Lower Limb Amputations Resulting from Heel Pressure Ulcers:

The Best Treatment is Prevention

A White Paper presented by

DM Systems, Inc.
Lower Limb Amputation as a result of advanced stage Heel Pressure Ulcers remains an unfortunate and prevalent surgical approach to treatment. Such radical treatment effectively eliminates the threat of further infection, but leaves the patient physically impaired and more dependent on both family and nursing staffs. In 2006 alone, over 65,700 non-traumatic lower limb amputations were performed. For patients with diabetes, a limb is amputated every 30 seconds. In 70-90% of these lower limb amputations, a foot ulcer preceded the amputation. With the earlier intervention of a more aggressive and conservative treatment for heel ulcers, the necessity for many of these lower limb amputations could be eliminated.

Treat Heel Pressure Ulcers to Prevent Lower Limb Amputations

The best treatment for a heel pressure ulcer is to prevent it from occurring. Such prevention can be achieved with the formulation of an effective preventive program that is diligently followed. Eight key features are part of such a strategy. The key elements of an effective pressure ulcer prevention program are:

1. Assessment
2. Defining a skin care regimen
3. Controlling impacting factors such as friction, pressure, shear, and moisture
4. Developing measures for good nutrition and hydration
5. Determining and utilizing appropriate support surfaces
6. Educating both the patient and the family
7. Providing clinical training
8. Establishing clear preventive protocols and procedures for staff

1. Assessment

Assessment of each patient is the first and perhaps most important step in preventing Heel Pressure Ulcers. As noted in the WOCN article, “It is not possible to manage what is not accurately measured.” Several assessment scales can be adopted including the Braden Scale, the Norton Scale, and the Waterlow Scale. These scales, administered upon admittance of a patient, can be used to determine each patient’s potential for heel ulcer risk with the results readily available to share with caregivers at all stages of patient treatment. Of course, this means all staff must be trained in how to assess a patient and be aware of the meaning of these risk factors and others that can affect the development of heel pressure ulcers. Some of these other factors include but are not limited to a patient’s mobility, previous development of heel ulcers, and whether or not the patient has diabetes.

The initial assessment is only the beginning. All findings need to be recorded and made available to all caregivers so each is aware of the patient’s risk status for
developing heel ulcers. With a baseline established, regular and ongoing assessment can continue.

2. Defining a Skin Care Regimen

An initial assessment enables the planning of a regimen of skin care that will address the individual needs of a patient in resisting the development of heel pressure ulcers throughout the course of treatment. Various factors play a role here including the patient’s age, physical condition, health status, and prescribed treatments. Ongoing assessment is an essential component of an effective skin care regimen.

3. Controlling Impacting Factors Such as Friction, Pressure, Shear, and Moisture

Heel ulcers do not develop when the heel is effectively free of the bed’s surface. Some patients who are cooperative and alert may be able to achieve acceptable results for a short period of time by simply elevating the feet on pillows. However, this will not work for patients who must be confined in bed for a long period of time or who have mobility issues. For this latter group of patients, a professional offloading device like the Heelift® Suspension Boot is necessary. This type of device lifts the heel completely from the bed surface, eliminating friction and completely offloading the heel while avoiding excessive moisture build-up. Additionally and quite importantly, a device like the Heelift Suspension Boot also redistributes the weight along the calf without putting excessive pressure on the Achilles tendon. With friction, shear, moisture and pressure issues ameliorated, heel ulcers do not develop.

Ongoing and regular examination of the patient’s heel must continue. This will ensure that the patient is properly using the heel protection device and that no other issues develop.

4. Developing measures to maintain good nutrition and hydration

Establishing a plan for good nutrition and proper hydration for patients is important to health. This is especially important for patients with diabetes.

5. Determining and Utilizing Appropriate Support Surfaces

From the first moment a patient enters a facility, he encounters a variety of surfaces. Some of these are as obvious as a facility bed mattress, pillow, and linens. Other surfaces a patient is exposed to are less obvious and dependent on a patient’s course of treatment and other factors. These surfaces could include emergency department stretchers, surgical tables, transporting gurneys, chair cushions, and other such surfaces.
These surfaces can impact a patient and need to be fully and carefully evaluated to avoid unnecessary injury or exposure to those factors that impact the development of pressure ulcers.

