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## Lavender Essence for Post-cesarean Pain

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**Abstract:** Post Cesarean (CS) pain is a challenging problem for the obstetricians, because it may interfere with mother and baby's well-being. Many approaches have been ever proposed to diminish this pain, each one with particular benefits and limitations. Aromatherapy is a complementary therapy especially for controlling pain. This study aimed at evaluating the effect of lavender essence on post CS pain. In a single-blind clinical trial, 200 term pregnant women with planned elective CS were recruited in a 12 month period of time. They were randomized in two 100-patient groups; received either lavender essence (the case group) or a similar clinically neutral aromatic material (the control group) thorough oxygen mask for 3 min 3 h after receiving similar intravenous analgesics. The Visual Analogue Scale (VAS) was employed to determine the level of post CS pain. The VAS was documented half hour after first intervention. Eight and 16 h later, the aromatherapy was repeated and half hour after each intervention, corresponding VAS was documented. The two groups were matched for demographics and obstetrical history. The baseline VAS was comparable between the two groups. The mean VAS decreased significantly by 16 h after the first intervention in both groups ( $p < 0.001$ ). However, this amelioration of pain was significantly more prominent in the cases group comparing with that in the controls in all documented stages half hour, 8 and 16 h after the first intervention ( $p < 0.001$  for all measurements). In conclusion, aromatherapy by using lavender essence is a successful and safe complementary therapy in reducing pain after CS.

**Key words:** Lavender, elective cesarean section, post-operative pain, aromatherapy, visual analogue scale

### INTRODUCTION

Pain is an unpleasant feeling which may indicate presence of an underlying pathologic process. Fear of pain could lead to delayed diagnosis and treatment (Townsend *et al.*, 2001). Cesarean Section (CS) is a very common operation all over the world. The rate of this operation reaches near 50% of all types of deliveries in Iran (Ganji *et al.*, 2006). Like any other surgery, postoperative pain is frequently reported after CS. More than half the patients report this pain severe or very severe (Stuart and Laraia, 2000). Management of this pain is very important for mother, nursing of infant and breast feeding (Rahmanpoor *et al.*, 2007). The post CS pain can be managed by opiates and their derivatives, non steroid anti inflammatory drugs (NSAIDs) and different types of anesthesia. (Olofsson *et al.*, 2000; Lim *et al.*, 2001; Rashid and Jaruidi, 2000; Gita-Shoeibi *et al.*, 2007; Miller *et al.*, 2005; Rasooli and Moslemi, 2007; Behnamfar *et al.*, 2006; Mohammadi and Seyedi, 2008). However, their liberal use is limited due to potential side effects, unavailability in all centers, substantial limitation in efficacy and safety and the cost (Goodman *et al.*, 2001).

Nowadays, alternative or complementary nonpharmacological treatments are getting enthusiasm from many physicians and patients (Cornwell and Dale, 1995). Aromatherapy is one of these alternative treatments which is thought to be effective in pain relief and improving anxiety, depression, insomnia, fatigue, asthma, etc. (Carroll and Bowsher, 1994). Lavender essence is an aromatic herbal material with anti-pain properties. Lavender oil has been successfully utilized to alleviate pain in different conditions such as changing dressings, palliative care, for control of labor pain, as well as chronic pain (Kim *et al.*, 2006). To the best of our knowledge, however, there is no similar report in the English literature about use of this material for control of post CS pain. The aim of this study was to assess the post CS pain control by aromatherapy using lavender essence.

### MATERIALS AND METHODS

**Subjects:** In this single blind clinical trial, 200 pregnant women at term undergoing elective CS were recruited in Tabriz Taleghani Teaching Centre in a 12-month period of time from June 2010 to June 2011. The patients were

randomized in two 100-patient groups and carried into two different rooms 6-8 h post operation. The inclusion criteria were using spinal anesthesia, absence of intra abdominal manipulation/adhesion, no concurrent operation and duration of operation less than 90 min. Emergence of any post CS complications was considered as exclusion criterion.

**Visual analogue scale:** The severity of pain was documented based on the Visual Analogue Scale (VAS). The VAS is a standard tool like a 10 cm ruler including 10 numbers begin from 0 (no pain) and end to 10 (most severe pain). The patient was asked to select a number based on severity of pain she feels (Johnson, 2005).

**Lavender essence:** The *lavenders* (*Lavandula*) are a genus of 39 species of flowering plants in the mint family, Lamiaceae (Bailey, 1949). In this study, shrubs of the plant were gathered from a plant biology greenhouse, Tabriz University of Medical Sciences. The root and stalk were used for preparing 2% lavender essence. The placebo was artificial aromatic material similar to lavender essence produced by pharmaceutical staff of Tabriz University of Medical Sciences. They confirmed that this was a clinically neutral material in a pilot study.

**Study design:** At least 3 hours after receiving similar intravenous analgesics, the baseline VAS was recorded. Two drops (about 1 cc) of 2% lavender essence were applied with a cotton swab to the inside of an oxygen face mask in the case group. Patients in the control group received oxygen through a face mask with the placebo. The mask was used for 3 min. Half hour later the VAS was documented again (stage 1). The same processes were repeated again 8 (stage 2) and 16 (stage 3) hours later. Finally, the VAS scores were compared between the two groups.

**Statistical analysis:** Statistical evaluation was made using SPSS for Windows V 18.0 (SPSS Inc., IL, USA). Data were shown as frequency (percentage) or Mean±standard deviation (SD). Independent samples T, chi-square, Fishers' Exact and Repeated Measures analysis tests were employed for statistical analysis. The p-values less than 0.05 were regarded as significant.

