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File: ■ Aloe Vera (*Aloe vera*, Liliaceae)
■ **Cesarean Section**
■ **Wound Healing**

HC 021521-515

Date: February 27, 2015

RE: Topical Application of Aloe Vera Improves Wound Healing in Patients Who Experience Cesarean Section

Molazem Z, Mohseni F, Younesi M, Keshavarzi S. *Aloe vera* gel and cesarean wound healing; a randomized controlled clinical trial. *Glob J Health Sci.* August 2014;7(1):203-209.

Cesarean sections have a number of complications associated with the surgical incisions including infection, wound healing, and occurrence of hematomas. *Aloe vera* (*Aloe vera*, Liliaceae) has been traditionally used for the healing of wounds and burns and has been found to have anti-inflammatory, antioxidant, and antiseptic qualities. Previous studies have found the mucilaginous gel found within the aloe vera leaves can improve healing of burns and wounds in the mouth. The goal of this randomized, double-blind, controlled study was to quantify the effect of aloe vera gel on wound healing in women with cesarean sections.

Patients between the ages of 18 and 36 years old were recruited from the Amir-al-Momenin Hospital in Gerash, Iran. Patients were included if they had a full-term pregnancy and had a history of no more than 2 cesarean sections. Patients were excluded if there were other complications with the delivery, the fetus was abnormal or remained hospitalized after the mother was released, the cesarean section was accompanied by a hysterectomy, there was severe bleeding, or the cesarean operation lasted more than 90 minutes.

Demographic and anthropometric information were collected from each patient. A REEDA (redness, edema, ecchymosis, drainage, and approximation) scale was used to measure the wound around the incision. The score for each metric ranged from 0 to 3, and a maximum score of 15 was possible. A higher score signifies poor wound healing. *Aloe vera* was prepared by sterilizing and slicing open a single leaf, removing the mucilaginous gel, and applying the gel to the newly prepared cesarean section incision. The incision was then wrapped in sterile gauze. Patients in the control group received no topical treatment, and incisions were wrapped only in sterile gauze. The sterile gauze was removed 24 hours after surgery and the wound was assessed with the REEDA scale. Patients returned to the hospital 9 days after surgery, and the wound was

reassessed. Data were analyzed with chi-squared tests and t-tests.

Initial enrollment in the study included 97 patients. Seven were lost to follow up, resulting in 45 patients in each group. The reasons for loss were not given. There was a slight, but significant, difference in body mass index and blood pressure between the treatment and control groups. After 24 hours, the patients treated with aloe vera had significantly lower REEDA scores (0.0 ± 0.0) than the control group (0.6 ± 1.3) ($P = 0.003$). The patients in the aloe vera treatment group all received REEDA scores of 0. Significantly fewer ($n = 35$) patients in the control group received REEDA scores of zero 24 hours after surgery ($P = 0.001$). There were no significant differences in REEDA score or number of patients with a REEDA score of zero 9 days after surgery. No adverse effects were noted.

Topical aloe vera application significantly improved wound characteristics 24 hours after cesarean section surgery, according to the authors. Application of aloe vera for the duration of the study may have resulted in a significant difference in wound healing 9 days post-surgery. This study was unusual in that the fresh gel from aloe vera leaves was used on the cesarean incisions. Some researchers argue that some of the medicinal properties of the aloe vera leaf are lost during processing and that fresh gel is more effective in wound healing. When fresh gel is harvested, care must be taken to ensure that the gel remains sterile. A recent study in which aloe vera was applied to infected wounds found that aloe vera application slowed wound healing. These results suggest aloe vera may be more effective at healing on recent, clean wounds.

There were several possible limitations of the study. The study may have been limited by the blinding protocol. It is difficult to say if patients were conscious during wound treatment. If they were, they would surely have noted the application or lack of application of aloe vera. The study would have been improved by adding a placebo in the form of a topical ointment. In addition, the average REEDA scores were extremely low, ranging from zero to 0.6 ± 1.3 . The majority of the patients, even those in the control group, had scores of 0. There would be value in comparing the non-zero averages between the groups at both time points.

—*Cheryl McCutchan, PhD*

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