

# Leg Ulcers

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At the June 2008 World Union of Wound Healing Societies meeting in Toronto, Ontario, the Leg Ulcer stream offered sessions that were both enlightening and informative. The most common theme throughout every session was that leg ulcers remain a financial and psychosocial burden to society. At any given moment, one to two per cent of the general population has a leg ulcer. The most prevalent is venous ulcers, which were reported by Sharon Baranoski as accounting for 70 to 90 per cent of all leg ulcers.<sup>1</sup> Rates increase with age.

According to Keryln Carville, "in Australia, leg ulcers comprise 50 per cent of wounds managed by community nursing services."<sup>2</sup> John Macdonald described the problem of lymphedema as a hidden epidemic around the world. He stated, "you have no idea how many physicians I've spoken to around the world who have no idea of this problem or what it is."<sup>3</sup>

Initial assessment of lower leg ulcers is critical in the diagnosis and treatment plan for patients who suffer diseases that contribute to their ulcers. Diabetes, peripheral vascular disease, venous disorders, obesity, lymphatic disorders, blood dyscrasias, autoimmune disorders and possibly genetic mutations were described throughout the Leg Ulcer stream.

There are many tools available to conduct a wound assessment. David Keast presented the MEASURE mnemonic (**M**easure, **E**xudate, **A**ppearance, **S**uffering, **U**ndermining, **R**e-evaluate, **E**dge) as an aid to a complete local wound assessment. The Leg Ulcer Measurement Tool (LUMT), is a validated tool that has been developed to quantify leg ulcer assessment and can be used to track change in wound status over time.<sup>4</sup> According to Marco Romanelli, "evaluations are in general performed on the basis of clinical experience, using very basic, low-tech equipment to make objective

measurements."<sup>5</sup> He went on to suggest that, "although wound parameters are clues to the definition of the cause, pathophysiology and status of the wound ... a complete and detailed history and physical examination are also fundamental."

Patients who suffer from peripheral arterial disease (PAD) are often overlooked due to the fact that, "early physical findings are subtle, and patients may not complain of symptoms until the disease is advanced."<sup>6</sup> Mary Sieggreen, asserted that, "early intervention can reduce morbidity and mortality from these diseases...and the nurse is in a unique position to assess and intervene when a patient presents with peripheral vascular disease."

The team approach to management of lower limb ulcers is essential to ensure proper care for individuals with leg ulcers.<sup>7</sup> Treatments plans must consider the holistic approach if successful outcomes are to be achieved. The gold standard for venous ulcers and lymphedema remains compression therapy. According to Christine Moffatt, "there are as many people with lymphedema as there are with venous leg ulcers."<sup>8</sup> Her presentation discussed the role of compression therapy and, although multi-layer bandages are more successful, it is still unclear how many layers are best. "Sometimes bandaging is the appropriate system for the long-term care and management of lymphedema."

John Macdonald from the University of Miami described the approach used at his facility. Complex decongestive physiotherapy (CDP) employs manual lymphatic massage, compression bandaging, instructed exercise and self-care instruction. At the University of Texas, the lymphedema clinic uses a unique approach to managing their patients. Caroline Fife described the importance of having the patient sign a contract prior to the initiation of a treatment plan. For many patients, according to Fife, "there is a link between

obesity and lymphedema and the focus tends to be on the edematous limb rather than on the issue of obesity.<sup>9</sup> But without addressing the cause—which is morbid obesity—the cycle of venous insufficiency, immobility, increased weight gain, sleep apnea, orthopnea and dependent edema continues to recur.

Venous ulcers require a multifactorial approach to management. Paolo Zamboni presented an exciting session on wound healing at the cellular and molecular levels. He shared his study on the recognition of functional gene variants, single nucleotide polymorphisms (SNPs) and their impact in wound healing and venous ulcer establishment. SNPs were used as molecular markers in hemochromatosis and coagulation factor XIII. Zamboni reported an increased incidence in HFE gene mutation that was seven times higher in patients with hemochromatosis and venous stasis than in those without. He stated that there needs to be further research on this topic.

