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Iodine impregnated dressings
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Abstract:

In her fourth article, Rosie Pudner discusses the use of iodine in wound care.

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This article will first explore the use of povidone-iodine impregnated dressings and then examine the use of cadexomer iodine impregnated dressings. In recent years there has been much debate on the use of iodine in wound management. However, Gilchrist (1997) gives a clear overview of a consensual meeting where the use of iodine was debated, and suggests that the use of iodine should be reconsidered in wound management. Falanga (1997) also suggests iodine should be used to eradicate methicillin resistant staphylococcus aureus (MRSA) from contaminated wounds, and Sundberg and Meller (1997) supports the use of cadexomer iodine in the management of chronic wounds.

Properties of iodine dressings

At present there are only two povidone-iodine impregnated dressings available – Inadine™ and Poviderm™. Both dressings are made of a sterile, low-adherent knitted viscose dressing impregnated with 10 per cent povidone-iodine ointment (Morgan, 2000). Povidone-iodine is an iodophore, which is a loose complex of iodine, and a carrier i.e. povidone, and has the broadest spectrum of activity amongst the antiseptics. The iodine is slowly released from the iodophore, making it less potent and less toxic than other iodine preparations containing free iodine (Morgan, 2000).

There has been some debate as to the toxic effects of povidone-iodine on wound healing (Williams & Leaper, 1998). Although the evidence is not conclusive at

present, it may be that it is the carrier that has the toxic effects on wound healing rather than the iodine itself being harmful. As the povidone-iodine is discharged into the wound, the dressing will undergo a colour change from orange/brown to cream/white in colour, indicating that the povidone-iodine has been used up (Morgan, 2000).

Povidone-iodine impregnated dressings are of value in preventing infection in some traumatic wounds and can also be used to treat local wound infections, especially methicillin resistant staphylococcus aureus (MRSA). Inadine™ and Poviderm™ can be used for prophylaxis of infection and treatment of minor burns, abrasions and traumatic skin loss injuries, e.g. finger tip injuries, pre-tibial lacerations. However, Lawrence (1993) found that povidone-iodine is neutralised rapidly as the wound oozes, and had an inferior prophylactic value when compared with a chlorhexidine-medicated tulle dressing.

These dressings can be used on lightly exuding, sloughy or granulating wounds. Any patients who have a known sensitivity to iodine should be patch-tested first before applying the dressing. These dressings are not advised for use in patients with thyroid disorders, and should be used with caution in pregnant women and lactating mothers.

Application of the dressing
An appropriately sized dressing should be chosen, and the backing sheets removed prior to applying the dressing to the wound, and securing with an appropriate secondary dressing. No more than four large dressings i.e. 9.5 x 9.5cm, should be applied at any one time, due to the amount of iodine that could be absorbed systemically.

The dressings can be left in situ for several days, in order to allow the iodine to be slowly absorbed into the wound. The dressing should only be changed when the colour has changed from orange/brown to a creamy/white colour, indicating that all the povidone-iodine has been released into the wound. The dressing should be gently removed from the wound. However, if the dressing has adhered to the wound bed, due to minimal exudate present, the dressing can be soaked off.

Cadexomer iodine dressings are available on FP10 as Iodosorb™ and Iodoflex™. Iodosorb™ is available as a powder or ointment, and Iodoflex™ comes as a paste wafer. Iodosorb™ powder contains hydrophilic microspheres of cadexomer, a modified starch hydrogel,

which is impregnated with elemental iodine (0.9% w/w). Cadexomer iodine is a three-dimensional starch lattice formed into spherical microspheres, with iodine 0.9% w/w trapped within this lattice. As fluid is absorbed into the dressing, so the pore size of the lattice increases, allowing the slow release of iodine from the resulting gel. The amount of iodine released is proportional to the amount of exudate that has been absorbed, and the slow release of the iodine also enables the iodine levels to be maintained in the wound bed (Sundberg & Meller, 1997). The cadexomer absorbs exudate from the wound bed, and forms a gel to provide a moist environment at the wound surface. Sundberg and Meller (1997) claim that 1 gram of cadexomer iodine can absorb up to seven millilitres of body fluid. According to Falanga (1997) slow-release iodine preparations that produce low concentrations of iodine in the wound, appear to be a safe and effective treatment, and the ion-exchange capacity of cadexomer also promotes an acid pH and favours antimicrobial activity of the iodine.

