

The Effects of Inhalation of Lavender Essential Oil on Reducing Postoperative Pain in Upper Eyelid Blepharoplasty Patients.

Supaporn saengngam

Fon_jawngam@hotmail.com

Master of Science (Anti-Aging and Regenerative Science)

School of Anti Aging and Regenerative Medicine

Mae Fah Luang University

Advisor Werner Kurotschka, Ph. D.

w.kurotschka@gmail.com

Co-Advisor Dr. Ariya Sarikaphuti

yuiariya@gmail.com

School of Anti Aging and Regenerative Medicine

Mae Fah Luang University

ABSTRACT

The objective of this study was to investigate the effects of inhaling lavender essential oil to reduce pain after upper eyelid blepharoplasty surgery.

In the methodology, the sample consisted of 18 Thai female patients aged 40-70 years undergoing upper eyelid blepharoplasty surgery at Chulalongkorn Hospital. The subjects were divided into two groups. Each group contained 9 patients. The sample was selected based on random sampling. The first group used only cold pack as the method to reduce pain. The second group used the integrated method of cold pack and inhaling lavender essential oil. Through verbal rating scale, pain scores were evaluated before and after the pain reduction intervention in two groups. Moreover, subject satisfaction with pain management was evaluated.

The results of this study showed that the second group using the integrated method of cold pack and inhaling lavender essential oil had decreased pain. Pain scores before (mean 3.56 ± 1.333) and after (mean 2.67 ± 0.866) the intervention were statistically significantly different ($p = 0.050$). The first group using a single method of cold pack had increased pain. Pain scores before (mean 3.67 ± 0.707) and after (mean 5.56 ± 0.882) the intervention were not statistically significantly different ($p < 0.001$).

The finding suggested that inhaling lavender essential oil could reduce pain after upper eyelid blepharoplasty surgery.

Keywords: Upper eyelid blepharoplasty /Postoperative pain/ Lavender essential oil

Introduction

Nowadays, upper eyelid blepharoplasty is one of the most common surgeries for many women. The most of this surgery is often done for aesthetic reasons. It is also an effective method to improve visibility in the elderly with sagging upper eyelids get in the way of their vision. After surgery, often find a problem of upper eyelid blepharoplasty surgery makes levels of pain and postoperative pain for the patients, too. Eyelid surgery can be divided into 2 types.

1) Those with single eyelid. And want have double eyelid, is performed to enhance and create upper eyelid crease.

2) Those who are more covering eyelids. Makes the eye looked smaller.

The aging eye undergoes many changes during each decade of life, including the onset of presbyopia, the loss of accommodative ability and many changes that encompass all aspects of the adnexa and eyeball (Nagi et al, 2011). It is a common age-related involuntional change characterized by excessive redundant skin folds that are sometimes associated with fat prolapsing through the orbital septum. (Ho et al, 2011) The surgical procedure in patients with type 2 had the same principles are different in terms of the amount of skin that needs to be eliminated. Upper eyelid blepharoplasty is plastic surgery operation for correcting defects and deformities disfigurations of the eyelids and for aesthetically modify regions of eye on the face. (Kure, 2001) Blepharoplasty is a procedure to remove skin or remove fat from the eyelids. Upper eyelids blepharoplasty uses excisions to allow for removal or adjustment of the position of excess tissues, and the reinforcement of the corresponding muscle and tendon tissues. A thin stitch is then used to bring the skin together to allow for a creation of an eyelid crease (Shirado, 2012). The duration of surgery 40-60 minutes, the eyelids blepharoplasty procedure resolves functional and cosmetic problems at area from the eyebrows to upper portion of the cheek. The procedure is more common surgeries among older women. After the surgery, pain is amongst the most common problems (Mc Quay et al, 2012). Pain is an unpleasant sensory and emotional experience, which is associated with the real or probably damage to tissue. However, many drugs that are used for this purpose, especially opioids and NSAIDs (None Steroidal Anti Inflammatory Drugs), have more side effects such as nausea, gastrointestinal bleeding, itching respiratory and distress (Gupta, 2010). The one of the main aims at anesthesia is to reduce postoperative pain. (Ochroch et al, 2005). Recent studies have indicated in using complementary therapies such as aromatherapy used for the relief to pain.

