

EFFICACY OF A COLLAGEN DRESSING APPLIED IN FIFTY PATIENTS WITH STAGNATING WOUNDS OF VARIOUS ETIOLOGIES

A Andriessen¹, PA, PhD & A van den Wijngaard², RN, Wound Care and Compression Specialist

¹Andriessen Consultants, Malden and UMC St Radboud, Nijmegen, Netherlands. anneke.a@tiscali.nl

²Lohmann & Rauscher, Almere, Netherlands. Alicevandenwijngaard@xs4all.nl

Introduction:

The purpose of this study was to evaluate the practical use of a native *collagen type 1 dressing for N=50 stagnating wounds of various etiologies. Collagen based wound dressings have been shown to reduce MMP-2 and MMP-9 levels helping to restore the physiological balance between MMP's and TIMP's (1,2) thus kickstarting the stagnating wound healing process.

Methods:

The patients included in the study had given consent. Ethical committee approval was not obtained as the *collagen product was already used in the clinics. Patients at the 5 study centers had stagnating wounds that were free of necrotic tissue and/or slough and clinical signs of infection. The ulcers did not respond to previous standard treatment, which comprised debridement, moist wound healing dressings, NPWT and preventive measures. Case ascertainment was used looking at time to healing, starter function of the collagen* dressing (shift from inflammation to granulation), patient reported pain measured before dressing changes (VAS, 10 point scale) and handling of the dressing regime. Wound healing was assessed using a clinical observation scale and digital photographs, comparing day 0 versus day 14 results. Patients were then followed until wound closure. Patients were treated in both an in and out-patient setting at the five participating centers. Dressing changes were on average twice weekly and took place at the discretion of the clinician depending on exudate production. Wounds were cleansed with saline using the wet to dry phase system. A foam** dressing or an alginate*** was used as a secondary dressing to cover the *collagen dressing. Patients received the *collagen dressing for a maximum of 14 days, after which the dressing was discontinued and **foam used as a primary dressing. Patients received standard preventive and treatment measures in line with the aetiology and local guidelines, such as compression for venous leg ulcers and off-loading for diabetic foot ulcers.

Results:

Fifty cases (n = 36 females and n = 14 males) were included, n=10 large stagnating surgical wounds, n=20 diabetic foot ulcers and n=20 wounds of various etiologies, such as pressure ulcers and venous leg ulcers. The patients had a mean age of 58 years (SD ±1.32; range 36 – 84) (Table 1).

Depending on the exudate production, either a **foam dressing or an ***absorbent pad was used as a secondary dressing.

In all observed cases (N=50/50 (100%) the wound bed condition improved within 14 days of treatment, indicating a fast reduction of inflammation. The dressing was comfortable and easy to handle. The mean treatment time for the surgical wounds was 68.6 days (±SD 0.64) and the wound area reduction was 97.3%. For the diabetic foot ulcers this was 76.4 days (±SD 1.34) with a 100% area reduction and for the venous leg ulcers this was 71 days (±SD 0.34). Two typical cases are presented to illustrate the results.

N = 50	Total Treated patients	Surgical wounds n=10	Diabetic foot ulcers n=20	Venous leg ulcers n=16	Other n=4
Age, years Mean ± SD Median (range)	58 SD ±1.32; 42 (range 36 – 84)	61 SD ±1.22; 53 (range 48 – 74)	49 SD ±1.42; 46 (range 32 – 59)	69 SD ±1.02; 56 (range 54 – 72)	46 SD ±1.42; 44 (range 32 – 52)
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Sex Male female	14 (28) 36 (72)	5 (50) 5 (50)	9 (45) 11 (55)	0 (0) 16 (100)	0 (0) 4 (100)
Previous treatment Debridement Moist wound healing dressings NPWT Other	26 (52) 50 (100) 8 (16) 6 (12)	4 (40) 7 (70) 3 (30) 3 (30)	20 (100) 20 (100)	0 (0) 16 (100) 16 (100)	1 (25) 3 (75)
Wound surface at day 0 (start) cm ² (end) cm ²	55.9 3.5	95 2.5	4.5 0	42 3.2	82 8.2

Table 1: Patient's characteristics

Case 1:

The 64 year-old male has diabetes mellitus type II since 1998. Additional pathologies were retinopathy and severe neuropathy. Due to poor concordance his blood glucose levels were difficult to control, moreover he had no awareness of low blood glucose values. Laboratory tests: HbA1c 10% = 86 mmol/mol. He receives insulin 4/day. Due to many recurrences he was treated by the vascular surgeon and the rehabilitation outpatient department. Despite 6 months of treatment with contact casting the ulcer failed to close. He was then referred to the Diabetes Specialist Nurse. Wound treatment comprised *SC covered with a secondary dressing. Offloading with felt, as the patient refused to wear floss shoes. Removal of callus was performed weekly in the first 4 weeks, followed by once/2 weeks for 3 months. As a result of this intensive therapy the ulcer had closed in 9 weeks. After ulcer closure he was referred to an orthopedic shoemaker for customized orthopedic shoes. He now visits the clinic regularly to prevent ulcer recurrence and to repeat education regarding foot care and blood glucose values control (Fig 1a – Fig 1e).



Fig 1a: start



Fig 1b: at four weeks



Fig 1c: at twelve weeks



Fig 1d: burn healed at 9 weeks

Cas 2:

The 76-year-old woman had chronic venous hypertension. She smoked about 20 cigarettes/day. After debridement the venous ulcer was covered with the collagen and a foam was used as a secondary dressing. She received compression with a tubular**** compression system. After 2 weeks the stagnating wound started to show signs of healing. Complete wound healing was achieved in 9 weeks (Fig 2a – Fig 2c).



Fig 2a: start



Fig 2b: collagen dressing is applied



Fig 2c: at 4 weeks the wound bed is healthy

Conclusion:

- The stagnating wounds that were treated with the collagen dressing moved towards epithelialization.
- In daily practice the use of the collagen dressing was shown to be easy, improving clinical outcomes, patient comfort and reducing pain.
- Moreover the collagen dressing helped kickstarting the stagnating wound healing process.

References:

- Mast, B. A.; Schulz, G.S.: Interactions of cytokines, growth factors and proteases in acute and chronic wounds. Wound Rep Reg 1996; 4: 411-420
- Andriessen A, Polignano R, Abel M. Development and implementation of a clinical pathway to improve venous leg ulcer treatment. WOUNDS 2009;21(5):127-133