Original Article

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Comparison of the Effects of Cold Compress with Gel Packs and Topical Olive Oil on Episiotomy Wound Healing

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ABSTRACT

BACKGROUND AND OBJECTIVE: Similar to other wounds, episiotomy could lead to infections and delayed recovery. Since olive oil has antibacterial and wound healing properties, this study aimed to compare the effects of cold compress with gel packs and topical olive oil on the recovery of episiotomy wounds in primigravid women.

METHODS: This clinical trial was conducted on 90 primigravid women referring to the hospitals affiliated to Guilan University of Medical Sciences, Iran. Subjects were randomly allocated to two groups of cold compress with gel packs (20 minutes within 12 hours after delivery, for 10 days if necessary) and topical olive oil (twice daily, within 12 hours and 10 days after delivery). Episiotomy wound healing was evaluated using the REEDA scale within the first 12 hours postpartum, and on days 5 and 10 after delivery (IRCT:201409164529N12).

FINDINGS: In this study, there was no significant difference in demographic features and other intervening variables between the two groups. However, a significant difference was observed between the study groups in terms of redness severity on the 10th day of postpartum (p=0.04). Mean of the REEDA score was 1.02±1.13 and 0.84±0.97 in the cold compress and topical olive oil groups, respectively. On day 10 after delivery, scores were determined as 0.47±0.96 and 0.2±0.5 in the cold gel pack and topical olive oil groups, respectively.

CONCLUSION: According to the results of this study, topical olive oil could be used effectively for episiotomy wound healing in primigravid women.

KEY WORDS: Episiotomy, Wound Healing, Cooling Gel Pad, Topical Olive Oil.

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Introduction

Episiotomy is a medical intervention used during the postpartum to extend the perineum. Episiotomy consists of surgical incisions in the perineum, while perineotomy is defined as the surgical incisions made on the perineal zone; however; episiotomy is usually synonymous with perineotomy (1). Frequency of episiotomy is variable in different countries. Despite the fact that episiotomy is commonly practiced in Iran, there are no comprehensive statistics regarding the prevalence of this surgical procedure in our country (2). In one study, Klossner et al. stated that although episiotomy is not recommended as a routine operation, it is used in approximately 40%

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of all deliveries (3). According to the World Health Organization (WHO), episiotomy is an unnecessary procedure recommended in only less than 10% of cases (4). Similar to other surgical procedures, episiotomy is associated with several risk factors, including pain and discomfort in the perineal zone, hemorrhage, infections and abscess, hematoma, damage to anal sphincter or rectal mucosa and wound dehiscence (1,3,5,6). Delayed episiotomy wound recovery increases the risk of infections, as well as inaccurate anatomic results, which may lead to severe complications and even maternal death. In another study, Sereshti et al. claimed that episiotomy is likely to cause infections in 12.5% of the cases (7). Decision to perform an episiotomy, applied techniques and quality of care are important factors in this surgical procedure since episiotomy has physiological, psychological and socioeconomic effects on the health of women (8).

In order to reduce maternal complications due to perineal damage, medical experts have focused on improving the quality of diagnosis and treatment (9). In this regard, anal, oral and topical treatments could be used to alleviate perineal pain. Among these methods, topical treatments are preferable since they are associated with few side effects (10,11). Herbal medication and cryotherapy are known as the most common topical treatments. Cryotherapy has remarkable effects on the treatment of inflammation, soft tissue injuries and wound healing (4,12). To date, several studies have evaluated the efficacy of cold compress with gel packs in the recovery of episiotomy wounds (4,13,14). As such, finding cost-efficient, accessible methods, which are acceptable among women, has concerned researchers (4,12). However, less attention has been paid to episiotomy pain relief through non-invasive techniques, such as cryotherapy, as a medical priority (4). Olive oil seems to be effective in the treatment of episiotomy wounds (9). In the traditional medicine, olive plant was frequently used to accelerate the process of wound healing (15). Olive plant, with the scientific name of Olea europaea, is from the family Oleaceae, which are effectively used for the treatment of many diseases (16). Olive oil is rich in polyphenols that are capable of cell repair through eliminating free radicals. Furthermore, these compounds are abundant sources of vitamins A, D, K and E; these vitamins protect cells against the damage caused by free radicals, which is an effective method for the treatment of skin disorders (8). Previous studies have assessed the efficacy of olive oil in the treatment of different wounds, such as episiotomy and burns (7,9).

