people, and excessive use can produce hyperaldosteronism symptoms. Moreover, it is not advised to be used during pregnancy (4). A sore throat after surgery is a common complication of anesthesia. Postoperative sore throats can cause dissatisfaction and trouble after surgeries, which delays the patient's return to daily activities.

Multiple factors can cause postoperative sore throat, and the incidence depends on the method of airway intervention. The rate is the highest after tracheal intubation (14.4% to 50%), while after laryngeal mask airway (LMA) insertion, the incidence significantly reduces (2.5% to 40%) (6,7). To the best of our knowledge, no study has examined the effect of taking licophar tablets on the sore throat due to LMA implantation. Therefore, the current study investigated the licophar prophylactic effects among patients who were candidates for cataract surgery at Khatam-al-Anbya Hospital, Mashhad, Iran.

Materials and Method

Patients and ethics

This phase-III randomized and controlled trial was conducted in Khatam-al-Anbya Hospital, Mashhad, Iran, between September 2018 and February 2019. This trial was registered by the Iranian Registry of Clinical Trials (IRCT20170415033428N4), and the ethical approval for the present study (IR.MUMS.MEDICAL.REC.1398.707) was provided by the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran.

It should be noted that informed consent was obtained from all patients. The sample size was determined at 241 cases candidates for cataract surgery with American Society of Anesthesiologists (ASA) class I or II. None of the patients were allowed to use opioids or analgesics 48 h before intervention. On the other hand, the patients with upper airway anomalies, sore throats before surgery, and those whose first attempt to implant a mask failed were excluded from the study, followed by patients with hypertension, addiction, and a full stomach.

Randomization and intervention

Patients were randomly divided into the intervention and control groups using computer-generated numbers (http://www.randomization.com), and allocation was conducted through sealed envelopes. Patients in the intervention group received one licophar (Goldaru-Iran; Barcode; PR001001119) lozenge (700 mg pill) half an hour before surgery.

On the other hand, those in the control group received no intervention. The size of the mask was similar in both groups and after deflation, the cuff was lubricated with saline. Patient monitoring was the same and included systolic, as well as diastolic blood pressure, pulse rate, respiration rate, blood oxygen saturation, electrocardiogram, and expiratory carbon dioxide. Induction of anesthesia was performed in both groups with fentanyl (1 µg/kg), propofol (2 mg/kg), and atracurium (0.5 mg/kg). In both groups, the LMA cuff was filled with the proper volumes (size 4: 30 ml; size 3: 20 ml) (8).

The success of LMA entry was assessed by chest expansion and capnography. Maintenance of anesthesia was performed with propofol (100 µg/kg/min) and a mixture of 50% N2O and O2. Moreover, the hemodynamic status of patients in both groups was recorded. At the end of the operation and after removing the LMA, the patients' sore throats were recorded 1, 3, 6, 12, and 24 h after the operation using the Visual Analog Scale (VAS) by a person who did not know the grouping of patients. The VAS is a common scale with 11 scores in which 0 describes "no pain" and 10 signifies "unbearable pain".

Statistical analysis

After data collection, they were entered and analyzed by SPSS software (version 16), and the figure was drawn using GraphPad Prism software. Mean±SD was used to describe quantitative data and frequencies. The repeated measure ANOVA was also utilized to compare the two groups at five different time points. The difference between age, gender, and the number of patients who did not experience pain was tested using the chi-square test. ANOVA was also performed to show the relationship between pain and laryngeal mask size or duration of surgery. The correlation between postoperative pain and age or duration of surgery was determined using the bivariate correlation analysis. In all calculations, a P-value of <0.05 was considered statistically significant.

Result

The mean age of the patients (n=241) was 61.19 (14.09) years, and 114 (47.3%) cases were female. The two groups were similar in terms of gender (P=0.47); however, the mean age of the intervention

group was about four years more than that of the control group (P=0.03). In addition, the mean LMA sizes in the intervention group were 3.10 (0.30) and 4.03 (0.26) for females and males, respectively. These corresponding values were obtained at 3.03 (0.17) and 4.06 (0.30) for females and males in the control group, respectively. The characteristics of the patients are presented in Table 1.

Table 1. Demographic characteristics of the included patients.

Demographic characteristics	Intervention	Control N=121	P-value
N=120	Control	68/53	0.47
N=121	P-value	59.24 (15.54)	0.03*
Male/Female ratio (number)	59/61	68/53	0.47
Age (Mean±SD)	63.15±12.16	59.24±15.54	0.03*
LM size (Mean±SD)	3.58 ±0.54	3.48±0.56	0.18
Duration of surgery (Mean±SD)	59.53±5.38	59.59±6.41	0.93

LM: Laryngeal Mask

* = Statistically significant

The patients' postoperative pain and the number of patients who did not experience pain 1 h after surgery are presented in Table 2. A CONSORT flow diagram describing the study design is demonstratThe patients' postoperative pain and the number of patients who did not experience pain 1 h after surgery are presented in Table 2. A CONSORT flow diagram describing the study design is demonstrated in Figure 1. There was a significant difference between the two groups at all-time points in postoperative pain measured by VAS (P<0.001) (Figure 2).

