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Green Betel Leaf Gel (*Piper betle*) as an Alternative to Perineal Wound Healing in Postpartum Mothers

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A B S T R A C T

Perineal wounds are tears that occur when the baby is born either spontaneously or by using a tool or action. Administration of amoxicillin and mefenamic acid as pharmacological treatment is not enough for perineal wound healing. An alternative way to heal perineal wounds is using green betel leaf gel, which has the advantage of cold gel properties, so it can reduce pain. The gel has benefits as an anti-inflammatory, antioxidant, antiseptic, and antibacterial, so it can be used as a perineal wound treatment that can help accelerate perineal wound healing. This study aimed to prove the administration of green betel leaf gel (*Piper betle*) effect on perineal wound healing in postpartum mothers. This study is a quasy experiment with a pretest and posttest with a control group design. Through the technique of purposive sampling, it was found that 32 respondents were divided into two groups, the control group with clean, dry wound care and the intervention group, which was given green betel leaf gel twice a day for 7 days as measured using the REEDA score. Green betel leaf gel is effective for perineal wound healing on the 7th day compared to dry clean treatment.

1. Introduction

Perineal injuries in postpartum mothers are one of the common complications that occur after delivery. The perineum is a part of the body that is prone to tears or injuries during normal delivery. Perineal injuries can range from mild to more serious, depending on a number of factors, such as the size of the baby, the technique of delivery, and the elasticity of the perineal tissue. Perineal injuries in postpartum mothers can cause pain, discomfort, and even more serious health problems if not handled properly. Therefore, proper care is very important to ensure optimal recovery for the mother after childbirth.[1-5]

One of the interesting alternatives getting attention in the treatment of perineal wounds is the use of green betel leaf gel (*Piper betle*). Green betel leaf, which has been used extensively in traditional medicine in various cultures around the world, has antimicrobial, anti-inflammatory, and healing properties that can support the perineal wound healing process. The use of green betel leaves in gel form can be a safe and natural solution to relieve pain, reduce inflammation, and accelerate perineal wound healing. One of the main functions of the gel is to keep moisture in the wound area. Wet wounds tend to heal faster than dry ones. Moisture helps expedite the process of cell regeneration and new tissue growth. The gel forms a protective layer over the wound, which can prevent contamination by bacteria, viruses, or other debris that can hinder healing. This is an important aspect of

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preventing infection. Wounds often produce exudate, which is fluid that comes out of the wound. The gel can absorb this exudate, keep the wound area clean and dry, and prevent a crust from forming that can hinder healing. The gel can also be used as a drug delivery medium (topical) to the wound area. Certain medications can be mixed in a gel and applied directly to the wound, enabling precise and metered drug delivery. The gel is an easy-to-use preparation. They can be applied directly to wounds without the need for special equipment, which makes them very practical.[6-10]

Green betel leaves contain natural antimicrobial compounds that can help prevent or reduce infection in perineal wounds. This is important because infection can hinder the healing process. The anti-inflammatory content in green betel leaves can help reduce inflammation around the wound. Excessive inflammation can exacerbate pain and slow down the healing process. Green betel leaves are also known to have the ability to stimulate the wound-healing process. This can speed recovery and help repair torn tissue.[11-15] This study aimed to prove the administration of green betel leaf gel (*Piper betle*) effect on perineal wound healing in postpartum mothers.

2. Methods

This study is an experimental study with a posttest-only approach with a control group design. A total of 32 research subjects participated in this study, where the research subjects were grouped into 2 groups, namely the treatment group and the control group. The treatment group consisted of 16 postpartum mothers with second-degree perineal wounds who received intervention in the form of betel leaf gel on the wound. While the control group consisted of 16 postpartum mothers with second-degree perineal wounds who were given standard perineal wound care. The research subjects were postpartum mothers in the working area of the Munjul Jaya Health Center and the Mulya Mekar Health Center, Purwakarta Regency, Indonesia. The betel leaf gel used in this study is a processed product from a factory that has obtained a permit from the Food and Drug Monitoring Agency (BPOM) so that its safety for use in research subjects is guaranteed. Betel leaf gel is given as much as 2 ml, with a duration of administration twice a day for seven days.