## RESULTS AND DISCUSSION

The two groups were matched for age, education level, occupation, gravidity, parity, previous CS and its number and previous history of abortion and its number. The mentioned variables are summarized and compared between the two groups in Table 1.

Table 1: Demographics and general data of the patients in two groups

Group	Case group (n =100)	Control group (n = 100)	p-value
Age (year)	24.72±3.70	25.02±3.97	0.58
Education			
Illiterate	10 (10)	15 (15)	0.53
Diploma or less	77 (77)	71 (71)	
University	13 (13)	14 (14)	
Occupation			
Housewife	82 (82)	85 (85)	0.57
Career woman	18 (18)	15 (15)	
Gravidity	1.74±1.10	1.85±1.05	0.17
Parity	0.59±0.10 (0-4)	0.78±0.22	0.14
Previous cesarean section	8 (8)	10 (10)	0.62
cesarean section number	1.38±0.52	1.22±0.05	0.12
Previous abortion	14 (14)	17 (17)	0.56
Abortion number	0.17±0.05	0.20±0.07	0.65

Data are shown as mean±standard deviation or frequency (percentage) p<0.05 is considered statistically significant. Based on this assumption, there was no significant difference with regard the mentioned variables between the two groups

The mean baseline pain score was 6.16±2.03 (range: 1-10) in the case group vs. 5.78±1.97 (2-10) in the controls. The two groups were comparable in this regard (p = 0.18). The mean pain score in the first stage was 3.67±1.60 (range: 1-8) in the case group and 5.29±2.22 (range: 2-10) in the control group. The decrease of pain score in this stage was significantly higher in the case group than that in the controls (p<0.001). In the second stage, it was 2.01±1.20 (range: 0-6) in the case group and 4.64±2.10 (range: 1-9) in the control group. The decrease of pain score in the second stage was again significantly higher in the case group than that in the controls (p<0.001). Finally, in the third stage it was 0.67±0.85 (range: 0-4) in the case group and 4.05±2.23 (range: 0-9) in the control group. The decrease of pain score in the third stage was significantly higher in the case group than that in the controls (p<0.001). In intra-group analysis, the mean pain score decreased significantly in both group from baseline to the end of study period (p<0.001 for both groups). Changes of mean pain scores during the study period are shown in Fig. 1.

The post CS pain control is still a big challenge for obstetricians. Currently, it is generally believed that the conventional monotherapies may not be efficient or safe in this regard. Alternative or complementary therapies have been proposed in pain management (Sahebihag *et al.*, 2011). Based on this fact, the current study aimed to evaluate the effect of aromatherapy, as an alternative therapy, in reducing pain after cesarean section. The analgesic property of lavender essence has been previously reported in post-cosmetic procedures (Grunebaum *et al.*, 2011), climacteric women (Hur *et al.*, 2008), hospice patients with terminal cancer (Chang, 2008), chronic pain (Ostermann *et al.*, 2008), laparoscopic gastric banding (Kim *et al.*, 2007), stroke (Shin and Lee, 2007) and breast biopsy (Kim *et al.*, 2006). All these data emphasize

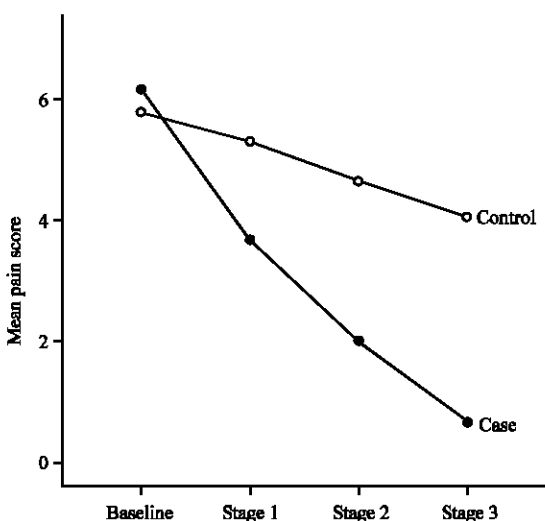


Fig. 1: Changes of mean pain score on the visual analogue scale from baseline to the end of study in the cases and the controls

on antinociceptive property of lavender oil/essence. The analgesic property of the lavender essence was also confirmed in the present study and so the results are in conformity with other reports. Efficacy of lavender oil/essence in relief of obstetric pain has been previously shown in postnatal perineal discomfort (Dale and Cornwell, 1994; Cornwell and Dale, 1995). The results of these two studies are also in conformity with our findings. However, it should be noticed that they used the lavender oil in bath for 10 days after vaginal delivery instead of aromatherapy. Vakilian *et al.* (2011) suggested application of lavender essential oil instead of povidone-iodine for episiotomy wound care after vaginal delivery. This study also confirmed the analgesic property of lavender oil in pregnant women after episiotomy without assessment of its aroma in this regard. This indicates efficacy and safety of this material after delivery, even in presence of open surgery wound. So, application of the material is safe in cesarean section, which was investigated in the current study. As mentioned earlier, for the first time in this study, it is shown that aromatherapy with lavender essence is effective in control of post CS pain. Based on these findings, aromatherapy could be used as an effective and safe complementary therapy for controlling pain after CS. This could effectively cut consumption of other routine costly and potentially harmful medications. As the present study is innovative, further multicentre studies will help the physicians to better decision-making. Maybe in future, the current medications could be replaced by aromatherapy after CS.

## CONCLUSION

Aromatherapy by using lavender essence is effective in reducing pain after CS in women. This method is safe and easy to perform. However, it is only recommendable as a complementary method along with routine pain management.

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