The mean pain of the control group was eight times greater than that of the intervention group 1 h after the operation (0.466 [1.454] vs. 3.842 [3.359]). Through time, the mean pain score of both groups decreased. The number of patients who had pain 1 h after surgery was higher in the control group (P<0.001) (Table 2). Moreover, ANOVA showed that postoperative pain was not associated with the size of the laryngeal mask in the control or intervention groups (P>0.1 for all). Bivariate correlation analysis also revealed that postoperative pain was not associated with age or duration of the surgery in the control or intervention groups (P>0.1 for all).

Table 2. Mean pain score in each group and its comparison at the time of measurement

Measurements (VAS)	Intervention N=120 (Mean±SD)	Control N=121 (Mean±SD)	Mean difference (SE)	P-value
Pain 1 h	0.466±1.454	3.842±3.359	-3.376 (0.334)	<0.001*
Pain 3 h	0.383±1.298	3.280±3.056	-2.897 (0.303)	<0.001*
Pain 6 h	0.275±1.102	2.694±2.580	-2.419 (0.256)	<0.001*
Pain 12 h	0.200±0.890	2.074±2.271	-1.874 (0.223)	<0.001*
Pain 24 h	0.108±0.574	1.429±1.714	-1.321 (0.165)	<0.001*
No pain 1 h (VAS=0) (number)	223	161	62	<0.001*

VAS: Visual Analogue Scale
Statistically significant = *

Discussion

To our knowledge, no randomized controlled trial has assessed licophar efficacy in reducing the pain caused by LMA. The present study investigated the prophylactic effect of licophar tablets on the sore throat due to LMA implantation on 241 patients. The results of our study showed that taking one licophar tablet half an hour before anesthesia significantly reduced sore throats in the intervention group, compared to the control group. Saeki et al. examined postoperative pain intensity after using endotracheal intubation, LMA, and cuffed oropharyngeal airway. They concluded that LMA was most appropriate to decline postoperative sore throat (9). Despite the reduction in pain using LMA, efforts to reduce it continue. Several studies have been conducted to minimize the postoperative sore throat caused by LMA implantation (10, 11). Intravenously administration of hydrocortisone five min before anesthesia induction could not relieve a postoperative sore throat caused by LMA implantation (12).

