

Wound digest: Leg ulcers

This digest aims to summarise the most important papers published recently on leg ulcers.

To compile the digest a Medline search was performed for the 3 months ending April 2010 using the search term 'venous leg ulcers'. Papers were chosen on the basis of their potential interest to practitioners involved in wound care day-to-day. The main findings of the papers were summarised and the papers were rated according to readability, applicability to daily practice, and novelty factor.

SELECTED PAPERS OF INTEREST

1. A novel technique improves skin graft take in recalcitrant leg ulcers
2. Pressure Ulcer Scale for Healing (PUSH) is applicable to other chronic wounds
3. Venous leg ulcer onset and healing show seasonal variation
4. Eradication of MRSA is achievable in leg ulcer outpatients
5. Patients need easy, convenient compression measures to encourage use
6. Encouraging healing rates achieved with a double-layered compression system
7. Better healing rates achieved with double- or multiple-component compression

1 A novel technique improves skin graft take in recalcitrant leg ulcers

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓	✓	

- This prospective pilot clinical trial assessed the safety and efficacy of a novel technique using platelet gel (PG) plus fibrin glue (FG) in promoting skin graft take in patients with recalcitrant lower extremity ulcers
- 15 subjects were studied: 5 men and 10 women aged 45–80 years with 17 ulcers of various aetiologies including venous insufficiency, diabetes, trauma and burn; ulcer duration 3 months–10 years; not curable by traditional healing methods
- Ulcers were debrided and the wound covered with moist saline dressing. Between 3 and 14 days after debridement, the wound bed was sprayed with PG, then a thin split-thickness skin graft with multiple splits applied. FG was then sprayed onto the graft and a splint used to immobilise the graft
- 13 of the 17 skin grafts took well, with complete wound healing achieved within 3 weeks to 2 months. There was no recurrence of ulcers during up to 18 months of follow-up
- There were no treatment-related adverse events. Some minor areas of skin graft loss (<5% total graft area) were seen in 4 ulcers but these healed spontaneously using conventional saline dressing
- The authors concluded that the technique offers

advantages for skin graft take in hard-to-heal wounds, by providing a delivery system for powerful mitogenic and chemostatic factors (via PG) and haemostatic factors (via FG). The method also avoids the need for conventional sutures or staples, promoting healing and reducing pain.

Chen TM, Tsai JC, Burnouf T. A novel technique combining platelet gel, skin graft, and fibrin glue for healing recalcitrant lower extremity ulcers. Dermatol Surg 2010 (Feb 19).

2 Pressure Ulcer Scale for Healing (PUSH) is applicable to other chronic wounds

Readability	✓	✓	✓	✓	✓
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓		

- This prospective, multicentre study investigated the responsiveness and validity of the Pressure Ulcer Scale for Healing (PUSH) in patients with chronic wounds of other aetiologies as well as pressure ulcers
- N=98 patients, aged 20–89 years, were assessed in a variety of acute, outpatient and community settings. The wounds assessed were: 47 pressure ulcers, grades 2–4, 23 venous leg ulcers, 28 diabetic foot ulcers
- Total PUSH score and acetate tracing of wound surface area were obtained by the same investigator at baseline and after 4 weeks or at the patient's next appointment, whichever was sooner

- After an average of 32 days, wound surface area, total PUSH scores and individual PUSH component scores decreased significantly between baseline and follow up (p=0.0000), with mean PUSH score significantly different between healing and non-healing wounds. There was a strong relationship between total PUSH score and wound surface area
- The authors concluded that PUSH is a valid and responsive tool for evaluation of wound progress in venous leg ulcers and diabetic foot ulcers as well as pressure ulcers.

Hon J, Lagden K, McLaren AM, et al. A prospective, multicenter study to validate use of the pressure ulcer scale for healing (PUSH®) in patients with diabetic, venous, and pressure ulcers. *Ostomy Wound Manage* 2010; 56(2): 26-36.

3 Venous leg ulcer onset and healing show seasonal variation

Readability	✓	✓	✓		
Relevance to daily practice	✓	✓	✓		
Novelty factor	✓	✓	✓	✓	

- This study was designed to evaluate whether venous ulcer onset and healing showed seasonal fluctuations, and involved a retrospective survey of leg ulcer patient case histories from 391 individuals treated in a leg ulcer clinic between 2000 and 2008
- Monthly aggregated rates of ulcer onset were assessed statistically; a Fourier time series analysis was also constructed for all patients to assess seasonal variations and trends over time
- The study showed that ulcer onset was strongly seasonal, with a significantly higher frequency of onset in spring (April–May) and autumn (September–October)
- Healing rates were also distributed unequally throughout the year. In general, healing rates of ulcers that opened, or were first treated in winter and summer, were lower than for those that opened or were first treated in spring and autumn
- This was the first study to demonstrate chronobiological features of leg ulcers in Europe; the seasonality of leg ulcer onset was weak, however, and the authors concluded that seasonality resulted mainly from a lower incidence of venous ulcers during the cold period of the year between November and March. They described the observed differences in healing rates throughout the year as difficult to interpret using current models of ulcer development and pathophysiology
- The authors concluded that further research involving a larger patient cohort will help to shed further light on these areas.

Simka M. Seasonal variations in the onset and healing rates of venous leg ulcers. *Phlebology* 2010; 25(1): 29-34.

