A Clinical Evaluation of a Biocelluose Membrane Dressing in Neuropathic and Neuro-Ischaemic Ulceration

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Aim

The diabetic foot ulcer is a major cause of lower limb amputation.[1,2] When foot ulcers do not respond to basic treatment then advance treatments such as extracellular matrix proteins may offer an alternative.[1]
Aim to see if Nanogen® bio cellulose products applied as a primary dressing with a variable disposable NPWT system UNO® (Aspen Medical Europe) would heal previously unhealed chronic wounds in a cost effective manner.

Method

Patients with foot ulcers that had failed to heal in six months or more were evaluated for 2 - 4 weeks.
A full holistic assessment was undertaken this included:

- Gender
- Age
- Wound type
- Underlying comorbidities

Wounds were measured and photographed at every dressing change with observations on peri-wound skin, exudate type and colour.
A single use variable topical NPWT was applied as a secondary dressing off- loading.
All patients were reviewed regularly. All patients documented length of treatment and estimated cost to date.

Discussion/Results

Results 4/20 patients had neuroischaemic, neuropathic or mixed aetiology ulcers the mean non-healing time prior to evaluation 92 days.
Mean to time to healing 14-25 days.
Using a conservative cost model, this small sample demonstrated cost efficiencies compared to maintaining the wound.
Conclusion Nanogen Aktiv appeared to kick start hard to heal wounds. It mimics the wound ECM and stimulates epithelialisation and improves inter cellular signalling, both of which have been shown to be critical in stimulating the healing of neuropathic and neuroischaemic foot ulcers.[3]
Nanogen healed 18 out of 20 previously unhealed wounds.

Conclusion

Ultimately there continues to be a role for disposable NPWT systems. The key is to use appropriately for the patient's requirements. This will depend on wound type and location. Where more exudate is present a canister system can certainly reduce the cost of disposable items. The biocellulose primary dressing and negative pressure improved patient quality of life enabling activities of daily living.

Case Study

54 year old male, an insulin dependent diabetic presented with ulceration to his right hallux of 8 weeks duration. He been given broad spectrum antibiotics but the wound had failed to improve. On examination he had full complement of foot pulses with good biphasic doppler signals. His right hallux was grossly oedematous with a necrotic area on dorsal and plantar aspect of his phalangeal joint. These appear to be connected.
He had a ray amputation of the right hallux on 18th September 2015 he was admitted to the hospital with an abscess associated with sepsis third right toe, a foreign body was surgically removed following debridement he was given systemic antibiotics Flucloxacillen.

Nanogen (Genadyne Pharma) was applied as a primary dressing with secondary dressing of Mepore® (Molnlycke Health Care). 23rd September he developed a sinus of the right plantar, topical negative pressure was applied maintaining a seal continued to be a challenge and this affected his quality of life. The patient then requested a return to Nanogen and mepore combination. He continued to comply with offloading, and he went on to heal successfully within 2 months.

Image1: 18th September 2015
On referral to wound care team following surgery

Image 2: 23rd September 2015
5 days following Nanogen application haemoserous exudate, granulating wound bed.

Image 3:14thOctober 2015
25 days following Nanogen application, rapid epithelisation

Image 4: 21st October 2015
Almost healed

References:
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2 Lauterbach s,Kostev K, Kholman T, (2010) Prevalence of Diabetic Foot syndrome and its risk factors Journal of Wound Care Vol 19 No 8 August 2010 pp 333-337
3.Leak K, Johnson S (2015) Going green: using a bio-cellulose membrane for patients with chronic non-healing wounds British Journal of Nursing Tissue Viability Supplement Vol 24, No 20pp S 61-S66

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