

OxyBand Overview

Focus on Tissue Perfusion and Healing Diabetic Foot Ulcers

- Chronic wounds are thought to fail to progress through the phases of healing in an orderly and timely fashion due to one or more defects in the healing cascade, including excessive bioburden, uncontrolled inflammation, the presence of stagnant or senescent cells, the lack of essential cytokines or metabolic factors, and inadequate tissue perfusion resulting in tissue hypoxia and deficient oxygen substrate.
- Of these deficits, the lack of tissue perfusion and resultant tissue hypoxia is considered to be paramount and especially significant when the patient has diabetes complicated by a nonhealing diabetic foot ulcer (DFU).
- Diabetics are a significant risk for the acceleration of atherosclerotic and arteriosclerotic vascular disease. Arterial narrowing due to disease results in poor tissue perfusion and the lack of blood flow to peripheral tissue results in tissue hypoxia. The combination of poor tissue perfusion and tissue hypoxia in a patient with a diabetic foot ulcer significantly increases the potential for infection and tissue necrosis leading to surgical resection and amputation of the gangrenous extremity.
- It has been shown that a hypoxic gradient (clearly present between surrounding healthy tissue and the center of a DFU) is critical to drive angiogenesis. However angiogenesis is a process with high metabolic requirements and thus is dependent on oxygen. Therefore severely hypoxic tissue will develop budding capillaries more slowly than stimulated tissue with available oxygen substrate.
- As noted above, DFUs often require surgical intervention and wound débridement. Sharp debridement is known to increase the metabolic demand of the involved tissue and can cause propagation of tissue hypoxia and necrosis. Delivery of oxygen substrate can mitigate this compromise. In addition to the removal of necrotic tissue, sharp débridement also decreases bacterial bioburden, encourages wound growth factor release and stimulates tissue perfusion and angiogenic pathways ultimately resulting in enhanced wound oxygenation. The activity of growth factors and other proangiogenic factors is enhanced by the presence of oxygen.

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- OxyBand is a transdermal oxygen delivery device with the capability of enhancing the wound microenvironment via the sustained delivering of oxygen substrate for an extended period of time (5-7 days). This benefit is achieved with a single dressing application.
- The ability to improve tissue oxygenation in chronic wounds hastens healing. Specially related to DFUs, the delivery of oxygen enhances white cell bacterial killing and bioburden reduction, stimulates cellular metabolic activity, promotes cellular proliferation and enhances angiogenesis.
- The utilization of OxyBand in the care of a patient with a DFU provides oxygen directly to the hypoxic tissues, improves the wound microenvironment via oxygenation, and enhances the wound base via proangiogenic pathways ultimately enhancing tissue perfusion.
- OxyBand is clearly a technology that providers could utilize in their clinical algorithm to enhance the management and improve the clinical outcomes of patients with all types of Diabetic Foot Ulcers.