Comparison of the Efficacy of Guava Leaves Extract as Hot Steam and Wash versus Intake of Oral Antibiotic for Postpartum Wound Healing after a Normal Spontaneous Vaginal Delivery with Episiotomy*

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ABSTRACT:

Objective: This single blind, randomized, controlled trial investigated the efficacy of the use of guava leaves as hot steam and wash for postpartum wound healing in women who underwent normal spontaneous delivery with episiotomy.

Methods: A total of 127 women aged 18 to 45, from 37 to 41 weeks AOG, served as subjects in this study. They were allocated to three treatments arms (guava group, antibiotic group and guava + antibiotic group) through block randomization. The guava group used a solution from boiled guava leaves as hot steam and wash tid for 7 days while the antibiotic group took amoxicillin 500 mg tid also for 7 days. The 3rd arm used both treatments. Outcomes included pain score (measured using Visual Analog Scale) and wound healing (measured using REEDA Scale) at 24 hours, 3 days and 7 days postpartum.

Results: Showed that mean pain scores and mean REEDA scores of the women in the three groups at 24 hours, 3 days and 7 days postpartum were not significantly different. Likewise, the risk of wound dehiscence was not significantly different for the three treatment arms. Therefore, this study revealed that guava leaves extract used as hot steam and wash is as effective as the standard oral antibiotic intake for postpartum wound care but no additional benefit is derived from combining guava leaves and oral antibiotic.

Conclusion: Guava leaves used as hot steam and wash may be recommended for postpartum wound care after normal spontaneous vaginal delivery with episiotomy.

Keywords: guava leaves, postpartum wound healing, episiotomy

INTRODUCTION

An episiotomy is a surgical incision of the mother's perineum performed as the baby's head emerges from the vaginal canal during birth intended to prevent tears of the perineal muscle. An episiotomy can decrease the amount of maternal pushing, trauma to the vaginal tissues and expedite delivery of the baby. However, episiotomy is also associated with a higher incidence of extensions or tears into the muscle of the rectum or even the rectum itself which is more difficult to repair and more painful for the mother.[1]

The typical healing time for an episiotomy is about 4 to 6 weeks depending on the size of the incision and the type of suture material used to close the episiotomy. The area of the episiotomy may be uncomfortable or even painful for several days. There are traditional practices done to help relieve some of the pain associated with an episiotomy and to hasten wound healing. One such practice, which is very popular locally, is the use of tea made from guava leaves as a steam wash for women who had just given birth. Guava (Psidium guajava), also known as bayabas in Filipino, is widely used in the Philippines as herbal medicine and is recognized by the Philippine Department of Health for its antiseptic property.

Traditionally, guava is used for the treatment of various ailments like diarrhea, wounds, rheumatism, lung problems, and ulcers among others. Guava contains a number of major pharmacologically active ingredients such as flavonoids, guayavolic acid, guavanoic acid, guajadial, guajaverin and so many other active components.

Literature reviewed by the researcher have reported the various biological activities of guava like antidiarrheal, antimicrobial, antioxidant, hepatoprotective, anti-allergy, anti-diabetic, anti-inflammatory and antitussive activity, among others.[4] However, no publication was found which provides scientific evidence on the efficacy of guava leaves as hot steam and wash for postpartum wound healing, hence the impetus for this study.

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OBJECTIVES

This study was designed to determine the efficacy of guava leaves extract as hot steam and wash for postpartum wound healing in patients who underwent normal spontaneous delivery with episiotomy.

Specific

1. To compare the effect of guava leaves extract and the usual intake of oral antibiotic postpartum in terms of:
   a. Pain
   b. Wound healing in terms of:
      i. Redness
      ii. Edema / Swelling
      iii. Ecchymosis / Tenderness
      iv. Discharge
      v. Approximation / Wound Dehiscence

METHODS

Study Design:

Single blind, randomized, controlled trial

Subjects:

One hundred fifty (150) term pregnant women who qualified based on the inclusion / exclusion criteria were enrolled in this study from August 2012 to April 2013. These women were all patients from the charity service of a private institution.

