A Monograph for Health Care Providers

Innovative Wound Care Specialists

Compromised Flaps & Grafts and Hyperbaric Oxygen

There are situations when grafts and/or flaps can become compromised and require urgent intervention for salvage. These instances can include irradiated or otherwise hypoxic wound beds, excessively large harvested grafts, random flap ischemia, venous or arterial insufficiency, and ischemic-reperfusion injury. Alternatively, compromised grafts and flaps can be inadvertently created secondary to trauma. It is in these types of cases, hyperbaric oxygen (HBO) therapy can serve as a useful adjunct in the salvage of compromised flaps and grafts.

Hyperbaric oxygen therapy is neither necessary nor recommended for the support of normal, uncompromised grafts or flaps. However, in tissue compromised by irradiation or in the other cases where there is decreased perfusion or hypoxia, as in traumatic amputations or degloving injuries, HBO has been shown to be extremely useful in flap salvage. HBO can help maximize the viability of compromised tissue, thereby reducing the need for regrafting or repeat flap procedures.

Hyperbaric oxygen therapy can enhance graft and flap survival by several methods including decreasing the hypoxic insult, enhancing fibroblast function and collagen synthesis, stimulating angiogenesis and inhibiting ischemia-reperfusion injury. Early initiation of HBO is critical. As soon as a compromised flap or graft is identified, hyperbaric oxygen therapy should be started to maximize tissue viability and ultimately graft/flap salvage.

Benefits of HBO include:

- Improved local tissue oxygenation leading to improved cellular energ
- Increased angiogenesis through stimulation of VEGF production
- Increased oxygen diffusion distance from the capillaries
- Enhanced production of growth factors and receptors
- Increased collagen synthesis
- Reduced inflammation
- Reduced apoptosis

References

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