4 Eradication of MRSA is achievable in leg ulcer outpatients

Readability	✓	✓			
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓		

- The authors questioned whether it is appropriate that methicillin-resistant *Staphylococcus aureus* (MRSA) in chronic wounds in outpatients should, as is currently the case, be largely ignored or tolerated
- This small-scale (n=38) pilot study was carried out to explore whether eradication of MRSA in chronic leg ulcers in outpatients could be achieved using antiseptic washes as used for inpatients
- Patients included in the study received standard wound care for at least 4 weeks prior to additional antiseptic measures for MRSA eradication, which were performed in accordance with the Robert Koch Institute recommendations for inpatients. Measures included the use of antiseptic body washes, antiseptic wound solutions, disinfection of personal belongings and contact surfaces and daily changes of linen and underwear. MRSA was considered to be persistent if it was still detected one month after eradication measures began
- Eradication of MRSA was achieved in 16 patients and not in 22 participants
- There was significant benefit associated with the use of antiseptic body washes, but other measures did not show significance
- The authors concluded that outpatient eradication of MRSA in chronic leg ulcers is possible; larger-scale placebo-controlled trials should ideally now be conducted to verify the findings of the present study.

Reich-Schupke S, Warneke K, Altmeyer P, Stücker M. Eradication of MRSA in chronic wounds of outpatients with leg ulcers is accelerated by antiseptic washes – results of a pilot study. *Int J Hyg Environ Health* 2010; 213(2): 88-92.

5 Patients need easy, convenient compression measures to encourage use

Readability	✓				
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓		

- The authors sought to verify whether recommendations for compression therapy in patients with venous leg ulcers were being followed by the individuals involved, and to explore reasons for any insufficient or missing compression measures
- Investigators documented the use and efficiency of compression therapy by 73 venous leg ulcer patients

taking place in a cross-sectional study; if none was being used, patients were asked for the reasons why

- The survey showed that 55 of the 73 patients (75%) were using compression therapy at the time of data collection, mostly using short-stretch bandages applied by the patients themselves
- Therapy was considered to be adequate in only 19 of the patients, however and patients described reasons for inadequate application of their bandages as being due to their being overweight and because of problems with getting their shoes to fit after applying the bandages
- In patients using compression stockings, use was optimal in 91%; patients mainly applied the stockings themselves
- Overall, 25% of patients did not use any compression measures at all, and of these, two thirds said that they were unwilling to use compression
- 25 patients were observed more than once, of whom 15 showed no change in their standard of compression (sufficient achieved in 73% achieved; insufficient in 27%)
- The authors concluded that barriers to sufficient compression should be identified and eliminated, and that patients should be motivated to use compression via easy-to-handle measures such as compression stockings.

Renner R, Gebhardt C, Simon JC. [Compliance to compression therapy in patients with existing venous leg ulcers. Results of a cross-sectional study] *Med Klin (Munich)* 2010; 105(1): 1-6. (Article in German)

6 Encouraging healing rates achieved with a double-layered compression system

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓	✓		

- An observational study was carried out among 136 venous leg ulcer patients at an outpatient clinic to assess the healing efficacy of a CE-certified double-layered compression system (Saphenamed ucv; Paul Hartmann AG, Germany), and the influence of wound duration on healing rates
- Patients were treated for up to 12 months or until ulcer healing, using the two-component system, which consists of an under-stocking (which delivers no pressure to the foot and 15–20mmHg at the ankle) plus an open-toed overstocking (delivering pressure of 23–25mmHg)
- Baseline median ulcer duration was 7.5 months and baseline median ulcer area was 4.3cm²
- 90.4% of wounds healed after 12 months and the mean healing time was 3 months. Total ulcer size reduced by 2.9+5.5cm per month
- Baseline wound size had a significant effect on mean healing times. Those with a surface area of ≥4.3cm²

healed within a mean of 5 months whereas those <4.3cm² healed within a mean of 3 months

- The authors concluded that these findings are encouraging and that the compression system should be studied further to assess its applicability in the daily practice of venous leg ulcer management.

Escaleira R, Cardoso M, Rego J, et al. Efficacy of a two-component compression system for the therapy of venous leg ulcers. *J Wound Care* 2010; 11: 104-109.

7 Better healing rates achieved with double- or multiple-component compression

Readability	✓	✓	✓	✓	
Relevance to daily practice	✓	✓	✓	✓	
Novelty factor	✓	✓			

- An open, randomised, prospective study was performed to investigate healing rates of venous leg ulcers treated with different compression systems and different sub-bandage pressures in 131 patients with VLU (ulcer surface >3cm²; duration >3 months)
- Patients were randomised into three groups: (A): n=42 treated with an open-toed, knitted tubular elastic, class III compression device (Tubulcus, Laboratoires Innothera, Arcueil, France); (B): n=46 treated with Tubulcus and one elastic bandage; (C): n=43 treated with Tubulcus and two elastic bandages. Pressure measurements were taken in the supine, sitting, and standing positions using the three different compression systems
- Median supine and standing resting pressures were: (A): 36.2mmHg and 43.9mmHg; (B): 53.9mmHg and 68.2mmHg; (C): 74.0mmHg and 87.4mmHg
- Healing rates during the 26-week treatment period were (A): 25% (B): 67.4% (C): 74.4%
- The success of compression treatment in group A was strongly associated with small ulcer surface area (<5cm²) and smaller calf circumference (CC; <38cm), and compliance in group A was good. In groups B and C, compliance was poor in patients with small CC, but the healing rate was high, especially in patients with large ulcers and a large CC (>43cm)
- The authors concluded that better healing results are achieved with double- or multi-component compression systems than with single-component systems; a compression system should be individually determined for each patient according to individual characteristics of the leg and CC.

Milic DJ, Zivic SS, Bogdanovic DC, et al. The influence of different sub-bandage pressure values on venous leg ulcers healing when treated with compression therapy. *J Vasc Surg* 2010; 51(3): 655-61.