An Entry Form was used to assess eligibility and collect baseline information. Inclusion / exclusion criteria were as follows:

Inclusion Criteria

- The subject must be 18 to 45 years old, 37 to 41 weeks AOG, underwent Normal Spontaneous Vaginal Delivery with Episiotomy using Vicryl Rapide 2-0 as suture material and signed the informed consent form.

Exclusion Criteria

- Presence of gestational diabetes mellitus, 4th degree laceration, pre-labor rupture of membrane, and / or ongoing lower genital tract infections upon delivery.

Randomization

The pregnant women who were found to be eligible for inclusion were randomized to the three study arms and treatment started after delivery. Block randomization was done to allocate eligible patients to either of the three treatment groups i.e guava leaves extract as steam bath and wash (no oral antibiotic), oral antibiotic and tap water (no guava leaves), and guava leaves extract with oral antibiotic. Block randomization is a commonly used technique in clinical trial design to reduce bias and achieve balance in the allocation of participants to treatment arms, especially when the sample size is small. This method increases the probability that each arm will contain an equal number of individuals by sequencing participant assignments by block.

Concealment of Allocation

Sealed envelopes were used to conceal the treatment allocation. The case report forms and the corresponding treatment based on the generated random sequence allocation were placed inside each envelope and sealed and only during follow-ups did the observer get to open the envelope and fill up the follow-up forms.

Study Procedure

Eligible subjects were asked to sign the informed consent forms. Patients were then given instructions on how to apply the treatment allocated to them.

A. Procedure for the Guava Group

i. Materials
10 guava leaves (approximately 18 grams); 1 liter of water

ii. Procedure

- Wash the leaves thoroughly.
- Boil the leaves with the one liter of water for at least 15 minutes
- Allow to boil at least 15 minutes (low heat – approximately 80 degrees C; water can only be heated to 100 degrees C before it ceases to be a liquid and vaporizes), straining the leaves and use as hot steam for 10 minutes.
- Keep the solution and allow it cool down for about 30 minutes and use as wash for perineal part [Note: Cooling is needed because human skin can tolerate temperatures only up to 44 degrees C for a relatively long time (up to 6 hours)[6]]
- Do this treatment for 7 days, 3x a day.
- Never reuse the solution twice. Unconsumed

guava solution must be discarded. Never reheat it.

B. Procedure for Oral Antibiotic Group
- Instructed to take amoxicillin 500 mg 3 x a day for 7 days
- Instructed to wash with tap water only

C. Procedure for the Guava + Oral Antibiotic Group
- Instructed to take amoxicillin 500 mg 3 x a day for 7 days
- Instructed to use guava leaves as hot steam and wash based on the procedure in letter A

Data Collection

Data on outcomes (pain and wound healing) were obtained using VAS (for pain) and REEDA (for wound healing) at 24 hours, 3 days and 7 days postpartum.

Out of 50 qualified women who were randomly allocated to each of the three study groups, the following numbers of women were lost to follow-up:

Guava group = 9 (total subjects = 41)
Antibiotic group = 8 (total subjects = 42)
Guava + antibiotic group = 6 (total subjects = 44)

Data Analysis

Mean scores from the VAS and REEDA were computed per group and compared using one-way analysis of variance. Level of significance was set at 0.05. Statistical calculations were performed through the use of SPSS for Windows version 16.

RESULTS

Mean pain scores of the women in the three groups at 24 hours, 3 days and 7 days postpartum were approximately the same (not statistically different at 5% level of significance). Mean pain scores for the three groups at 24 hours were all reflective of moderate pain (p-value = 0.456). At 3 days, mean pain scores for the three groups were all indicative of mild pain (p-value = 0.077) while at 7 days, patients from all the 3 groups had no more pain. [Figure 1]

Similarly, mean scores of the women in the three groups at 24 hours, 3 days and 7 days postpartum were also approximately the same (p-values > 0.05) in terms of redness [Figure 2], edema / swelling [Figure 3], and dehiscence (approximation) [Figure 4].