6. Educating Both the Patient and the Family

When patients and their families understand both an illness and its treatment, they can better contribute to their wellness. The same is true for the prevention of heel pressure ulcers. Cooperation is critical in the use of any device to eliminate friction and pressure. Knowing what to look for, the importance of reporting it, and how to care for it contributes to prevention and early onset treatment.

Patients, especially diabetic patients, and their families need to understand the necessity of monitoring blood sugar and regularly examining feet for signs of potential ulcers. Patients must be made aware of any loss of feeling that would elevate their risk. Most importantly, they must be trained that foot ulcers do not have to be a fact of life and are preventable and treatable.

7. Providing Clinical Training

Effective prevention of heel pressure ulcers requires a staff that experiences ongoing clinical training and development of their role in this effort. Clinical training needs to include education from data collection and assessment to prevention and treatment and be relevant to the challenges staff face on a daily basis. Setting and establishing staff expectations and responsibilities for patient care is reinforced with effective clinical training and can develop an effective and ongoing team approach to daily patient care. Clinical training provides the information and incentives to prevent errors in staging or in decisions regarding the selection of support surfaces.

8. Establishing Clear Preventive Protocols and Procedures for Staff

The number of people at risk for developing heel pressure ulcers is likely to increase as the population ages and more individuals develop diabetes. The American Diabetes Association estimates nearly 44 million people will develop diabetes over the next fifteen years (2). Many of these people will be unaware that they have diabetes. Neuropathy is a major contributing factor in the development of foot ulcers. At least one-third of these people will be at risk for a lower limb amputation if proper assessment and care is not provided. But is amputation the only treatment for an advanced stage heel pressure ulcer?
Treating an Existing Heel Pressure Ulcer: Is Amputation the Only Treatment?

When a patient develops an advanced stage heel ulcer, is lower limb amputation the only option? One case study suggests this is not the only possible treatment. It reports that a multi-disciplinary approach can be an effective alternative.\(^5\)

The patient in this case study was an 86-year old woman who had developed a Stage IV Pressure Ulcer that had failed to respond to a variety of treatments. This patient had a number of health issues, including Type 2 Diabetes, severe peripheral vascular disease, anemia, low albumin level, ASCAD, CHF, right femoral-popliteal bypass, left eye blindness, and degenerative joint disease besides the heel ulcer that complicated her case. With her heel ulcer at such a critical stage and with these other health issues, the vascular surgeon recommended the amputation of her leg below the knee as the only viable treatment of this wound. But the patient wanted to keep her leg and asked for an alternate, less radical approach.

A multi-disciplinary team was assembled to develop a plan of treatment and provide ongoing management of the Stage IV Heel Pressure Ulcer. The treatment had six areas of focus:

1. Selecting a dressing product that was effective
2. Removing necrotic tissue around the wound (debridement)
3. Achieving effective pressure relief of the wound
4. Managing the patient’s pain
5. Managing infection
6. Providing positive nutrition meeting the multiple health issues of the patient

To quickly eliminate the gross amounts of necrotic tissue necessary to promote healing, sharp debridement was performed. Further dead tissue removal was achieved by the use of Amorphous hydrogel in combination with a synthetic platelet derived growth factor gel. This also promoted tissue healing. Consistent, complete pressure relief was achieved throughout the process using a therapeutic mattress and a Heelfit Suspension Boot.

After eight months of this multi-disciplinary treatment, and with the continued use of the pressure relief provided by the Heelift Suspension Boot, the woman’s chronic pressure ulcer began to heal and finally closed. This woman’s leg was saved and a case was made for an alternative to lower limb amputation.
Conclusion

Heel pressure ulcers are best treated by never being allowed to develop. Education about heel pressure ulcers, early assessment by medical professionals, and ongoing and effective preventive management are central to preventing heel pressure ulcers. These preventive steps can eliminate heel pressure ulcers thus eliminating the need to consider the radical treatment of lower limb amputation.

However, even in cases where heel pressure ulcers have already progressed to a stage where surgical amputation has been recommended, a multi-disciplinary and dedicated team approach using effective pressure relieving devices offers an effective and conservative alternative treatment to lower limb amputation.