Lavender (*Lavandula officinalis*) from Labiatae family with some therapeutic properties is vastly used in the variety of aromatherapy methods. The primary components of lavender oil are linalool (51%) and linalyl acetate (35%). Other components include α -pinene,

limonene, 1,8-cineole, cis- and trans-ocimene, 3-octanone, camphor, caryophyllene, terpinen-4-ol and lavandulyl acetate (Prashar et al. 2004). The health benefits of lavender essential oil include its ability to eliminate nervous tension, relieve pain, disinfect the scalp and skin, enhance blood circulation and treat respiratory problems. It is the first assessment report on the effect of lavender essential oil on reducing pain for postoperative (upper eyelid blepharoplasty surgery). The researcher studied on the effects of inhalation of lavender essential oil on the pain of upper eyelid blepharoplasty postoperative with fewer side effects.

The Purpose of the Study

To study the effects of inhalation of lavender essential oil on the pain of upper eyelid blepharoplasty postoperative.

Scope of the Research

Thai population, female sex, aged 40 to 70 years who had undergone upper eyelid blepharoplasty surgery both eyes at Chulalongkorn Hospital. Eighteen randomly research participants. The research duration is 65 minute/subject.

Research Design

1. Recruited a group that meets the criteria specified from Chulalongkorn Hospital by patients had undergone upper eyelid blepharoplasty surgery both eyes.

2. Eighteen research participants were recruited according to the eligibly criteria to join the clinical study. Patients were divided randomly into 2 groups (experiment and control, 9 subjects in each) to receive either used cold packs with inhalation 0.2 ml of lavender essential oil 10% in their face mask or cold pack only for 60 minute, Glide line of postoperative upper eyelid blepharoplasty surgery of Chulalongkorn Hospital

3. Explain the objective, process, expected purpose, benefits and complications of the treatment and gave the patients.

4. After attending the orientation session and fulfilling written informed consent paper, the participants were enrolled.

5. Patients were receive either used cold packs with 0.2 ml of lavender essential oil 10% in face mask in experiment group and cold pack only in control group for 60 minute. Through verbal rating scale, pain scores were evaluated before and after the pain reduction intervention in two groups. Moreover, two groups satisfaction with pain management was evaluated.

6. Pain score were measured using the verbal rating scale and the McGill pain questionnaire for all patients. The VRS is a standard tool including 10 numbers begin from 0 (no pain) and end to 10 (most severe pain). The Short Form McGill pain questionnaire consists of 15 descriptors (11 sensory; 4 affective) which are rated on an intensity scale as 0 = none, 1 = mild, 2 = moderate or 3 = severe. Three pain scores are derived from the sum of the intensity rank values of the words chosen for sensory, affective and total descriptors. The SF-MPQ also includes the Present Pain Intensity (PPI) index of the standard MPQ. After the onset of postoperative pain. Before and after, the inhalation using cold packs with 0.2 ml of lavender essential oil 10% in face mask or cold pack only in control groups.

7. Follow up the signs medicines results of physical examinations and monitor vital signs include blood pressure, heart rate, pulse rate and oxygen saturation.

8. After treatment, participants will be asked to rate on satisfaction scale.

Statistical Analysis

Descriptive Statistics use to describe mean and SD of age and satisfying of participants after treatment.

The differences in the levels of operative pain variables were compared, before and after the intervention, in each group. For variables with normal distribution, a paired t-test and for variables other than those, a wilcoxon test was used.

To compare quantitative variables between the two groups, independent t-test and Mann-withney test were used for normal and non-normal distribution variables, respectively.

Differences with p-value <0.05 were considered to be statistically significant.

Results

Eighteen patients with diagnosis of dermatochalasis both upper lid were recruited from the eye surgeon. The demographic of the research participants consisted of age, frequency of defecating, proportion of defecation trouble and duration of defecation taken is shown in table 4.1

Table 4.1 Characteristics of research participants at baseline characterized by age.

