

# AMPUTATION DUE TO BUERGER'S DISEASE, A CHALLENGING WOUND

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## INTRODUCTION

Buerger's disease, also known as thromboangitis obliterans, is a rare form of vasculitis characterized by acute inflammation and clotting of the small and medium arteries and veins of the hands and feet. It's believed that in genetically susceptible individuals, smoking triggers an autoimmune response that causes the inflammation.

Symptoms include pain in the feet or hands. Other possible symptoms include tingling and/or numbness in the limbs, and Raynaud's phenomenon. Eventually, tissue may be damaged and destroyed leading to ulceration and/or gangrene.

Buerger's disease is most common among people aged between 20 and 40, and affects men three times as often as women. The disease can run in families and is more common among people from Asia, India and the Middle East.

People who develop Buerger's disease tend to be heavy smokers. There's no cure. The only effective treatment is to stop smoking. If an affected individual continues to smoke, they're likely to need amputation of their toes and/or fingers.

Our patient is a young male who used to be a heavy smoker. He developed gangrene on two toes due to Buerger's disease. This eventually led to amputation of the entire right forefoot. He stopped smoking prior to the amputation but the ulcer continued to deteriorate and he was at risk of losing his entire foot. By the time he came to our wound clinic the amputated surface had been open for 2 years in spite of vascular surgery, topical negative pressure and a variety of different modern wound care dressings. For several years he has experienced excruciating pain 24 hours a day and finds it almost impossible to walk.

## AIM

To save the foot from amputation by closing the wound that had been open for two years, and, to control the pain so he can live a "normal" life.

## METHOD

Polymeric membrane dressings were chosen due to our previous successful experience with these dressings. These dressings reduce inflammation and pain by diminishing the nociceptor activity. Polymeric membrane dressings also have a built in wound cleanser that eliminates the need of painful wound cleansing or debridement during dressing changes.

The first few days the forefoot was cleansed prior to dressing changes in order to remove all iodine residues. Later dressing changes without additional cleansing were performed first twice a day and after a couple of weeks on a daily basis. It would have been enough to change 2-3 times a week but the patient wanted to inspect his wound every day.

## RESULTS

The pain dropped from 9 to 3 after two days. It took about a week to see new healthy granulation tissue as well as re-epithelialising wound edges. After three weeks the patient didn't feel any pain at all and could start walking again. The wound closed in 4,5 months.

## DISCUSSION

These types of wounds are extremely painful and tend to progress especially if the patient continues to smoke. In this case the patient stopped smoking when he had his amputation, but the wound still deteriorated. The dramatic pain relief and the visible improvement seen at every dressing change were very motivating for the patient as well as the nurses.

## References

- Beitz AJ et al. A polymeric membrane dressing with antinociceptive properties: analysis with a rodent model of stab wound secondary hyperalgesia. J Pain 2004 \_ feb;5(1):38-47.
- Agathangelou C. Increased Quality of Life with the help of a Polymeric Membrane Dressing. Poster presented at EWMA 2008 in Lisbon.
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## Case

A 36 year old male developed gangrene on two toes due to Buerger's disease. He was initially treated by a vascular surgeon who after dilatation, soaked the toes in iodine solution and covered them with iodine based dressings every day. The patient eventually developed gangrene on the rest of his toes leading to an amputation of the forefoot. This open wound was covered with dressings as a skin graft was not an option.

A year later an attempt was made to close the wound with topical negative pressure but that only resulted in a larger, more painful, deteriorating open wound.

By the time he was referred to our wound clinic the ulcer had been open for two years and the patient could hardly walk due to the pain. We gently cleansed the wound with saline to try remove all the iodine residues and applied a polymeric membrane dressing.



6 August 2009  
Initial appearance of the wound.



### 11 August

Five days after initial application of polymeric membrane dressings and the granulation tissue is already looking much healthier. We have changed the dressings twice a day due to the copious amounts of wound exudate. This is rather common in the initial stage of polymeric membrane dressing usage, it usually subsides after a couple of weeks.



### 24 August 2009

After 2,5 weeks with polymeric membrane dressings the pain has gradually reduced from a score of 9 to a score of 2. This is a dramatic difference and the patient can now sleep through the night, something that has not been possible for several years. The wound surface is beginning to even out as the new granulation tissue is filling up the crevices.



Due to the way polymeric membrane dressings work, they require a direct contact to the wound surface. This was a bit challenging for us as the wound was uneven and the surface area round. We eventually found a good solution where we applied small rolls of gauze fixated by a soft crepe bandage on top of the dressing.



### 16 September 2009

All the slough and fibrin has been removed by the dressing. Even though it would be sufficient to change the dressing every other day the patient still wants daily dressing changes. He is so excited over the progress he wants to inspect his wound every day. The wound is healing so fast now that the progress is visible at every dressing change.



### 23 November 2009

The wound continues to reduce. Now we are only waiting for the epithelialisation to cover the last open area. The patient reports that he has started to walk without his crutches and it is going very well. Most of the dressing changes are now done by the patient himself at home.



### 20 January 2010

The wound has been completely closed since mid-December. We needed to convince the patient to come back to the wound clinic for a follow-up photo. The patient hasn't experienced any pain for several months but still remembers vividly the dramatic reduction of pain after having used polymeric membrane dressings for only a couple of days.

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