Venous ulceration: Documenting the South African experience

Abstract

This is the first in an ongoing series of research work that will be overseen by the Wound Healing Association of Southern Africa (WHASA). It heralds the start of serious objective research that will document the South African experience relating to a variety of wound care problems. The reported series below represents a start of this widespread project – it will be ongoing with updates of statistics and conclusions based on these statistics.

Introduction

Venous ulceration (VU) is a complex condition resulting from a multitude of causes relating to chronic venous insufficiency. The success of treatment is related to many factors including background disease control, patient compliance, local management of the wound and socio-economic issues. It would be extremely useful to be able to identify factors that are likely to affect the outcome of VU treatment in order to change, adapt or introduce new modalities to improve these outcomes. A broad outline of this research project is presented below, together with results, impressions, and recommendations for management of VU in the South African context and ongoing research thereof.

Researchers

Five of nine provinces participated (Eastern Cape, Free State, Gauteng, North West, Western Cape). More input is needed from the other provinces. A total of 13 participants were selected according to information supplied. Of the 13 participants, nine have more than five years experience and three have more than 10 years experience. Eight of the 13 participants hold a degree or more advanced training in wound care.

In this group, the average total new cases per caregiver per month is 36.3 cases, the average leg ulcers per caregiver per month is 7.5 cases and average compression (VU) cases per caregiver per month is 2.4 – thus VU on average forms about 7% of average cases per caregiver per month.

Patient group

One-hundred-and-ninety VU patients were treated and analysed in this study. Sixty-two per cent of patients were of ages 51–80 years and 76% of ages 51–90 years. The average age of patients treated was 64.8 years. The vast majority of patients treated were white, but this is likely to be a function of the location of the specific practices that participated, and socio-economic factors. However, a higher incidence is expected in white patients due to their genetic predisposition, sedentary lifestyle, and occupations which require standing for long periods of time.

There were 111 female and 79 male patients – thus 58% of the study patients were female. The available literature usually suggests a 2:1 female to male ratio.

History

Twenty-two per cent of VU had been present for longer than two years before attendance at the researcher, 27% longer than one year and 45% longer than six months from occurrence – thus only 55% had been present for less than six months before presenting for treatment to the researcher.

Ulcer characteristics

The location of VU was mainly medial (39%), antero-medial (18%) and lateral (17%) with these three accounting for three quarters of all wounds treated, and with the least common location being posterior (2%). Dry skin accompanied the ulcer present in 31% of VU cases, 20% presented with lipodermatosclerosis and 19% with eczema. These three skin conditions surrounding the VU were present in 70% of all wounds treated. Infection was present in 59% of wounds on day one and 53% of the VU were recurrent ulcers.
Treatment with compression

The most common type of compression therapy was low self-compiled (17%) followed by high 4-layer (12%) and short-stretch 2-layer (12%). Other treatments included inter-alia ABS (African Bandage System [12.5%]) which is a new system, currently under investigation, of self-compiled bandages at a high moderate pressure 32–40 mmHg at the ankle, short stretch 2-layer adhesive, compression stockings, orthopaedic wool bandage, high 3-layer, high 2-layer and zinc paste bandages.

Progression with treatment

The area (size = length x width) of 94% of all VU reduced from day one to end week three. The average VU length from day one to the end of week three reduced from 62 mm to 46 mm and the average width from day one to the end of week three reduced from 47 mm to 35 mm – a 25% reduction in three weeks.

Factors impacting on healing

a. Wound location

Seventy-five per cent of posterior wounds and 73% of antero-medial wounds decreased in size by week three and went on to heal. Sixty-four per cent of medial wounds and 50% of antero-lateral wounds decreased by week three and went on to heal. Only 43% of circumferential wounds decreased by week three and went on to heal; 44% of lateral wounds decreased by week three and healed and a further 6% increased by week three and healed.

b. Infection + patient compliance

Where VU decreased by week three and did not heal, 70% were recurrent, 73% had infection present on day one and 47% tampered with dressings.

Where VU decreased by week three and healed, only 50% were recurrent, 51% had infection present on day one and only 18% tampered with dressings.

Thirty per cent of all wound dressings were tampered with.

c. Skin condition

When the skin condition was compared to the healing outcome it was found that 75% of pink skin wounds and 64% of eczema and dry skin wounds decreased in size by week three and went on to heal. Patients who presented with lipodermatosclerosis (51%) and macerated surrounding skin (47%) decreased by week three and went on to heal but 41% of lipodermatosclerotic and macerated surrounding skin did show a decrease by week three but did not progress to full healing.

d. Duration of ulcer before seeing researcher:

Of the ulcers that decreased in size from day one to end week three and healed, 53% were present up to four months before being seen by the researcher and 47% were present longer than four months. Of the ulcers that decreased in size from day one to week three and did not heal, only 25% were present for up to four months and 75% were present longer than four months before researcher assessment.
e. Complicating systemic diseases
Of VU that did not heal (39% of total VU cases), 73% of those which decreased by end of the third week had other medical conditions present, and 90% of those which increased by end week three had other medical conditions present. Of those VU that did heal, 60/116 had other conditions present (52%).

f. Age
The highest percentage of cases that decreased in size by end week three and went on to heal were within the 31–40 and 91–94 age brackets, but these only account for a small percentage of total cases, so is probably not significant.

g. Compression
On evaluating compression therapy protocols, 86% of VU in short stretch 2-layer and 80% of VU in high 2-layer compression therapy decreased by week three and went on to heal. Three sub-categories of other forms of compression followed: compression stocking 69%, zinc paste bandages 67% and ABS trial 63%. The worst results were in the remaining ‘other’ category with only 27% of VU that decreased and progressed to full healing. Choices in this category comprised a low self-compiled system (44%) and high pressure layer compression (44%).

h. Response to therapy in first three weeks
Where the VU went on to heal, 67% of cases showed a reduction of VU size (area = length x width) of greater than 50% with 30% of cases that showed a reduction of greater than 75%. Where the VU did not go on to heal, only 23% of cases showed a reduction of VU size (area = length x width) of greater than 50% and only 6% showed a reduction of greater than 75%. Thus progress of healing at three weeks appears to be an important prognostic indicator.