Given the importance of reducing the complications caused by perineal injuries in normal vaginal delivery, as opposed to the high sensitivity of the perineal zone, incisions in this area could cause several problems. Although cryotherapy has long been used for the treatment of damages in soft tissues, this method is not commonly accepted by women after delivery. Topical creams are easily applied for perineum restoration, and olive oil has significant anti-inflammatory properties on other tissues than the perineum. Moreover, both these methods are cost-efficient and available therapeutic approaches for women. This study aimed to compare the efficacy of compress with cold gel packs and topical olive oil in the treatment of episiotomy wounds in primigravid women referring to the hospitals affiliated to Guilan University of Medical Sciences during 2013-2014.

Methods

This randomised clinical trial was conducted on 90 primigravid women (IRCT: 201409164529N12) referring to Amini Hospital (Langarud city, Iran) and Ansari Hospital (Roudsar city, Iran) during June-August 2014. Study protocol was approved by the Ethics Committee of Guilan University of Medical Sciences, and sample size was calculated at 45 subjects in each group (total: 90). Inclusion criteria of the study were as follows: 1) primigravid women within the age range of 18-35 years; 2) singleton vaginal delivery with mediolateral episiotomy perfoemed without tears and auxiliary tools; 3) gestational age of 37-42 weeks; 4) neonatal birth weight of 2500-4000 g; 5) residence in Guilan province; 6) literacy; 7) BMI of 19.8-30 kg/m^2; 8) no prior history of chronic diseases (e.g., cardiac and pulmonary diseases, coagulopathy and connective tissue disorders, diabetes, anemia, immunodeficiency, hemophilia, malnutrition and mental disorders); 9) no prior history of sensitivity to topical medications; 10) absence of eclampsia and preeclampsia during pregnancy; 11) no premature rupture of membranes for over 24 hours; 12) no drug addiction and long-term delivery; 13)

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absence of congenital anomalies; 14) appropriate conditions for cryotherapy (e.g., good blood circulation and high pain threshold for cold stimulation) and 15) no history of hemorrhoids and anal fissures. Exclusion criteria were as follows: 1) incorrect use of cold gel packs and olive oil cream; 2) presence of allergies and hematoma in the episiotomy area within the first 24 hours of delivery; 3) unwillingness to continue participation; 4) sexual intercourse within the first five days of delivery; 5) manipulation of the perineal zone after episiotomy repair and 6) lack of referrals to the hospital. Head of the maternity ward, midwives and eligible samples were selected by the researcher after delivery based on purposive sampling. After explaining the objectives of the study and obtaining written informed consent from the patients, they were randomly allocated to two groups of cold compress with gel packs and topical olive oil (45 subjects in each group). Data were collected using demographic and obstetric questionnaires, checklists about analgesic consumption and side effects, health status forms, and redness, edema, ecchymosis, discharge and approximation (REEDA) scale (18). Data collection was performed in the presence of the researcher through observations, interviews, examinations and evaluation of the medical records of patients. In total, eight questions evaluated the health status of patients by determining the level of health facilities at home and observation of personal hygiene. For the homogeneity of subjects in terms of health status, the researcher classified samples into three categories (poor, average and good) based on their responses. Content validity was used to confirm the validity of demographic and obstetric questionnaires, analgesic consumption checklists and health status forms. Health status forms were provided through the review of related textbooks and scientific papers based on the objectives of the study and consideration of confounding variables. In this regard, we consulted with 10 faculty members of the Department of Midwifery and Obstetrics at Guilan University of Medical Sciences. On the other hand, determining the reliability of analgesic consumption checklists, and demographic and obstetric questionnaires was not needed. To verify the reliability of health status forms, they were completed by 10 patients on day 10 of postpartum, and the correlation was calculated using the Spearman's test, which was indicative of no significant difference between the obtained results. The REEDA scale is a measure used to assess perineal status, which was invented by Davidson in 1974. This scale evaluates parameters such as hyperaemia, oedema, ecchymosis, discharge and approximation of wound edges. In 2009, Malekpoor et al. confirmed the efficacy of this tool in the evaluation of episiotomy wound healing (18,19). To determine the reliability of the REEDA scale, interobserver agreement was determined among 10 samples. To do so, perineum condition forms of these samples were simultaneously completed by the researcher, in addition to one expert with equal academic and professional status, on day five of postpartum. Moreover, correlation of this scale was calculated using the Spearman's test (0.85%). In this study, patients received face-to-face training on the use of educational pamphlets about perineum care and its sutures, personal hygiene, nutrition status and physical activity. Demographic and obstetric questionnaires were completed via interviews and review of the medical records of mothers. Before the intervention and two hours after delivery, baseline assessment was carried out to determine episiotomy wound healing in both study groups. All subjects were recommended to wash the wounds using a solution of Betadine and water. After washing and drying the perineum, mothers used the cold gel packs (Kavian Pars Co., size: 1×5 and 5×23 cm) preserved in freezers of the maternity ward. For the next round of intervention, three gel pads marked with instructions and information of subjects were prepared for use. Subjects were asked to cover a pad with gauze and place it on the suture site for 20 minutes. Afterwards, the pads were cleaned by warm water and soap, and dried by a towel for later use. In the olive oil group, mothers were asked to cover the perineum with topical olive oil cream (natural ingredients with no chemicals, made by ETKA Company) after washing and drying twice daily for 10 days. Afterwards, they used sanitary napkins for 1-2 minutes. During the first stage, administration of olive oil was carried out under the supervision of researchers at the hospital within 12 hours after delivery (at least two hours after episiotomy wound repair). In this study, all deliveries and episiotomy treatments were performed by two experienced midwives, and

