

## Rigenase® and Polyhexanide Versus Saline Gauze Dressing in Patients with Diabetic Foot Ulcers

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### Introduction

Diabetic foot ulcer is a major complication of diabetes mellitus and probably the major component of the diabetic foot. Wound healing is an innate mechanism of action that works reliably most of the time. A key feature of wound healing is stepwise repair of lost Extra Cellular Matrix (ECM) that forms the largest component of the dermal skin layer. But in some cases, certain disorders or physiological insult disturbs the wound healing process. Diabetes mellitus is one such metabolic disorder that impedes the normal steps of the wound healing process. Many studies show a prolonged inflammatory phase in diabetic a wound, which causes a delay in the formation of mature granulation tissue and a parallel reduction in wound tensile strength.

### Description

**Treatment:** Treatment of diabetic foot ulcers should include blood sugar control, removal of dead tissue from the wound, wound dressings and removing pressure from the wound through techniques such as total contact casting. Surgery in some cases may improve outcomes. Hyperbaric oxygen therapy may also help but is expensive.

**Wound dressings:** Wound dressings represent a part of the management of diabetic foot ulceration. Ideally, dressings should alleviate symptoms, provide wound protection and encourage healing. No single dressing fulfills all the requirements of a diabetic patient with an infected foot ulcer. All dressings require frequent change for wound inspection. Heavily exuding ulcers require frequent change to reduce maceration of surrounding skin. Dressing choice should be guided by the characteristics of the ulcer, the requirements of the patient and costs. However, there is no doubt that proper management of infected diabetic foot ulcers should include appropriate antibiotic therapy, regular and thorough wound debridement and daily dressing changes.

**Classes of dressings:** Non adherent or low adherence dressings. Various types of non-adherent or saline soaked gauze dressings are often regarded as standard treatment for diabetic ulcers and have usually been used as the control arm in studies of dressings. These dressings are designed to be atraumatic and to provide a moist wound environment.

**Hydrocolloids:** Hydrocolloid dressings are semipermeable to vapor, occlusive to wound exudate and absorbent. They are usually presented as an absorbent layer on a film or foam. This creates a hypoxic and moist environment that may also facilitate autolysis of necrotic material. Hydrocolloid dressings are designed to be left on the wound for prolonged periods ( $\geq 1$  week); this is useful in managing clean ulcers, but not when regular wound inspection is required. Thus, these dressings are probably more useful in preventing, rather than treating, infection within a wound.

**Hydrogels:** Hydrogels are similar to hydrocolloid dressings in that they are designed to facilitate autolysis of necrotic tissue, but they differ in that they donate moisture to extensively dry wounds. Thus, they can lead to maceration when applied to wounds that are moderately to heavily exuding. Their use on a diabetic foot lesion should be as an adjunct to sharp debridement of necrotic eschar.

**Foams:** Foam based dressings are another popular choice for diabetic foot ulcers. The dressings have a wide range of absorbency, provide thermal insulation, and are easily cut to shape. However, their absorbency and comfort would theoretically make them a suitable choice. A new foam dressing (Avance) impregnated with bactericidal silver has recently been introduced.

**Alginates:** A wide range of different alginate, or seaweed, products are currently available. They are highly absorbent, pack into cavity wounds, provide hemostasis and are a traumatic at dressing change (but may require wetting). It is important to ensure that all dressing is removed from a cavity wound, because retained dressing may be a source for further infection. The dressings may have some bacteriostatic properties. Alginates should be safe to use on infected foot ulcers, provided there are regular and thorough dressing changes.

**Iodine preparations:** Antiseptics, such as iodine based preparations, are commonly used on wounds, although there is no evidence to support a beneficial effect. Typically they are applied to locally infected wounds, usually in combination with systemic antibiotics. Iodine comes in 2 main preparations: Cadexomer iodine and povidone iodine. Povidone iodine has long been used as a skin antiseptic, but its antimicrobial effect on wounds is debatable certain iodine dressings are highly absorbent and therefore useful in preventing skin excoriation in moderately exuding ulcers.

**Silver-impregnated dressings:** The use of silver as a topical antimicrobial for acute and chronic wounds is well established. It has been traditionally delivered as silver nitrate (on sticks or roll ons) or as silver sulfadiazine (e.g., Flamazine ointment). Silver nitrate has cytotoxic effects on host cells, a property often exploited in the treatment of hyper granulating tissue, but its application can be uncomfortable. Silver sulfadiazine, which has the antimicrobial actions of both silver and sulfadiazine, is used on burns and chronic wounds and is generally well tolerated.

### Conclusion

A wide array of dressings is now commercially available for treatment of diabetic foot ulcers. New products are frequently being

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released, each targeted at different aspects of healing. An appropriate dressing will control exudate and odor, alleviate pain and contain wound infection. Whatever dressing is chosen, there is no substitute

for adequate wound debridement, appropriate systemic antibiotic therapy and frequent (daily) dressing changes and wound inspection.