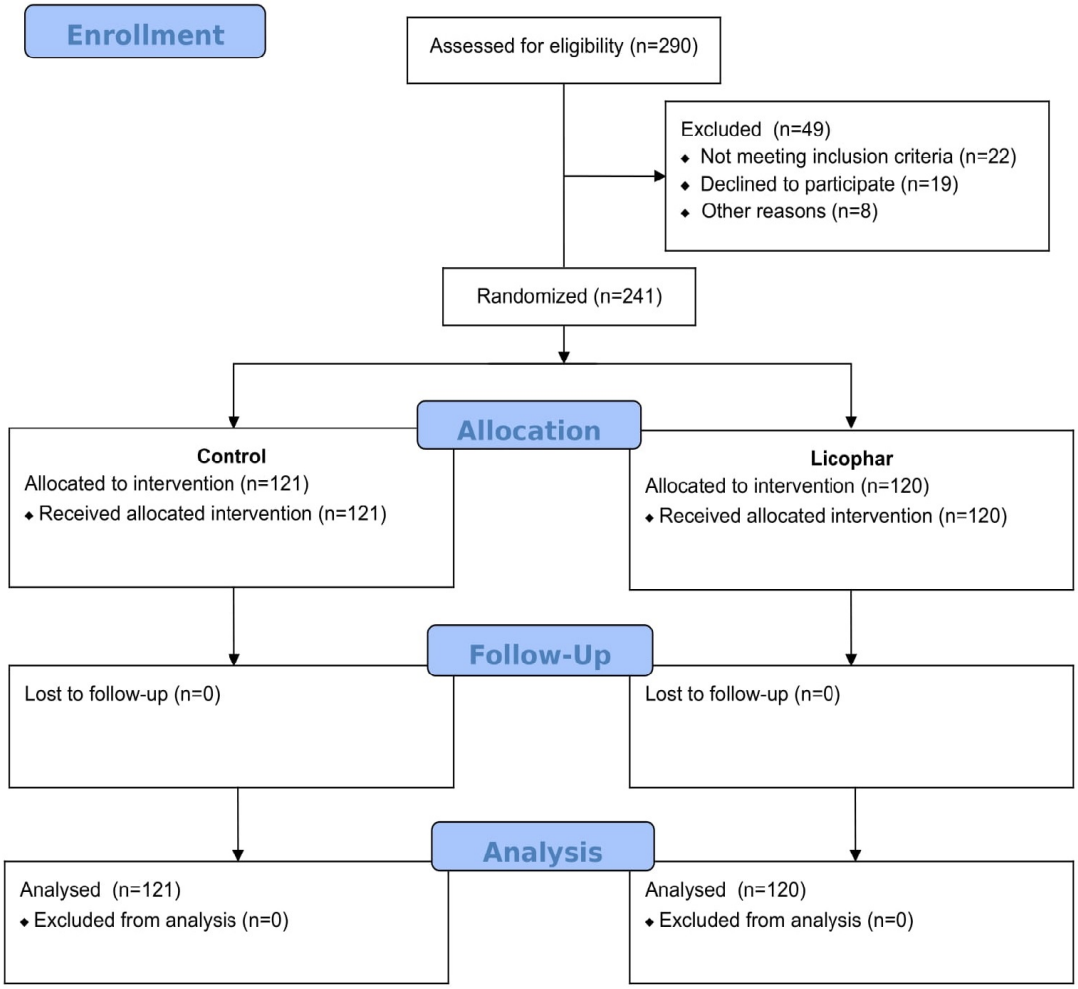

Figure 1: A CONSORT flow diagram presenting the study design

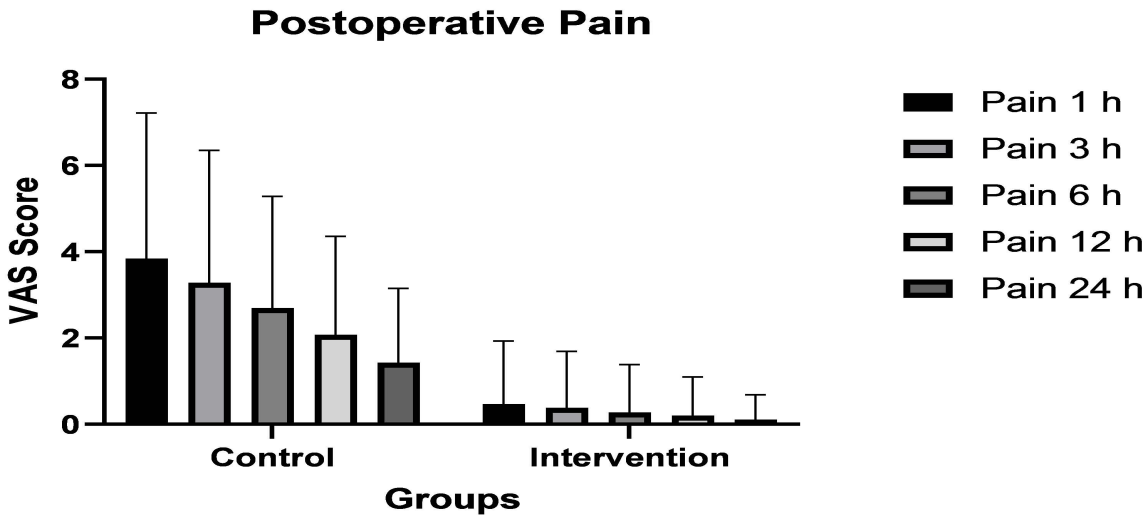

Figure 2: Postoperative pain at five time points; the control group did not receive anything, and the intervention group received a licorice pill half an hour before surgery

Lidocaine also did not show postoperative pain alleviation after the operation with tracheal intubation (13, 14). However, Sumathi et al. indicated weak improvement in the postoperative sore throat of patients who received lidocaine, and they also showed hopeful results for betamethasone. A meta-analysis conducted by Kuriyama et al. suggests that preoperative topical application of licorice could decrease the incidence and severity of postoperative airway complications by its anti-inflammatory property (15).

Previous studies with multiple methods showed anti-inflammatory features of licorice (4, 16-18). Several papers described the potential anti-inflammatory mechanism of action of licorice (19, 20). Furthermore, Ruetzler et al. compared licorice and sugar-water gargling for the prevention of postoperative sore throat in patients having thoracic surgery who required an endotracheal tube. Licorice could decrease the incidence of sore throats by 50% (21).

Another study by Sabermoghaddam et al. on patients candidates for cataract surgery examined the efficacy of diphenhydramine gargling on postoperative sore throats. The mean difference in the sore throats was higher in the present licophar study, compared to the diphenhydramine gargling study (22).

Conclusion

The results of this study showed that the use of licophar lozenges half an hour before the start of anesthesia had a significant effect on reducing postoperative sore throats caused by LMA implantation in cataract surgery. Future studies should compare the efficacy of licophar with other effective medicines.

Conflict of interest

There is no any kind of conflict of interest in this article.

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