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examination of the perineum was performed by one midwife during the follow-up period. All subjects were given ballot pamphlets, including information about required training and recommendations for necessary care and time of visit as a reminder for patient follow-up on days five and 10 after delivery. Furthermore, location of patient examination and contact number of researchers were added to the pamphlets so that patients would be able to contact the researcher for necessary measures in case of complications such as allergy, fever and chills, infections, pain, itching, burning or dryness in the wounded zone. Within the first 12 hours of delivery and on days five and 10 of postpartum, rate of episiotomy wound recovery was recorded by the REEDA scale in the lithotomy position using LED examination light, and total scores of wound healing were calculated in each group. Data analysis was performed using independent T-test, Chi-square, Mann-Whitney, Fisher's exact test, Friedman test and Cochran C test in SPSS, and $p<0.05$ was considered as significant.

Results

In this study, 90 primigravid women were evaluated in two groups of cold compress with gel packs (N=45) and topical olive oil (N=45). There was no statistically significant difference between the groups in terms of age, education status of women and their spouses, employment status of women and their spouses, income status, neonatal birth weight, length of hospitalization, duration of the first, second and third stages of labor, repair time of episiotomy wound, number of used threads for wound repair, health status and consumption of analgesic compounds (table 1). Except for redness on day 10 of delivery, there was no statistically significant difference in other criteria of the REEDA scale between the two groups within the first 12 hours of delivery, and day five of postpartum (p=0.04) (table2).

On the other hand, no statistically significant difference was observed between the groups in the rate of wound recovery on days five and 10 after delivery (table3).

Table 1. Comparison of demographic and obstetric characteristics of subjects in cold gel pack and topical olive oil groups

Groups / Variables	Cold Gel Pack Mean±SD	Topical Olive Oil Mean±SD	p-value
Age (Year)	24.6±4.08	25.7±3.99	0.1
Neonatal Birth Weight (g)	3308±384.5	3263±281.7	0.4
Length of Hospitalization(H)	30.76±5.4	31.49±6.7	0.8
First Stage of Labor(H)	2.5±1.23	2.48±1.04	0.7
Second Stage of Labor (Min)	30.89±11.9	28.89±12.7	0.1
Third Stage of Labor (Min)	9.1±3.2	9.5±2.9	0.2
Duration of Episiotomy Wound Repair (Min)	25.4±4.2	24.6±4.3	0.4
High School Education (%)	35.6%	40%	0.9
Mother's Occupation (Housewife,%)	97.8%	95.6%	1
Health Status (Good,%)	55.6%	42.2%	0.3

Table 2. Frequency of patients in terms of redness (12 hours, 5 days and 10 days after delivery)

Groups / Presence / Absence of Redness	Cold Gel Pack N(%)	Topical Olive Oil N(%)	p-value
12 Hours after Delivery	23(51.1)	23(51.1)	0.7
5th Day Postpartum	34(75.6)	37(82.2)	0.3
10th Day Postpartum	41(91.1)	45(100)	0.04