End-result following treatment
Of the total VU sample of 190 cases in this study, 61% of wounds ultimately healed with 38% of the cases still in treatment. Almost a third of the patients (32%) healed within eight weeks, 45% achieved healing by 12 weeks and 53% were healed by 18 weeks. Sixty percent of VU that decreased in size from day one to the end of week three, ultimately went on to heal. Although 1% increased in size from day 1 to week three, the ulcers still ultimately went on to heal. In 34% of VU a decrease in size was observed, but it did not progress to healing. A further 5% of VIU increased in size and did not heal at all.

Conclusions
From this pilot study definite trends may be deduced:

1. The earlier the VU is presented for treatment, the better the chance that it will decrease by week three and go on to heal. If a VU is presented to the caregiver within four months of occurrence, 79% are likely to decrease in size and heal and 21% are likely to decrease and not heal. It presented longer than four months from occurrence, 47% are likely to decrease and heal and 53% are likely to decrease and not heal. It may be possible to apply the principle that a patient who presents within four months of occurrence or size of VU reduces by week three has a 1/3 (33%) higher chance of healing than those who present after four months.

2. Progress of healing at three weeks appears to be an important prognostic indicator. The greater the reduction in size of a VU by week three, the greater seems to be the likelihood that it will go
on to heal. Of all VU, of those that reduced in size by 1–25% by week three, 30.8% went on to heal; of those that reduced in size by 26–50% by week three, 54.2% went on to heal; of those that reduced in size by 51–75% by week three, 79.2% went on to heal; of those that reduced in size by 76–100% by week three, 89.5% went on to heal. It may also be possible to formulate a rule of thumb as follows:

a. If the VU reduces by more than 50% by end of week three, the patient is likely to have an 80% chance of healing or a 20% chance of not healing
b. If the VU reduces by less than 50% by end of week three, the patient is likely to have a 44% chance of healing, or a 56% chance of not healing.

3. Medial 39% and antero-medial 18% are the most treated location of VU; put together, this means that the two locations which account for 57% of all VU have a 64% to 73% success rate of reducing in size by week three and ultimately progressing to healing. Lateral wounds which account for 17% of wounds treated achieved success rate of 50% healed (44% decreased and 6% increased in size by week three).

4. Patient adherence is vitally important. Tampering of bandages is a problem in 31% of compression cases of this study which has a direct impact on the efficacy of the applied compression bandages. In South Africa tampering may be attributed to discomfort due to high seasonal temperatures although there may be more reasons present that are currently not known. The use of 2-layer bandage systems as choice of compression may also be rooted in high seasonal temperatures due to better comfort that increases adherence to the compression protocol.

5. First time VU are more likely to heal than recurrent ones.

6. There is more chance of VU healing if there is no infection present on day one.

7. This data does not support any conclusion with regards to the effect of age of patient on the healing process.

8. The most common type of compression is low-self-compiled which shows one of the lowest success rates measured by decreased size by week three and goes on to heal – only 44% success rate. The tendency to do self-compiled bandages is prevalent with the nurses in this study group. Although the study group mainly treats patients who do belong to a medical insurance company, the cost of ready-packed compression bandage systems remains high and becomes a financial burden to the patients when their available medical insurance benefit becomes depleted. In order to maintain some form of compression, nurses then compiled their own bandage systems. In this study it is clear that these are not as effective as other systems to facilitate healing and that the cost saving weighed against the slower healing, are neutralising each other to the detriment of the patient.

9. Conversely, short stretch 2-layer which is one of the most used (12%) shows an 86% success rate. Also a surprise was that little compression treatment was applied in some provinces of which Gauteng province utilised compression bandages the least (29%).

Most compression cases (VU) as a percentage of leg ulcers were seen in the Eastern Cape (53%) and the Western Cape (50%).

By extrapolating this information the following is found: The best prognosis for healing in VU is a patient that presents with a new non-recurrent ulcer that presents within four months of occurrence, shrinks greater than 50% in the first three weeks of treatment, in a patient without background complicating diseases who is compliant with compression therapy. The converse holds true – recurrent ulceration present greater than four months, non-responsive to treatment in the first three weeks has poor prognostic connotations (add to that a non-compliant patient with complicating background diseases and we have a major problem with healing the ulcer!)

Patients who do not respond favourably within the initial treatment period (50% surface reduction in the first three weeks) should be reassessed with regards to their history. If no co-morbid conditions are known, clinical assessment including arterial assessment should be repeated. Special investigations and/or specialist referral might be warranted. All patients who do not heal within the first three months should be considered for specialist referral.

These statistics will be updated periodically and any change in conclusions arising from these updates will be reported in future editions of WHSA.

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