

ORIGINAL ARTICLE

Povidine iodine versus honey in management of chronic wounds

¹Dr Raj Kumar Vishwakarma, ²Dr. Amit Varshney

¹Assistant Professor, Department of General Surgery, Major S D Singh Medical College, Farukhabad, Uttar Pradesh, India;

²Assistant Professor, Department of Internal Medicine, F.H. Medical College, Tundla, U.P., India

ABSTRACT:

Background: Chronic wounds are often complex, recalcitrant to healing and may persist for months or years due to underlying disease processes or complications. The present study was conducted to compare povidine iodine and honey in management of chronic wounds. **Materials & Methods:** 60 patients with chronic wounds of both genders were divided equally into 2 groups of 30 each. Group I patients honey after sterilized by gamma-irradiation was applied and in group II, 10% povidone iodine solution was applied. Parameters such as complete healing, reduction in wound surface area, pain during dressing was recorded. **Results:** Type of wound was arterial in 6 in group I and 11 in group II, diabetic 7 in both groups, pressure sore 8 in group I and 5 in group II, traumatic ulcer 6 in group I and 4 in group II, venous ulcer 3 in group I and II. Site was ankle in 5 in group I and 4 in group II, leg 10 in group I and 12 in group II, foot sole seen 6 in group I and 4 in group II, foot dorsum 7 in group I and 6 in group II and thigh wound 2 in group I and 4 in group II. There was significant difference reduction in surface area, pain score, overall comfort score in group I and II ($P < 0.05$). **Conclusion:** Honey dressing was netter as compared of povidine iodine in chronic wounds.

Key words: Chronic wounds, Honey dressing, Povidine iodine

Corresponding author: Dr Raj Kumar Vishwakarma, Assistant Professor, Department of General Surgery, Major S D Singh Medical College, Farukhabad, Uttar Pradesh, India

This article may be cited as: Vishwakarma RK, Varshney A. Povidine iodine versus honey in management of chronic wounds. *J Adv Med Dent Scie Res* 2015;3(2):220-223.

INTRODUCTION

Chronic wounds are common with approximately 50% of home care clients receiving nursing services related to wound care. However, chronic wounds are often complex, recalcitrant to healing and may persist for months or years due to underlying disease processes or complications.¹ The exact mechanisms that contribute to poor wound healing remain elusive but likely involve interplay of systemic and local factors. Although complete healing may appear to be the logical goal for most patients and clinicians, some wounds do not have the potential to heal due to a number of factors such as inadequate vasculature, coexisting medical conditions and medications that prohibit the healing process.²

Iodine has been used as an antiseptic in the treatment of wounds for more than a century, yet questions are raised about the place of iodine-based agents in the management of wounds. With povidone iodine (PVP-I), there have been concerns about allergy, ineffective penetration, and toxic effects on host cell.³

PVP-I has been demonstrated to be active against a broad spectrum of pathogens including gram-positive and gram-negative bacteria, spores forming fungi, protozoa and viruses.⁴ In povidone iodine, iodine forms a complex with the synthetic carrier polymer povidone, which itself has no microbicidal activity. In

an aqueous medium, free iodine is released into solution from the povidone iodine complex and an equilibrium is established, with more free iodine being released from the povidone iodine reservoir as iodine-consuming germicidal activity proceeds.⁵ The present study was conducted to compare povidine iodine and honey in management of chronic wounds.

MATERIALS & METHODS

The present study was conducted among 60 patients with chronic wounds of both genders. All were included once they provided their written consent.

Data such as name, age, gender etc. was recorded. Patients were divided equally into 2 groups of 30 each. Group I patients honey after sterilized by gamma-irradiation was applied and in group II, 10% povidone iodine solution was applied. The wound dressings were changed on alternate days for 6 weeks of follow-up period or till complete healing. Parameters such as complete healing at the end of the sixth week, reduction in wound surface area measured in cm², pain during dressing change measured on a VAS of 0–10 (0 meaning no pain and 10 indicating very severe pain), and overall comfort of subjects with dressing measured on the VAS of 0–10 was recorded. Results were tabulated and analysed statistically.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Agent	Honey	Povidine iodine
M:F	20:10	17:13

Table I shows that group I had 20 males and 10 females and group II had 17males and 13 females.

