

Treatment of a Chronic Stage IV Pressure Ulcer using Topical Wound Oxygen (TWO₂) Therapy

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Introduction

Chronic wounds are frequent, difficult to treat and show high rates of complications. We examined the clinical efficacy of a unique pressurized topical oxygen therapy (TWO₂) device in a long term care setting in Canada on a 67 y/o male patient with a stage IV pressure ulcer.

Method

The patient was treated daily with TWO₂ therapy for 90 minutes. Prior to each treatment, the patients wound dressings were removed and the wound bed was irrigated with a normal saline solution. After each TWO₂ treatment, the wound was treated with Silversorb and Betadine then redressed with standard gauze dressing. The TWO₂ device delivered humidified medical grade oxygen at a constant pressure of 22 mmHg. The wound care coordinator performed weekly wound assessments including photos to document the wound area, volume and changes in each from the previous assessment.

Results

Initial wound measurements indicated the ulcer had an area of 31.2 cm² with a volume of 109.2 cm³. Tissue was noted to be very necrotic and the peri-wound was macerated. After one week of treatment, the wound area and volume had increased slightly, however the physician noted that the maceration had improved. Week 2 measurements showed a decrease in both area and volume with significant granulation. By week 3, the wound was 95% covered with granulation and it was noted the peri-wound was less friable. Wound area had decreased by 43% and the volume by 41% and dressings were now being done with Dermagen packing. The patient was hospitalized after 6 weeks of therapy for an unrelated condition. At that time, his wound area had decreased to 4.55 cm² and volume to 11.38 cm³. TWO₂ therapy was discontinued during the hospitalization. TWO₂ resumed one month later; with an area of 5.28 cm² and volume of 12.5 cm³. After 2 additional weeks of therapy, the wound had 100% closure.

Observations:

1. TWO₂ improves local tissue perfusion
2. TWO₂ softens necrotic tissue and enhances debridement
3. TWO₂ eliminates maceration
4. TWO₂ reduces nursing intervention time

Conclusion

Patients with severe chronic wounds benefit from the treatment with TWO₂ and show remarkable wound closure rates.