Age (years)	n	%	Mean	S.D.	Max	Min
41-50	7	38.89	56.06	9.213	70	41
51-60	5	27.78				
61-70	6	33.33				
Total	18	100				

Around of the research participants (38.89%) was between 41-50 years old, and one-third (33.33%) of them was between 61-70 years old, and the last group (27.78%) was 51-60 years old. The mean age of the patient participants was 56.06 ± 9.213 years old while the maximum patient's age was 70 years old and minimum was 41 years old.

Analyzing of pain score on verbal rating scale.

The research used parametric statistics methods. Paired t-test was used to analyze paired t-test was used for analyzing pain score data. The results were considered to be statistically significant when p-values were less than 0.05

Table 4.2.1 Compared pain score before and after of experiment group. (n=9)

Group	Mean	S.D.	d.f.	t-test	p-value
Before	3.56	1.333	8	2.286	0.050*
After	2.67	0.866			

Note. * Significantly different, $p < 0.05$

There was significant difference in pain score before (mean 3.56 ± 1.333) and after (mean 2.67 ± 0.866) of experiment group. After inhaling lavender essential oil coupled with the cold pack, the pain scores decreased. It was found that participant pain scores decreased with statistical significance ($p = 0.050$).

Table 4.2.2 Compared pain score after and before of control group. (n=9)

Group	Mean	S.D.	d.f.	t-test	p-value
After	5.44	0.882	8	10.000	< 0.001 *
Before	3.22	0.972			

Note. * Significantly different, $p < 0.05$

There was significant difference in pain score after (mean 5.44 ± 0.882) and before (mean 3.22 ± 0.972) of control group. After using cold pack to reduce pain, the pain scores increased. It was found that participant pain scores increased with statistical significance. ($P < 0.001$).

Table 4.2.3 Compared pain score before and after of control group. (n=9)

Group	Mean	S.D.	d.f.	t-test	p-value
Before	3.22	0.972	8	10.000	<0.001*
After	5.44	0.882			

Note. * Significantly different, $p < 0.05$

There was significant difference in pain score before (mean 3.22 ± 0.972) and after (mean 5.44 ± 0.882) of control group. Comparative analysis of the control group by using cold pack to reduce pain after upper eyelid blepharoplasty surgery, it was found that it could not reduce the pain. Based on the measurement on pain scores before and after treatment, it showed difference in pain score with statistical significance. ($p < 0.001$).

Table 4.2.4 Compared pain score (before) between experiment group and control group. (n=18)

Group	Mean	S.D.	d.f.	t-test	p-value
Experiment	3.56	1.333	16	0.606	0.553
Control	3.22	0.972			

There was no significant difference in pain score (before) between of experiment group (mean 3.56 ± 1.333) and control group (mean 3.22 ± 0.972). It can be concluded that pain score (before) not different between of experiment group and control group. ($p = 0.553$)

Table 4.2.5 Compared pain score (after) between experiment group and control group. (n=9)

Group	Mean	S.D.	d.f.	t-test	p-value
Experiment	2.67	0.866	16	5.080	<0.001*
Control	5.44	0.882			

Note. * Significantly different, $p < 0.05$

There was significant difference in pain score (after) of experiment group (mean 2.67 ± 0.866) and control group (mean 5.44 ± 0.882). The comparison of pain scores after treatment between the experiment group and control group showed that subjects using lavender essential oil coupled with cold pack can reduce pain in patients after upper eyelid blepharoplasty surgery better than using only a cold pack, with pain scores decreased with statistical significance ($p < 0.001$).

Conclusion and Discussion

The results from the inhalation of lavender essential oil coupled with the cold pack on postoperative pain in upper eyelid blepharoplasty surgery patients in the experiment group showed as follows. After inhaling lavender essential oil coupled with the cold pack, the pain scores decreased. The pain score was measured by the pain before and after treatment. It was found that participant pain scores decreased with statistical significance ($p\text{-value} = 0.050$).