Table II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Type	Arterial	6	11	0.09
	Diabetic	7	7	
	Pressure sore	8	5	
	Traumatic ulcer	6	4	
	Venous	3	3	
Site	Ankle	5	4	0.12
	Leg	10	12	
	Foot sole	6	4	
	Foot dorsum	7	6	
	Thigh wound	2	4	

Table II, graph I shows that type of wound was arterial in 6 in group I and 11 in group II, diabetic 7 in both groups, pressure sore 8 in group I and 5 in group II, traumatic ulcer 6 in group I and 4 in group II, venous ulcer 3 in group I and II. Site was ankle in 5 in group I and 4 in group II, leg 10 in group I and 12 in group II, foot sole seen 6 in group I and 4 in group II, foot dorsum 7 in group I and 6 in group II and thigh wound 2 in group I and 4 in group II. The difference was non- significant (P> 0.05).

Graph I Comparison of parameters

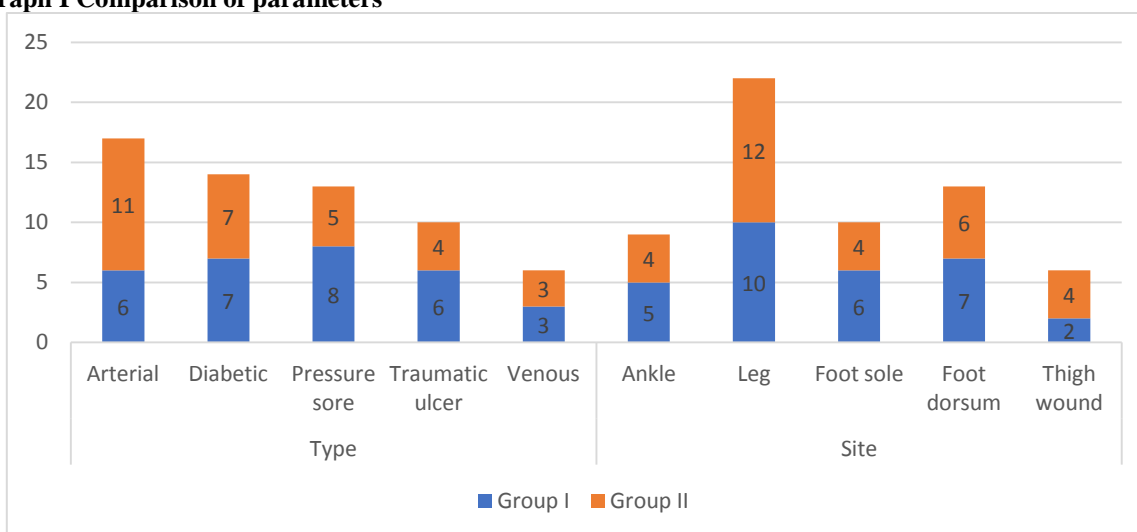


Table III Outcome of treatment

Parameters	Variables	Group I	Group II	P value
Surface area (weeks)	0	4.6	4.13	0.04
	2	3.4	3.7	
	4	1.8	3.0	
	6	0.52	1.90	
Pain score (weeks)	0	6.2	5.2	0.02
	2	4.3	4.2	
	4	2.3	3.5	
	6	1.2	2.6	
Overall comfort score (weeks)	0	4	4	0.01
	2	5.6	5	
	4	7.2	6.5	
	6	9.0	6.9	

Table III, graph II shows that there was significant difference reduction in surface area, pain score, overall comfort score in group I and II (P< 0.05).

DISCUSSION

Inflammation occurs as a physiological response to wounding and is required for the healing process, microbial infection can induce excessive inflammation. Prolonged inflammation together with defective remodelling of the extracellular matrix and a failure of re-epithelialization are hallmark characteristics of chronic wounds.⁶ Microbial colonies in chronic wounds often produce biofilms that interact with host tissue in a parasitic manner. The reduced metabolic state induced by biofilms can also enhance resistance to antibiotics and aid the evasion of host defence mechanisms.⁷ Biofilms are found in approximately 60% of chronic wounds and 6% of acute wounds, with eradication of the resident bacteria remaining difficult. Therefore, effective antiseptics for wound healing should ideally address both inflammation and biofilm formation.⁸ Honey may provide nutrients needed for regenerating tissue because it contains large quantities of readily assimilable sugars, many amino acids, vitamins, and trace elements. Its high vitamin C content may prove beneficial by promoting collagen synthesis.⁹ The present study was conducted to compare povidone iodine and honey in management of chronic wounds.

In present study, group I had 20 males and 10 females and group II had 17 males and 13 females. Gulati et al¹⁰ compared the healing of chronic wounds with honey dressing vs. Povidone iodine dressing in adult subjects with chronic wounds of ≥ 6 weeks of duration. Forty-five subjects were randomized into two groups i.e., Honey & Povidone iodine dressing group. Dressing was done on alternate day basis for 6 weeks of follow up period. Main outcome measure was complete healing at 6 weeks. Wound healing status was assessed at 2 weekly intervals till 6 weeks. Seven out of 22 subjects in honey treated group achieved complete healing as compared to none out of 20 subjects in Povidone iodine treated group. There was a significant decrease in the wound surface area, pain score & increase in comfort score in Honey dressing group in comparison to the Povidone Iodine group at 0.05 level of significance. Honey dressing is highly effective in achieving healing in chronic wounds as compared to Povidone iodine dressing.

