

OMO bath: a cost-effective enzymatic wound debridement method in resource-limited settings

Background: Surgical, mechanical, biological, autolytic and enzymatic debridement have all been demonstrated to be effective, and all with their own benefits and challenges. In practice, the debridement method chosen will depend on the type and location of the wound, local availability, comorbidities of the patient, skills and knowledge of health workers, economic considerations and others. Enzymatic debridement is a selective method for debridement of necrotic tissue and therefore, has been shown to be an alternative to the conventional surgical debridement.

Aim: To demonstrate the impact of a cost-effective washing powder (OMO) as an enzymatic wound debridement method.

Methods: We explore the mechanism behind the OMO bath through its use on patients in practice.

Results: We illustrate how the OMO bath was used on four patients to debride chronic, septic wounds.

Conclusion: Each OMO packet contains enzymes, especially protease, lipase and amylase. These are enzymes that break down animal and human proteins and dirt while washing. We hypothesise that it uses the same mechanism to debride necrotic tissue in chronic wounds.

Daniel Gakwerere

Intern Doctor, Department of Surgery, St. Francis Hospital, Mutolere, Kisoro District, Uganda

Niels Jig Jansen

Medical Officer and Clinical Research Coordinator, Department of Surgery, St. Francis Hospital, Mutolere, Kisoro District, Uganda

Key words

- Debridement
- Enzymatic debridement
- Limited-resource setting
- Ulcers

Debridement is an essential component of wound bed preparation, defined as the process of eliminating non-viable, necrotic or infected tissues and foreign bodies from a wound. This promotes granulation, epithelialisation and eventually wound healing. Surgical and sharp debridement are still seen as the gold standard for wound debridement. Surgical debridement cuts back into healthy bleeding tissue, and sharp debridement is a less aggressive form that does not cut into healthy tissue and can be performed at the bedside (Tettelbach et al, 2024). Both are very effective methods, but they also have some limitations. They come with procedural costs, bleeding potential, pain and should not be used on exposed areas, such as bone, tendon and ligaments.

In some low-resource settings there is inadequate clinician expertise. Alternative methods stated in the international consensus document 'Best practice for wound debridement' by Tettelbach et al (2024) are:

- Mechanical debridement with saline wet-to-dry dressing or pressure irrigation;
- Autolytic debridement, keeping a wound moist to enhance phagocytic and

endogenous enzyme activity on non-living tissues;

- Biological debridement, which utilises maggot therapy;
- Enzymatic debridement, which utilises agents, such as collagenases and papain-urea.

As several references have shown (Patry, 2017; Shoham, 2018; Onesti, 2016), the debridement method chosen will depend on the type and location of the wound, local availability, comorbidities of the patient, skills and knowledge of health workers, economic and practical considerations, among others, depending on the individual patient, wound and setting. Enzymatic debridement is safe and effective for burns, pressure wounds or venous ulcers, diabetic foot ulcers and chronic ulcers (Patry, 2017; Ramundo, 2008).

In this article, we aim to showcase the effect of a cheap source of enzymatic debridement in a low-resource setting in Uganda. Washing powder, in this case OMO™ (Unilever), which is Unilever's largest detergent brand. It is also known by different names across the globe. Washing powder contains: surfactants, silicates, corrosion inhibitors, anti-redeposition agents,

perfume, optical brighteners and enzymes. OMO contains enzymes such as protease, lipase and amylase. The protease catalyses proteolysis, meaning it breaks down proteins into smaller polypeptides or single amino acids, and removes protein-based stains like blood, egg, milk and grass while washing. Lipase catalyses the hydrolysis of fats and effectively removes oily or greasy stains in clothes (Kirk et al, 2002). Hence, we hypothesise that these enzymes, under suitable conditions, degrade necrotic tissue in wounds and promote healing.

Therefore, this article intends to show how OMO bath can be used as an adjuvant therapy to conventional wound debridement methods and wound management in a low-resource setting.

Methods

Washing powder is designed to break down human and animal proteins and all kinds of dirt. The variety of enzymes contained in this washing powder helps in attaining the desired clean and dirt-free effect. The protease, lipase and amylase are the enzymes responsible for this biological effect.

During the OMO bath, these particular enzymes degrade proteins in a targeted manner, after which it is possible to remove and mechanically flush away dissolved debris from the wound.

Safety precautions

Besides, we hypothesise that the enzymes have an effect on wound debridement; OMO

washing powder contains several other chemicals [Table 1]. Although there is no literature available on the precise effect of those chemicals in wounds, the assumption is that washing powder for hand washing is safe for skin contact. Also, the packing of OMO washing powder does not contain any specific warning, for example, stating ‘not to use when you have any lacerations/wounds’. It does contain warnings for contact with the eyes and not to drink it. Individual ingredients of OMO and their potential harm to skin and wounds are shown in Table 1. Individual ingredients are found to be safe or have a possible risk of skin irritation; none of the ingredients are a known harmful or toxic chemical. Most of these ingredients are also widely used in cosmetics. Furthermore, our patients have previously used OMO during washing and they are asked about any history of allergies or skin sensitivity after the use of OMO.