Zbigniew Rybak from the Wrocław Medical University in Poland shared his experience with foam sclerotherapy of the superficial vein insufficiency in treating venous ulcers. He reported the results of his study showing that, “of the patients who received sclerotherapy foam (SF), 87 per cent went on to healing within three months. One injection of SF was enough to heal 73 per cent of patients, nine per cent healed in six months and eight per cent within 10 months.”<sup>11</sup> Surgical intervention, such as subfascial endoscopic perforator surgery (SEPS) for the treatment of reflux in the perforators, may well be an option when conservative compression therapy is not enough to treat venous ulcers.<sup>12</sup>

Arterial ulcers are the result of a lack of oxygen to the tissues. Assessment of arterial disease can be conducted through a history and physical, as well as with non-invasive vascular studies. Arterial angiography is indicated when there is inadequate blood supply for healing. Revascularization can be achieved through surgical interventions and endovascular procedures. Endovascular procedures present less risk, but may not provide the same degree of improvement in blood supply and therefore may not be as desirable.<sup>13</sup> Peter Vowden outlined four

basic therapeutic strategies that can be employed singularly or in combination to enhance healing and improve outcomes when surgical intervention is not an option.<sup>14</sup> Vowden discussed neurovascular interventions such as lumbar sympathectomy or spinal cord stimulation; systemic therapy with hyperbaric oxygen or interavenous therapy with agents such as prostaglandins; local mechanical therapy such as negative pressure wound therapy (NPWT), electromagnetic stimulation or enhanced local oxygen therapy; and, finally, topical therapy with vaso-active growth factors or tissue engineered skin products.

Inflammatory ulcers are often very difficult to diagnose and according to Siobhan Ryan, “10 per cent of people are misdiagnosed with pyoderma gangrenosum (PG).”<sup>15</sup> Robert Kirsner indicated that 10 per cent of leg ulcers are of unusual etiology and that diagnosis is made by clinical features in combination with lab evaluations, tissue cultures and histopathology.<sup>16</sup> All presenters in this session stressed the importance of a biopsy in making a correct diagnosis. Kirsner recommended the appropriate time to biopsy is, “when the wound has an atypical appearance, atypical location, atypical presentation and failure to respond to treatment.”

PG should be considered when a patient suddenly develops a painful leg ulcer. A clinical manifestation of PG is violaceous borders in the wound. Vasculitic ulcers are the result of an inflammatory process in the small, medium and large vessels. Clinicians must be aware of the systemic involvement of multiple organ systems. Massimo Papi said the treatment for severe cases is bedrest, compression and systemic treatments.<sup>17</sup>

Local wound management of lower limb ulcers continues to be moist wound healing with the exception of arterial ulcers, where it is recommended to maintain a clean, dry environment until blood supply is re-established to the limb. The wound bed preparation paradigm continues to be the foundation in the decision-making process for dressing selection. Sylvie Meaume addressed dressing selection and suggested that, “Dressings are classified according

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to their performance criteria. Expert opinions are determinant, mainly due to the poor level of evidence obtained with randomized controlled trials. Topical therapy moved from basic devices to bioengineered products or to dressings that may interact with the healing process. These new products still need efficacy and cost-effectiveness studies.<sup>18</sup>

Addressing both intrinsic and extrinsic factors following a thorough wound assessment can identify key elements of the wound etiology. According to Mike Stacey, “there is an association between venous ulceration and specific genetic polymorphisms—such as the promoter for the tumour necrosis factor alpha gene (TNFA-308A)—and fibroblast growth factor receptor-2.”<sup>19</sup> Stacey suggested that “certain individuals may be genetically more prone to developing wounds and may have a lesser ability to heal wounds.”

Adjunctive therapies offer clinicians additional modalities for the treatment of chronic wounds. Elia Ricci outlined the benefits of negative pressure wound therapy (NPWT) in reducing edema and bacterial load, while increasing perfusion to the wound. Other topics within the session on adjunctive therapies were electrical stimulation, ultrasound therapy, ultraviolet light, hydrotherapy and pneumatic compression. Joseph McCulloch discussed the history of electrical stimulation and how it evolved to the present day.<sup>21</sup> Pamela Houghton shared with the audience that a meta-analysis and clinical trials have demonstrated that, “therapeutic ultrasound can significantly reduce the size of chronic wounds.”<sup>22</sup>

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In summary, the Leg Ulcer stream was informative and offered attendees a recap of assessment, treatment and management of lower limb ulcers. The key to identifying an appropriate diagnosis is a thorough history and physical examination. Compression therapy remains the gold standard for venous ulcers and lymphedema. Adjunctive therapies such as ultrasound, electrical stimulation, ultraviolet light, hydrotherapy and pneumatic compression can improve wound healing outcomes in recalcitrant, chronic wounds. Sclerotherapy foam was discussed, and genetic markers show promising results for future research. ☺

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