No subject from any group exhibited wound ecchymosis / tenderness and discharge.

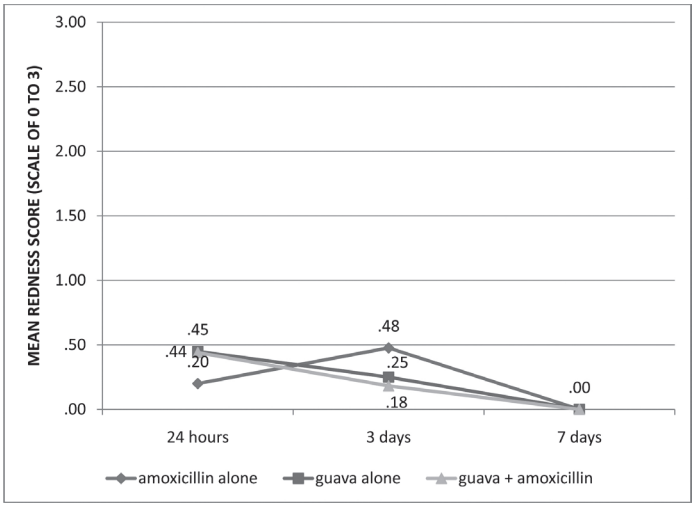

Figure 1. Mean Redness Score of Patients at 24 hours, 3 days and 7 days postpartum

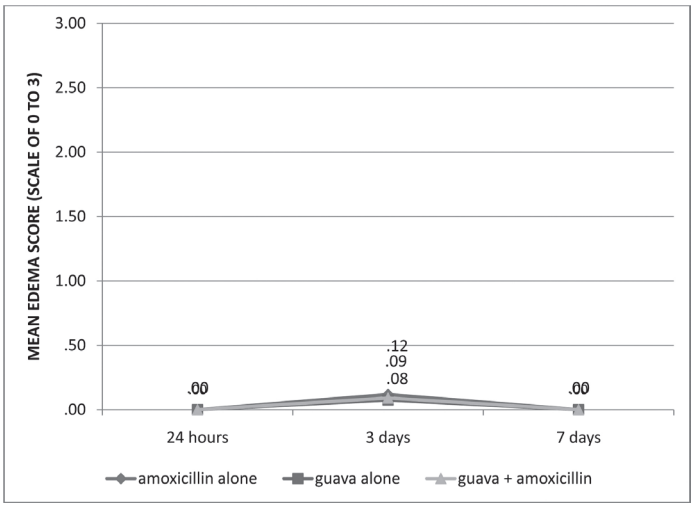

Figure 2. Mean Edema Score of Patients at 24 hours, 3 days and 7 days postpartum

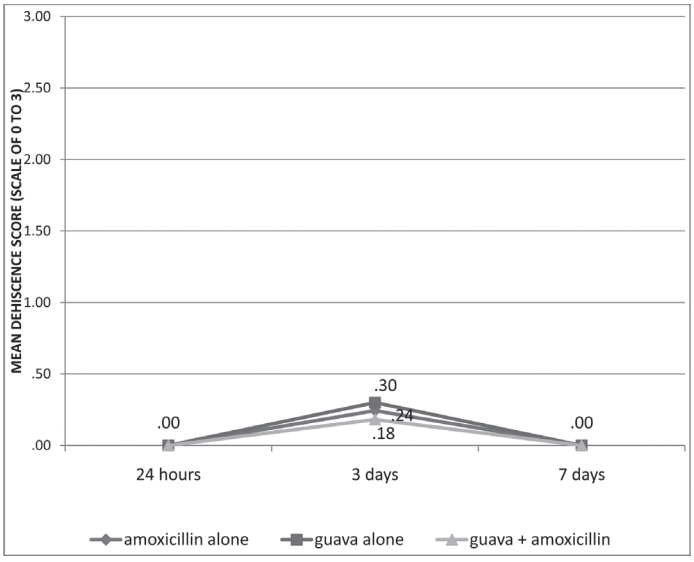

Figure 3. Mean Dehiscence Score of Patients at 24 hours, 3 days and 7 days postpartum