Lastly, the risk of potential contaminants during bulk storage is estimated to be very low. Unilever’s statement: ‘The powder is stored in dry, cool, and well-ventilated areas, away from direct sunlight and incompatible substances. It is kept in sealed containers to prevent contamination and moisture exposure prior to packaging’ (Personal Communication, 2025).

How to use the OMO bath

- Use as much powder as for hand washing (approximately 50g). Too much powder will not clean better, but will need extra rinse cycles, which makes the treatment

Table 1. Ingredients, function and potential risk of OMO washing powder		
Ingredients*	Function	Potential risk for skin/wound
Sodium benzenesulfonate (20–25%)	Surfactant	Possible skin irritation Also used in shampoo and toothpaste
Sodium carbonate (10–20%)	Builder	Possible skin irritation (>10% concentration) Below <10% it is safe
Sodium silicate (5–10%)	Builder and corrosion inhibitor	Possible skin irritation Also used in cosmetics
Sodium lauryl sulphate (3–5%)	Surfactant	Possible skin irritation Also used in cosmetics, shampoo and toothpaste
Bentonite (1–5%)	Anti-redeposition agent	Safe for skin when used up to concentrations of 5% Also used in cosmetics
Enzymes (protease, lipase and amylase)	Stain removal	Safe for skin use
Optical brighteners and perfumes	Scent	Possible skin irritation Also used in cosmetics
*Note that the OMO washing powder is also further diluted in lukewarm water.		

unnecessarily intensive for the patient and nurse

- Rinse the wound once a day for 15–30 minutes in lukewarm water containing dissolved washing powder. The lukewarm water provides a favourable ambient temperature (20–40°C) for enzymes to do their biological activity in debridement
- Put the wound completely in a bucket or basin with lukewarm OMO washing powder solution. Total immersion is very important to ensure reaching possible skin or tissue pockets. The patient can gently stir the water with his or her hand, thus introducing the enzymes each time for them to do their work
- After 15–30 minutes, rinse thoroughly twice with lukewarm tap water (no soap). Then, place a gauze over it to prevent flies and let the skin dry to prevent maceration
- Dress and bandage the wound with sterile gauze and repeat the same procedure daily for the optimal outcome.

Note, in the case of a deep wound gap with a high risk of pocket formation, gently spray the wound with a syringe. Spray with lukewarm OMO bath water into depth during the bath. When rinsing, also spray into the pockets with lukewarm tap water (no soap) to rinse the OMO and debrided tissues from the pockets.

Results

In this case series, we show four patients who received OMO bath debridement between June and August 2024 in our facility. Three were following contracture release and a full-thickness skin graft following burns during childhood. All of them received five days of antibiotics post-operatively and the grafted limb was splinted with a cast for 10 days post-operatively. All grafts were opened on day five, and none of them showed signs of infection. All three patients were re-admitted more than three weeks post-surgery during follow-up with chronic septic wounds. A fourth patient was a 66-year-old male, without other comorbidities, admitted with a chronic wound on the dorsum of the foot. The wound started five months previously when a rock hit his foot; the wound never healed despite wound dressing from a health clinic.

None of the patients reported any allergies or skin sensitivities in previous clothing-wash sessions with OMO. After obtaining consent for treatment and documentation, OMO bath was initiated in all four patients, which yielded exceptionally good results and prepared the patients for discharge or skin grafting. **Table 2** shows the chronological photo progress of wound healing with the OMO bath. As this is

a case study, approval from the institutional ethics board was not required.

Discussion

Wound healing depends on debridement as a basic component of wound management. Among the methods available for debridement, some can be expensive, not accessible, less effective and have risks like pain or bleeding. This article demonstrates a cost-effective, enzyme-rich detergent as a method of enzymatic debridement.

A study in Canada by Woo et al (2015) on cost-analysis of various methods of wound debridement concluded that surgical debridement was the cheapest, followed by enzymatic, autolytic, mechanical and biological methods. Patient status, access to skilled personnel, location and nature of the wound, goals of treatment and presence of infection are some of the factors that influence the choice of modality for debridement. Patients in Uganda cover their health bills out of their own pocket which highly influences the method of debridement. Inequitable distribution of skilled personnel, accessibility of debridement methods and patient status also individualise the suitability of patients' wound debridement technique.

In another study from Mosher et al (1999) comparing four methods of debridement, collagenase resulted in the lowest cost of treatment (\$610.96) for one month, followed by autolysis (\$920.73), fibrinolysis (\$986.38) and wet-dry-dressing (\$1008.72). In comparison, the OMO packet costs \$0.14 in Uganda and can be used for two or three days, making the monthly cost \$1.50–2.10. It is less painful, reduces the period of hospital stay and can be conveniently done as an outpatient visit. Minimal side effects, such as wound maceration were reported. However, this may arise if the area is soaked for more than 30 minutes. This effect eventually resolves after 30 minutes.

