

Clinical Case Study: A Multidisciplinary Approach to Managing Severe Necrotising Fasciitis and Optimising Wound Healing

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Patient Profile

- Demographics: 41-year-old female
- Comorbidities: Newly diagnosed pre-diabetes, high BMI
- Relevant Medical History: Previous right ankle ORIF, uterine D&C
- Medications: Oral contraceptive pill, Duromine (PRN)
- Allergies: No known allergies

Initial Presentation

9 August 2023

Location: Blacktown Hospital Emergency Department

The patient presented with a seven-week history of a poorly healing posterior left heel blister that had been self-managed with adhesive dressings and antiseptic washes. Over the preceding week, she experienced progressive swelling, erythema, and severe pain in the left foot and ankle, accompanied by systemic symptoms including fever, chills, calf tightness, breathlessness on exertion, and a burning skin sensation.

Clinical and Diagnostic Findings

Vitals:

- Pyrexia (Temperature $\geq 38^{\circ}\text{C}$)
- Tachycardia (Heart rate up to 110 bpm)

Local Examination:

- Marked oedema of the left foot and ankle, extending to the calf
- Erythema and fluctuance over medial, posterior, and lateral ankle
- 2 cm macerated wound on posterior heel with surrounding blistering
- Severe tenderness (+++)
- Neurological changes: burning sensation and reduced tibial nerve sensation (50%)
- Pulses difficult to palpate due to oedema

Laboratory Results:

- White Cell Count (WCC): 24 $\rightarrow$ 17
- C-Reactive Protein (CRP): 134 $\rightarrow$ 397
- HbA1c: 5.4%
- Blood cultures positive for streptococci/enterococci

Imaging:

- **MRI:** Extensive soft tissue oedema with no bone involvement
- **Ultrasound:** No drainable collection detected

LRINEC Score: 6 (high risk for necrotising fasciitis)

Surgical Management Overview

10 August 2023

The patient underwent emergency incision, debridement, and washout to manage necrotising fasciitis of the left foot. This initial procedure was critical for infection control and set the foundation for subsequent reconstructive strategies and reduction in odour.

17 August 2023

Transferred to Westmead Hospital for advanced tertiary care.

- Additional wound washout and debridement were performed.
- A biodegradable temporising matrix dressing was applied to support wound healing.
- Several subsequent procedures followed to optimise wound bed preparation and address ongoing infection concerns.

29 August 2023

The patient was discharged with arrangements for community nursing follow-up and a scheduled review at the Plastics Outpatient Clinic.

4 September 2023

At the outpatient review, significant peri wound and digital maceration were observed, along with a highly saturated NPWT dressing. (**FIG. 1 a-c**)



FIG. 1a-c: patient's foot with significant peri-wound and digital maceration

Intervention with Negative Pressure Wound Therapy

To optimize wound healing and improve patient comfort, a non-adherent, 3-dimensional film dressing* was implemented as part of the wound management protocol. (**FIG. 2a-b**)

As a secondary dressing used to seal wounds on extremities during negative pressure wound therapy, the dressing needed to provide an airtight barrier against external contamination while allowing sufficient water vapor transmission to support appropriate moisture management. Furthermore, the dressing had to protect the peri wound skin from additional irritation or damage, facilitate straightforward and efficient application during routine dressing changes, and support patient mobility and treatment adherence beyond the acute care setting.



FIG. 2a-b: Use of the non-adherent, 3-dimensional film dressing

Intervention with Suprasorb® CNP EasyDress

14 September 2023

The non-adherent, 3-dimensional film dressing* was removed, revealing dry peri wound skin and toes with a notable reduction in maceration. The patient reported no pain.

25 September 2023

Further improvement was noted, with continued progress in peri wound condition and overall skin integrity. (**FIG. 3a-b**)



FIG. 3a-b: continued improvement in skin integrity and peri-wound condition after start of NPWT treatment

10 October 2023

Additional debridement and NPWT were performed to further prepare the wound bed.

24 October 2023

Definitive reconstruction was achieved with further debridement and the application of a split-thickness skin graft to the left distal leg and foot, successfully restoring wound bed integrity. (**FIG. 4**)



FIG. 4: patient's foot with definitive reconstruction using split-thickness skin graft

Conclusion

This case study highlights the importance of a coordinated, multidisciplinary approach in managing complex wounds caused by necrotising fasciitis. Early surgical intervention, combined with targeted wound care strategies proved pivotal for:

- Infection control after aggressive debridement.
- Peri wound protection and management of excessive exudate.
- Achieving optimal wound bed preparation for successful skin grafting.

The ease of use, comfort, and efficient exudate management afforded by the non-adherent, 3-dimensional film dressing not only accelerated the healing process but also enhanced patient comfort and compliance and in the outpatient setting.

This case illustrates the potential of unique advanced negative pressure wound therapy technologies in driving positive clinical outcomes for patients with severe, complex wounds.