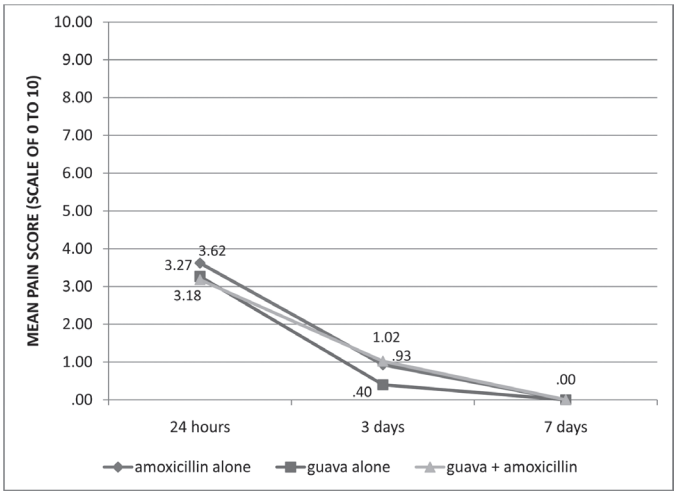

Figure 4. Mean Pain Score of Patients at 24 hours, 3 days and 7 days postpartum

DISCUSSION

Results showed that the use of guava leaves alone exhibited the same effect on postpartum wound care as the standard use of oral antibiotics. In the study by Chah et al., as cited in Gutierrez, et al., guava leaf extracts were found to aid in the healing of surgical wounds. More than 90% wound healing was observed after 14 days post-surgery, whereas 72% healing was observed in the distilled water treated group.

The antibacterial potential of the crude leaves extracts of Psidium guajava Linn. against some bacteria associated with surgical wound, burns, skin and soft tissue infections were investigated by Abubakar under different conditions. Phytochemical screening of the crude leaves extracts revealed the presence of some bioactive compounds that have been associated with antimicrobial activities. Aqueous extracts were more potent in inhibiting the growth of pathogenic Proteus mirabilis, Streptococcus pyogenes, Escherichia coli, Staphylococcus aureus and Pseudomonas aeruginosa than the organic extracts. The gram-negative bacteria were less susceptible to the effects of the crude drugs. Moreover, the crude extracts were found to be more effective under acidic conditions and also at low temperatures. Therefore, Abubakar's study concluded that plant can be used for the management of surgical, skin and soft tissue infections.

CONCLUSIONS

Guava leaves extract used as hot steam and wash is as effective as the standard oral antibiotic intake for postpartum wound care. No additional benefit is derived from combining guava leaves and oral antibiotic.

RECOMMENDATIONS

Based on the results of this study, guava leaves used as hot steam and wash may be recommended for postpartum wound care after normal spontaneous vaginal delivery with episiotomy. Further studies can be made to determine the most effective dosage and frequency of administration.

It is noted at this point that this study has some limitations in terms of not being able to control some variables in the research design stage such as type of episiotomy and surgeon who performed the episiotomy. However, the type of episiotomy was considered in the analysis stage and results showed no significant differences in the outcomes of patients who underwent the two episiotomy types (median and right medio-lateral). On the other hand, it was not possible to have only one surgeon to perform the episiotomy because of sample size limitations. Full adherence to the treatment regimen assigned to each patient during the study period could also not be established.

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