Evidence summary: low- and middle-income countries

WHAM evidence summary: potato peel dressing for healing burns

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CLINICAL QUESTION

What is the best available evidence for potato peel dressing (PPD) for healing burns?

SUMMARY

PPD is a low cost, traditional dressing used to treat burns and other wounds. Sterile PPD is used with gauze bandages to prevent the burn from desiccation. In most uses, a topical antimicrobial is also applied. *Level 1* evidence[1] at high risk of bias showed that partial thickness burns treated with PPD can achieve healing, but not as quickly as with honey dressing. Low level evidence[2-4] showed no substantial difference in healing time for burns treated with PPD compared to other basic dressings (banana leaf and petroleum-impregnated gauze). In clinical settings without access to modern/advanced wound treatments, PPD could be considered as a protective dressing to use in conjunction with topical antimicrobials for treating burns; however, evaluation of the clinical options is paramount.

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CLINICAL PRACTICE RECOMMENDATIONS

All recommendations should be applied with consideration to the wound, the person, the health professional and the clinical context.

There is insufficient evidence to make a recommendation on the use of potato peel dressings to promote healing in burns.

SOURCES OF EVIDENCE: SEARCH AND APPRAISAL

This summary was conducted using Joanna Briggs Institute[5-8] methods. The summary is based on a systematic literature

search combining search terms related to PPDs and burns in humans. Searches identified evidence published up to 10 August 2024 in English in the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline (Ovid), Google Scholar, Embase (Ovid), AMED, Health Internetwork Access to Research Initiative (Hinari, via Research4Life) and Cochrane Library. Levels of evidence for intervention studies are reported in Table 1.

BACKGROUND

Potato peel dressing is prepared in low and middle resource countries as a cost-effective treatment to protect burn injuries from desiccation in the absence of modern/advanced dressings that promote wound healing.[1-4, 9] When the peelings can be sourced at no cost from local food preparation industries the PPD is less expensive than alternatives, including petroleum-impregnated gauze.[9]

CLINICAL EVIDENCE ON POTATO PEEL DRESSING FOR TREATING BURNS

Table 2 summarises studies exploring PPD for treating burns. The evidence comes from the following studies, all of which were at high risk of bias:

- In a small RCT[1], partial thickness burns were treated with either sterile PPD covered in sterile gauze and changed on alternate days (n = 50) or unprocessed, undiluted honey dressing changed on alternate days (n = 50). The PPD group achieved granulation tissue in a mean of 9.2 days compared to a mean of 6.8 days in the honey-dressing group. The mean time to total healing was significantly longer in the PPD group (16.2 days versus 9.2 days, $p < 0.001$) Around 80% of the burns in both groups had colonisation at baseline on culture. By day 7, 90% of burns in the honey group that were colonised at baseline had negative cultures compared with none in the PPD group[1] (*Level 1*).
- In a small comparative study,[2] partial thickness burns received either PPD (n = 30) or banana leaf dressing (BLD, n = 30). All burns also received povidone-iodine ointment. Participants acted as their own control with the comparative treatments applied to burns at different anatomical locations. There was no between-group difference for complete healing without a skin graft (PPD = 67% of burns versus BLD = 64% of burns, $p > 0.05$); most burns completely healed within 10 days. The PPD and BLD were rated equivalently and favourably by participants with respect to managing pain[2] (*Level 2*).
- In an observational study[4], (n = 17) PPD was evaluated for partial and full thickness burns using histological examination of wound biopsies. All participants received silver sulphadiazine ointment and the majority of their burn was covered with PPD and gauze. A small burn area was covered with gauze only as a comparison. Complete

Table 1. Levels of evidence for clinical studies

Level 1 evidence	Level 2 evidence	Level 3 evidence	Level 4 evidence	Level 5 evidence
Experimental designs	**Quasi-experimental designs**	**Observational – analytic designs**	**Observational – descriptive studies**	**Opinion/ bench research**
1.c Randomised controlled trial[1]	2.c Quasi-experimental prospectively controlled study[2]	3.e Observational study with control group[4]	4.d Case study[3]	Opinion[9]

Table 2. Summary of evidence for potato peel dressing for healing partial and full thickness burns

Study	Country	PPD treatment and comparators (number participants)	Wound outcome measures	Level of evidence
Sub-rahmanyam, 1996[1]	India	• Normal saline, sterile PPD, sterile gauze, bandage (n = 50) • Unprocessed honey, sterile gauze and bandage (n = 50)	• Time to healthy granulation tissue • Time to complete healing • Colonisation (swab culture and microscopy)	1
Gore, 2003[2]	India	• PPD, povidone-iodine ointment, gauze and bandage (n = 30) • Banana leaf dressing povidone-iodine ointment, gauze and bandage (n = 30)	• Time to complete healing • Patient-rated burn pain	2
Keswani, 1990[4]	India	• Silver sulphadiazine cream, PPD and gauze (n = 17) • Silver sulphadiazine cream and gauze (n = 17)	• Time to healing • Histological evaluation • Colonisation (swab culture and microscopy)	3
Keswani, 1985[3]	India	• PPD, povidone-iodine and gauze (n = 1) • Petroleum-impregnated gauze (n = 1)	• Time to healing	4

healing was achieved in 21–26 days; longer healing time was associated with delay in hospitalisation. The PPD was associated with lower levels of inflammation, more orderly cellular stratification and faster epidermal regeneration compared with gauze only, with no difference in microbial profiles[4] (*Level 3*).

- In a case report[3], the majority of a child's partial thickness burn was covered with PPD, and a small area was treated with only petroleum-impregnated gauze. Time to complete healing was faster with PPD (7 days versus 10 days)[3] (*Level 4*).

CONSIDERATIONS FOR USE

- Consider local policies, procedures, and licensing before implementing traditional treatments.
- To prepare PPD, clean boiled potato peelings are adhered to a roller bandage using starch paste before being dried, rolled into a bandage and autoclaved. The bandage is applied with the inner surface of peel in contact with the burn, with no gaps between the peel. This is covered with sterile gauze and a bandage.[1, 3, 4]
- No allergies or adverse events were experienced in the studies[1-4] on PPD for treating burns.

CONFLICTS OF INTEREST

The author declares no conflicts of interest in accordance with International Committee of Medical Journal Editors (ICMJE) standards.

ABOUT WHAM EVIDENCE SUMMARIES

WHAM evidence summaries include the best available evidence to inform clinical practice. The evidence should be evaluated by appropriately trained professionals with expertise in wound prevention and management, and considered in the context of the individual, the professional, the clinical setting and other relevant clinical information. WHAM evidence summaries are developed using methodology consistent with that published by Joanna Briggs Institute[5-8]. Evidence is identified via a PICO search strategy, assigned a level of evidence and evaluated for risk of bias. Visit the website: www.WHAMwounds.com.

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