A limitation of our study would be that we do not know the specific type of collagenase in the OMO bath and the precise effect of the other chemical ingredients on wounds. Furthermore, being a case study, the sample size is small and no control group was included. Another limitation of the treatment would be that the treatment is best applicable to wounds on the extremities because of the need to immerse the wound in the OMO bath. This makes treating, for instance, sacral or thoracic wounds, not suitable for the OMO bath.

Conclusion

As far as we know, this is the first publication about the effectiveness and cost-effectiveness

Table 2. Chronological photo progress of wound healing with OMO bath.

Case 1	OMO bath		
	Starting	After three days	After seven days
22-year-old female, three weeks after grafting the left cubital groove			
Case 2	Starting	After four days	After 11 days
25-year-old male, four weeks after grafting palmar side left hand (digits 1-5)			
Case 3	Starting	After five days	
16-year-old male, three weeks after grafting left popliteal groove			
Case 4	Starting	After seven days	
66-year-old male, chronic foot ulcer dorsum foot for five months			

*Optical lighter skin compared to previous photos is caused by ambient light in the room.

of the OMO bath as an enzymatic debridement method. We tested and recommend the use of OMO bath on extremities with scenarios, such as diabetic foot ulcers, pressure/venous ulcers, chronic leg ulcers, osteomyelitis after debridement and complicated limb fractures with fixators. Just like other methods

of debridement, the OMO bath is also complemented with systemic antibiotics and wound dressing. We recommend the OMO bath not as a substitute for surgical debridement, which remains the gold standard. But it has been shown to be very helpful in resource-limited settings due to its wide availability and low costs.

Further research should be done on the safety and effectiveness of such a cheap product as an alternative to the enzymatic debridement method. ●

Consent

Consent was obtained for treatment and documentation, before OMO bath was initiated in all four patients, both verbal and written.

References

- Kirk O, Borchert TV, Fuglsang CC (2002) Industrial enzyme applications. *Curr Opin Biotechnol* 13: 345–51
- Mosher BA, Cuddigan J, Thomas DR, Boudreau DM (1999) Outcomes of 4 methods of debridement using a decision analysis methodology. *Adv Wound Care* 12(2): 81–8

- Onesti MG, Fioramonti P, Fino P et al (2016) Effect of enzymatic debridement with two different collagenases versus mechanical debridement on chronic hard-to-heal wounds. *Int Wound J* 13(6): 1111–5
- Patry J, Blanchette V (2017) Enzymatic debridement with collagenase in wounds and ulcers: a systematic review and meta-analysis. *Int Wound J* 14(6): 1055–65
- Ramundo J, Gray M (2008) Enzymatic wound debridement. *Wound Ostomy Continence Nurs* 35(3): 273–80
- Shoham Y, Krieger Y, Tamir E et al. (2018) Bromelain-based enzymatic debridement of chronic wounds: A preliminary report. *Int Wound J* 15(5): 769–75
- Tettelbach WH, Ciprandi G, Downie F et al (2024) International consensus document: Best practice for wound debridement. *J Wound Care* 33(6 sup C): S1–32
- Woo KY, Keast D, Parsons N et al (2015) The cost of wound debridement: a Canadian perspective. *Int Wound J* 12(4): 402–7

Expert commentary: OMO bath: A cost-effective enzymatic wound debridement method in resource-limited settings

Wound cleansing and debridement are key tenets of gold-standard wound care practices: they reduce the risk of infection, reduce symptoms such as exudate and malodour by quickly removing dead and devitalised tissues, which contribute to both of these, and these practices can also give the patient an increased sense of wellbeing, promoting good general hygiene where wounds and limbs have been encased in dressings and bandages.

In high-resource countries, clinicians are fortunate to have access to a range of sterile commercial products that facilitate both cleansing and debridement, but in other areas of the world, these may not be so freely available, and even where they may be available, cost constraints and practicalities of supply and access to healthcare make their use incredibly limited.

This article describes a way a clinician took the principles underpinning what they knew needed to be achieved – enzymatic action to achieve debridement – and a cleansing material, and took a considered approach to making it available for their patient group.

There is clear evidence of the thought processes and consideration of the risks in

using a freely available product – a washing powder in a wound care scenario. The supplier was unable to provide evidence of the product's use in wounds, but logic states that it is used on a daily basis (when handwashing) by people who may have multiple small wounds (just from daily activities, such as cat scratches, trips and falls) without any deleterious side effects. Consideration has been given to the key ingredients of the wash powder, including its effects on skin, which would, of course, have been considered by the manufacturer because the items it is used to wash are then in intimate contact with the skin. The other components of the powder are reviewed, and their effects and side effects are weighed.

There is no evidence base to support this practice, but this clinician has created a solution that works for their patients, and more importantly, is contributing towards that evidence base, rationalising what they did and how it worked, demonstrating the clinical need and improved outcomes – the starting point for even the most sophisticated of products.

That is not to say that this should become widespread use, but sometimes the end justifies the means, and the patient outcomes here demonstrate the benefits to these patients.

Jacqui Fletcher
Independent Nurse
Consultant, UK