

Treatment of a mildly infected diabetic foot ulcer after amputation of the fifth toe with Biatain Silicone Ag

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Introduction

The patient underwent an amputation of the fifth toe due to both soft tissue and bone infection. After amputation, he had a diabetic foot ulcer (DFU) of 8 weeks duration on the amputation wound bed. After hospital discharge, the patient had been treated by his nurse at

Primary Care with hydrogel and a foam dressing as secondary dressing. The patient came to the clinic because the ulcer did not improve and the nurse decided to refer him to our centre.

The patient had not worn any off-loading and he had not received additional debridement of the ulcer from the hospital discharge.

Patient



- 67-year-old, mobile, male patient living at home alone
- Diabetes, Type 2, for 7 years, with an apparently a good metabolic control (HbA1c:7%), managed by oral antidiabetics (metformin)
- Hypertension, treated with a beta-blocker
- No dyslipidemia, no retinopathy, no renal failure
- No history of alcohol abuse or smoking
- Distal polyneuropathy
- Both distal pulses absent (pedis artery and posterior tibial artery)
- Ankle Brachial Index (ABI) 0.8 and Toe Brachial Index (TBI) 0.69

Initial wound assessment



Size of wound	Length:	28mm
	Width:	9mm
	Depth:	5mm

- Neuroischaemic foot ulcer (Texas type IID)
- Signs of mild infection at start of treatment
- Bacterial load: 4.29 Log₁₀ CFU/g

For tissue type and exudate, write findings.

For others, mark "x" for positive findings from assessment, and mark "0" if not present.

Wound Assessment

- Tissue type
- Exudate
- Infection

Wound Assessment

- Maceration
- Dehydration
- Undermining
- Thickened/rolled edges

Wound Assessment

- Maceration
- Excoriation
- Dry skin
- Hyperkeratosis
- Callus
- Eczema

Management goals

Mark "x" for all appropriate management goals

Wound Assessment

Management goals

- Remove non-viable tissue
- Manage exudate
- Manage bacterial burden
- Rehydrate wound bed
- Protect granulation/epithelial tissue

Wound Assessment

Management goals

- Manage exudate
- Rehydrate wound edge
- Remove non-viable tissue
- Protect granulation/epithelial tissue

Wound Assessment

Management goals

- Manage exudate
- Protect skin
- Rehydrate skin
- Remove non-viable tissue

Treatment

Vascular surgeons considered that patient had not the indication for revascularisation because he did not suffer from critical limb ischaemia and we decided to begin the management of the ulcer because TBI was adequate and systolic ankle pressure was 85mmHg, allowing for healing of the ulcer. The wound was diagnosed with mild infection and it was confirmed by quantitative and qualitative soft tissue culture. Microbiological analyses showed an isolation of *Staphylococcus aureus* and *Staphylococcus coagulase negative*. Sharp debridement was performed to remove detached non-viable sloughy tissue as well as hyperkeratosis and macerated wound edge. A removable walking cast was worn by the patient during all the treatment.

The patient was followed during 6 weeks in a clinical cases series for assessment of clinical and microbiological outcomes. Biatain Silicone Ag was applied twice a week. No antibiotics were prescribed.

Results

At week 3, wound bed improved significantly showing 90% granulation tissue at the wound bed. Size of the ulcer had decreased 46% (20x7x1mm). Bacteria load at week 3 was 2.45 Log₁₀ CFU/g.

At week 6 ulcer was almost healed. The area surface decreased 74% (7x4x0mm) and 100% of the wound bed showed good granulation tissue at the wound bed. Bacterial load decreased dramatically to 1.30 Log₁₀ CFU/g ($p=0.01$) compared with the bacterial load of 4.29 Log₁₀ CFU/g at start of treatment. There were no clinical signs of infection, ulcer exudation decreased and the maceration of the wound edge had disappeared. The wound edge was no longer undermined and hyperkeratosis of the periwound skin was no longer present.

At week 9, the wound had healed during the period of follow-up of the study.



3 weeks



6 weeks



9 weeks

Reassessment of the wound at the end of case period

For tissue type and exudate, write findings.

For others, mark "x" for positive findings from assessment, and mark "0" if not present.

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Conclusion

After 6 weeks of treatment, the ulcer improved significantly in terms of quality of wound bed and with a decrease of ulcer area of 74%. Maceration and status of the wound edge and periwound skin improved and the local infection was controlled using Biatain Silicone Ag without use of systemic antibiotics.

Bacterial load of the ulcer decreased significantly at the end of the treatment (week 6) and all clinical signs of infection disappeared. The antimicrobial dressing had a good action against pathogenic bacteria, that were eradicated at the end of the treatment.

Improvement of clinical features of the ulcer was associated with a bacteria load reduction and the absence of clinical sign of infection.

Diabetic foot ulcers with mild infection can be managed with Biatain Silicone Ag, adding to the standard of care of diabetic foot ulcer.