Table 3. Comparison of REEDA scale scores (12 hours, 5 days and 10 days after delivery)

Time / Scale	12 Hours after Delivery Mean±SD	5th Day Postpartum Mean±SD	10th Day Postpartum Mean±SD	p-value (Friedman Test)
Cold Gel Pack	2.18±1.5	1.02±1.13	0.47±0.96	<0.001
Topical Olive Oil	1.96±1.38	0.84±0.97	0.2±0.5	<0.001
p-value(Mann-Whitney)	0.5	0.5	0.1	

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Discussion

According to the results of this study, there were no signs of hyperaemia on the 10th day of postpartum in subjects of topical olive oil group. Therefore, it could be concluded that olive oil was more effective in the treatment of redness caused by episiotomy wounds compared to cold gel packs, and there was a significant difference between the groups in this regard. This finding is consistent with the results obtained by Behmanesh et al. who investigated the effects of sitz bath with olive oil on the improvement of perineal trauma postpartum among 60 women in Babol city, Iran. According to that study, there was a significant difference between the subjects of the olive oil and distilled water groups in terms of the severity of redness 10 days after delivery (9). In another study, Al-Waili evaluated the efficacy of topical honey, olive oil and beeswax in the treatment of infant dermatitis and reported that redness improved from severe/moderate to mild/imperceptible among the patients (20). Mechanism of wound healing in olive oil is associated with the presence of polyphenols. These compounds stimulate cell restoration through eliminating free radicals. In addition, olive oil is considered as a rich source of vitamins A, D, K and E, which are involved in the process of wound healing via protecting cells against the damage caused by free radicals (9). In the present study, no significant improvement was observed in episiotomy wound healing between the subjects in the cold gel pack and topical olive oil groups within the first 12 hours of delivery, and days 5 and 10 of postpartum.

This finding was consistent with the results obtained by Jarahi et al., which indicated that topical application of olive oil had no significant effects on the rate of wound healing, and mean percentage of wound recovery was not significantly higher in the olive oil group on day five of postpartum, until full recovery on the 20th day (21). In another study by Mahishale et al., rate of wound recovery was assessed using the REEDA scale criteria, and there was a statistically significant difference between the patients in the intervention and control groups. However, no significant difference was observed between the two groups in terms of discharge. This finding is inconsistent with the obtained results of the current study, which could be due to the variations in the inclusion and exclusion criteria and cultural differences between these studies (14). According to a study by Farahani et al., rate of recovery in burn wounds was higher in rats administered with olive oil compared to those using silver sulfadiazine cream. Moreover, this rate was higher in rats administered with silver sulfadiazine cream compared to the normal saline group. Furthermore, they reported that use of olive oil could accelerate the process of wound healing in rats. Discrepancies between the results of the present study and findings of Farahani et al. could be due the differences in the characteristics of studied samples, type and location of wounds or the small sample size in that study (17).

According to the results obtained by Abedian (2006), perineal wounds had a more significant improvement in subjects of the cold gel pack group compared to the groups receiving cold compress with ice pack and cooling gel pads, as well as the control group, within the first 4 hours after delivery, and the second, fifth and tenth day of postpartum; this difference was considered to be statistically significant. However, these findings are inconsistent with the results of the current study due to the differences in sample size, as well as the type and size of cooling measures (11). One of the limitations of the present research was that we could not conduct a double-blinded study due to the differences in the type of treatment, as well as the shape, size and composition of the herbal drugs. Pain threshold is variable among patients depending on individual differences, cultural factors and economic situation; therefore, it is possible that pain severity is expressed more or less than the actual level of pain. The main strength of the present study was the baseline assessment carried out to measure pain intensity and recovery rate of episiotomy wounds, as well as to control confounding variables, determine the validity and reliability of research instruments, manage possible symptoms and use one researcher to evaluate pain intensity. In conclusion, it could be stated that cold compress with gel packs is more effective in pain reduction compared to topical olive oil, whereas topical olive oil is more effective in the recovery of episiotomy wounds compared to cold gel packs. Given the efficacy of olive oil in the treatment of episiotomy wounds and better acceptance of this substance by patients, olive oil could be used efficaciously to accelerate the process of wound

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recovery. Therefore, it is recommended that future studies be conducted regarding the efficacy of olive oil in the recovery of episiotomy wounds.

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