We found that type of wound was arterial in 6 in group I and 11 in group II, diabetic 7 in both groups, pressure sore 8 in group I and 5 in group II, traumatic ulcer 6 in group I and 4 in group II, venous ulcer 3 in group I and II. Site was ankle in 5 in group I and 4 in group II, leg 10 in group I and 12 in group II, foot sole seen 6 in group I and 4 in group II, foot dorsum 7 in group I and 6 in group II and thigh wound 2 in group I and 4 in group II. Medhi et al¹¹ conducted a meta-analysis to evaluate the efficacy of topical application of honey in observational studies as well as in clinical trials in the treatment of wounds. Most of the subjects reported complete healing within 4–12 weeks in clinical trials and within 2–9 weeks in observational studies.

Vehmeier-Heeman et al¹² evaluated wound healing in 10 burn patients after split skin graft application. Operated sites were randomly treated with either vaseline gauze or PVP-I (10%) impregnated vaseline gauze. Analysis of quantitative bacteriology indicated a significant reduction ($P < 0.05$) in the number of colony forming units (CFU) per gram of tissue between PVP-I and the vaseline gauze in the third and fourth quarter of the total healing time (4.0 CFU/cm² versus 9.6 and 1.1 versus 4.0). The 50% healing time was significantly improved in the PVP-I group (9.4 versus 10.1 days, $P = 0.023$). The healing time was statistically shortened by almost 1 day but this may not be clinically relevant. Thyroid function tests were within normal range.

CONCLUSION

Authors found that honey dressing was netter as compared of povidone iodine in chronic wounds.

REFERENCES

1. Cherry M, Daly CG, Mitchell D, Highfield J. Effect of rinsing with povidone-iodine on bacteraemia due to scaling: a randomized controlled trial. *J Clin Periodontol* 2007;34:148–55.
2. Seguin P, Tanguy M, Laviolle B, Tirel O, Malledant Y. Effect of oropharyngeal decontamination by povidone-iodine on ventilator associated pneumonia in patients with head trauma. *Crit Care Med* 2006;34:1514–9.
3. Banwell H. What is the evidence for tissue regeneration impairment when using a formulation of PVP-I antiseptic on open wounds? *Dermatology* 2006;212(1 Suppl):66–76.
4. Wagner KH, Jurb A, Zarembach B, Elmadfa I. Impact of antiseptics on radical metabolism, antioxidant status and genotoxic stress in blood cells: povidone-iodine versus octenidine dihydrochloride. *Toxicology In Vitro* 2004;18:411–8.
5. Kaya AZ, Turani N, Akyuz M. The effectiveness of a hydrogel dressing compared with standard management of pressure ulcers. *J Wound Care* 2005;14:42–4.
6. Voboril R, Weberova J, Kralove H. Successful treatment of infected vascular prosthetic grafts in the groin using conservative therapy with povidone-iodine solution. *Ann Vasc Surg* 2004;18:372–5.
7. Howell-Jones RS, Wilson MJ, Hill KE, Howard AJ, Price PE, Thomas DW. A review of the microbiology, antibiotic usage and resistance in chronic skin wounds. *J Antimicrob Chemother* 2005;55:143–9.
8. Yapucu Güneş U, Eşer I. Effectiveness of a honey dressing for healing pressure ulcers. *J Wound Ostomy Cont Nurs* 2007;34(2):184–190.
9. Okeniyi JA, Olubanjo OO, Ogunlesi TA, Oyelami OA. Comparison of healing of incised abscess wounds with honey and EUSOL dressing. *J Alternative Compl Med* 2005;11(3):511–513
10. Gulati S, Qureshi A, Srivastava A, Kataria K, Kumar P, Ji AB. A prospective randomized study to compare the effectiveness of honey dressing vs. povidone iodine dressing in chronic wound healing. *Indian Journal of Surgery*. 2014 Jun;76(3):193-8.
11. Medhi B, Puri A, Upadhyay S, Kaman L. Topical application of honey in the treatment of wound healing: a metaanalysis. *Alternative Med* 2008;10(4):166–169.

12. Vehmeyer-Heeman M, Van den Kerckhove E, Gorissen K, Boeckx W. Povidone-iodine ointment: no effect of split skin graft healing time. *Burns* 2005;31:489-94.