Observation of perineal wound healing was carried out with reference to the REEDA score. Redness: Measures the level of redness in the wound area. Redness is a sign of inflammation and possible infection in the wound. Low scores indicate little or no redness, while high scores indicate significant redness. Edema: Measures the degree of swelling in the wound area. Swelling can hinder the healing process and cause discomfort. Low scores indicate little or no swelling, while high scores indicate significant swelling. Ecchymosis: Measures the degree of discoloration to blue or blue-black in the wound area. This can indicate small bleeding under the skin. Low scores indicate little or no color change, while high scores indicate significant color change. Discharge: Measures the amount and nature of discharge (fluid or mucus) from the wound area. Excessive or smelly discharge can be a sign of infection. A low score indicates little or no suspicious spending, while a high score indicates significant spending. Approximation: Measures how far the edges of the wound are close to each other or close together. A good approach is an important sign of the healing process. A low score indicates a good approach, while a high score indicates that the wound edges may still be separated. Each parameter is assessed using a numerical scale (usually from 0 to 3), where 0 indicates normal or very good condition, and 3 indicates the worst or abnormal condition. These scores are then summed to give a total REEDA score, which can provide an overview of the condition of the perineal wound. Analysis of the REEDA score data was carried out using SPSS version 25 software using univariate and bivariate methods, with $p<0.05$.

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3. Results and Discussion

Table 1 shows the characteristics of the research subjects. The study results showed no differences in age, personal hygiene, hemoglobin levels, education, occupation, and parity between research subjects in the treatment group and the control group. This was further strengthened by the results of statistical tests, which showed no differences between research subjects in the treatment group and the control group, p>0.05.

Table 1. Characteristics of research subjects.

Variable	Treatment group (%)	Control group (%)	P-value*
Age:			1,331
20-25 years	18,8%	31,3%	
>25 years	81,3%	68,8%	
Personal hygiene:			0,052
Cleaned	87,5%	87,5%	
Rarely cleaned	12,5%	12,5%	
Hemoglobin levels:			1,763
Normal	100%	0%	
Anemia	0%	100%	
Education:			0,666
Junior high school	25%	18,8%	
Senior high school	75%	75%	
College	-	6,3%	
Occupation:			1,000
Working	56,3%	56,3%	
Not working	43,8%	43,8%	
Parity:			0,007
Primipara	18,8%	56,3%	
Multipara	81,3%	43,8%	

Table 2. Differences in REEDA scores between treatment groups.

REEDA score measurement	Intervention	Control	P-value*
	Mean±SD	Mean±SD	
Pretest	13,00±1,095	13,31±0,793	0,445
Posttest I	5,81±1,559	8,63±1,500	0,000
Posttest II	1,81±0,981	2,75±1.125	0,023
Posttest III	0,13±0,342	1,13±0,619	0,000

*Mann Whitney test.

Based on Table 2 it is known that the REEDA score on the pretest or the first day did not differ, with a significant value obtained p = 0.445, meaning that the initial REEDA score data described the condition of the wound to be in the same state between the control and intervention groups, in the first posttest or From the 3rd day to the 3rd posttest or the 7th day of observation it is known that there is a difference between the control group and the intervention group with the greatest decrease in the intervention group. In addition to the intervention on day 5 or posttest II, the wound score was close to healing, namely 1.81, while in the control group it was 2.75. The average score on the 7th day of the control group was 1.13 so it could be interpreted that wound healing was still not good. The average score on the 7th day of the intervention group was 0.13, which means that most of the wounds of all respondents in the intervention group had good wound healing.

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Betel leaf gel has potential in wound healing because it contains various natural compounds that have properties that support the healing process. Green betel leaves contain phenols and tannins, which have antimicrobial properties. These compounds help fight bacteria and other microorganisms that can cause infection in wounds. Flavonoids are anti-inflammatory compounds that can help reduce inflammation around wounds. Excessive inflammation can slow down the healing process. Calcium oxalate in green betel leaves can help in the formation of collagen tissue which is important for wound healing. Collagen is a protein that forms the structural framework of skin and connective tissue. Betel leaves contain various vitamins and minerals, including vitamin C. Vitamin C is needed for collagen synthesis and accelerates the healing process. Betel leaf is also known to have analgesic or pain-relieving properties. This can help relieve pain in the wound, allowing the patient to be more comfortable and actively participate in the healing process. Several compounds in betel leaf have antioxidant properties. Antioxidants help protect cells from oxidative damage and speed up the healing process. Traditionally, betel leaves are used in traditional medicine to accelerate wound healing. It includes stimulant properties that can stimulate new tissue growth and faster wound healing.[16-20]

4. Conclusion

Giving betel leaf gel shows effectiveness in the process of healing perineal wounds in postpartum mothers.

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