Iodosorb™ ointment is similar to Iodosorb™ powder, but has an ointment base of polyethylene glycol (Morgan, 2000). Iodoflex™ is cadexomer iodine paste containing iodine (0.9% w/w) in an inert base, sandwiched between two pieces of protective gauze. When the colour of the dressing changes from orange to a creamy colour, this indicates that the absorption capacity of the cadexomer has been used up and all the iodine has been released.

These dressings can only be used on exuding wounds, and are of most value in chronic, sloughy or infected wounds as they can reduce the bacterial load in the wound, especially in the case of methicillin resistant staphylococcus aureus (MRSA). They can be used on leg ulcers, pressure ulcers and diabetic ulcers, but it should be noted that the duration of treatment should not exceed three months in a single course of treatment. Falanga (1997) suggests that as hidden infection is common and often clinically undetectable in the elderly patient, cadexomer iodine products may be of value in the treatment of chronic wounds in this client group. These dressings are not advised for use in those patients with any iodine sensitivities or thyroid disorders (Morgan, 2000), and should be used with caution in pregnant women and lactating mothers.

Application of the dressings

Iodosorb™ powder and ointment should be applied on to the wound surface to a depth of 3mm. Any beads that have dispersed onto the surrounding skin should be carefully removed. As this is a common problem, some practitioners prefer the ointment as it is more

controllable during application to the wound. An appropriate non-adherent secondary dressing should then be applied, depending on the amount of exudate. Some patients may initially complain of a stinging or burning sensation after the Iodosorb™ powder is applied, which is due to the dressing absorbing the exudate from the wound, and may prefer Iodosorb™ ointment, which is less likely to cause this unpleasant sensation.

If Iodoflex™ is used, the two pieces of white protective gauze must be removed, prior to applying the dressing to the wound. Some practitioners will mould the dressing to fit the wound, especially if there is a slight indentation or small cavity in the wound. A suitable non-adherent secondary dressing should be applied, depending on the amount of exudate. Patients may also experience a burning or drawing sensation after the dressing has been applied, as the exudate is absorbed into the dressing. A single maximum application dose of 50g and a weekly maximum dose of 150g of both Iodosorb™ and Iodoflex™ should not be exceeded (Morgan, 2000).

The wound may need to be redressed every day initially, especially if there is large amounts of exudate. Thereafter, the dressing should be changed every two to three days, or when there is loss of colour in the dressing, indicating that all the iodine has been used up. After the secondary dressing has been removed, the wound should be irrigated with warmed tap water or normal saline 0.9% so as to remove the gel from the wound bed. Any beads or ointment that have collected at the wound edges should also be removed, as otherwise a crust may form.

Clinical research studies

Sundberg and Meller (1997) undertook a comprehensive retrospective review of the use of cadexomer iodine in the treatment of chronic wounds, which included venous leg ulcers, pressure ulcers and diabetic ulcers.

Although they noted that there were some problems comparing studies due to different methodologies having been used, it would appear that cadexomer iodine was shown to be effective in promoting wound healing in chronic wounds. No serious side effects were reported, although a common adverse effect appeared to be a burning sensation on application of the dressing. Sundberg and Mellor (1997) also found that cadexomer iodine has a positive infection-reducing effect on chronic wounds, which may be due to keeping the wound in a colonised state. Danielson et al. (1997) in a small study of 11 patients, found that the application of cadexomer iodine to venous ulcers colonised with pseudomonas

aeruginosa obtained negative cultures from 65 per cent of ulcers after just one week of treatment with Iodoflex™. Although pseudomonas aeruginosa may not necessarily interfere with wound healing, the green exudate and odour can be distressing for the patient.
Bianchi (2001) reviewed the use of Iodoflex™ and Iodosorb™ in the treatment of venous leg ulcers and claims that cadexomer iodine products may enhance healing coupled with graduated compression.
It can therefore be seen that iodine impregnated dressings are of value in the prevention of infection in some traumatic wounds, and in the treatment of chronic exuding infected wounds, e.g. leg ulcers and pressure ulcers. They all have the ability to deliver iodine into the wound over a period of time, and have a low risk of sensitivities. However, they should be used appropriately and not used for extended periods of time.

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Back to Top

Back to Search Results