At present, there has been no research conducted on the effects of using lavender essential oil to reduce pain in patients after upper eyelid blepharoplasty surgery. However, there are other studies that used lavender essential oil for pain relief for other surgeries:

In 2011, Niaz and Ali Akbar studied on “the lavender essential oil for post-cesarean pain” on 200 pregnant women. The results showed aromatherapy by lavender oil is a successful and safe complementary therapy in terms of reducing pain after cesarean.

In 2010, Kim et al. studied on “The effect of lavender oil on stress, bispectral index values, and needle insertion pain in volunteers”. Thirty (30) healthy volunteers were randomly allocated to 2 groups: the experimental group received oxygen with a face mask coated with lavender oil for 5 minutes, and the control group received oxygen through a face mask with no lavender oil for 5 minutes. The pain intensity of needle insertion was significantly decreased after aromatherapy compared with the control ($p < 0.001$).

The experiments on the comparison of pain scores after treatment between the experiment group and control group showed that subjects using lavender essential oil coupled with cold pack can reduce pain in patients after upper eyelid blepharoplasty surgery better than using only a cold pack, with pain scores decreased with statistical significance ($p < 0.001$).

Comparative analysis of the control group by using cold pack to reduce pain after upper eyelid blepharoplasty surgery, it was found that it could not reduce the pain. Based on the measurement on pain scores before and after treatment, it showed difference in pain score with statistical significance ($p < 0.001$).

From the comparative analysis of the satisfaction of the participants after attending the independent study, it was found that in terms of pain management, the experiment group's satisfaction level was good to excellent. The control group's satisfaction level was low to moderate. In terms of nursing helps to relieve pain, providing information on the level of pain, providing information on adverse reactions of using lavender essential oil to reduce the pain of the two groups' satisfaction was good to very excellent.

Evaluation of the side effects of treatment. No subjects in the study was found with any side effect associated with adverse reactions to inhaling lavender essential oil throughout the trial.

The results from the inhalation of lavender essential oil coupled with the cold pack on postoperative pain in upper eyelid blepharoplasty surgery patients in the experiment group showed as follows. After inhaling lavender essential oil coupled with the cold pack, the pain scores decreased. The experiments on the comparison of pain scores after treatment between the experiment group and control group showed that subjects using lavender essential oil coupled with cold pack can reduce pain in patients after upper eyelid blepharoplasty surgery better than using only a cold pack, with pain scores decreased with statistical significance.

References

- Gupta A, Kaur K, Sharma S, Goyal S, Arora S, Murthy RS. (2010). Clinical aspects of acute post-operative pain management & its assessment. *J Adv Pharm Technol Res*; 1(2):97–108.
- Ho SF, Morawski A, Sampath R, Burns J. (2011). Modified visual field test for ptosis surgery(Leicester Peripheral Field Test) *Eye(Lond)*;25(3):365–369.
- Kim S, Kim HJ, Yeo JS, Hong SJ, Lee JM, Jeon Y. (2010). The effect of lavender oil on stress, bispectral index values, and needle insertion pain in volunteers. *J Altern Complement Med*
- Kure K and Minami A. (2001). A simple and durable way to create a supratarsal fold (double eyelid) in Asian patients. *Aesthet Surg J*; 21:227–232.
- McQuay H, Derry S, Wiffen P, Moore A, Eccleston C. (2012) Postoperative pain management: Number-needed-to-treat approach versus procedure-specific pain management approach. *Pain*; 154(1):180.
- Nagi KS, Carlson JA, Wladis EJ. (2011). Histologic assessment of dermatochalasis: elastolysis and lymphostasis are fundamental and interrelated findings. *Ophthalmology*; 118(6):1205–1210.

Niaz H, Ali Akbar H. (2011). Lavender essence for post-cesarean pain. Pak. J. Biol. Sci; 14:664–667

Ochroch A, Gottschalk A. (2005). Impact of acute pain and its management for thoracic surgical patients. Thorac Surg Clin, 15(1), 105-21.

Prashar A, Locke IC and Evans CS. (2004). *Cytotoxicity of lavender oil and its major components to human skin cells*. Cell Proliferation, 221-229.

Shirado M. (2012). Dyslipidaemia and age-related involutional blepharoptosis. J Plast Reconstr Aesthet Surg; 65(6):e146–150.