

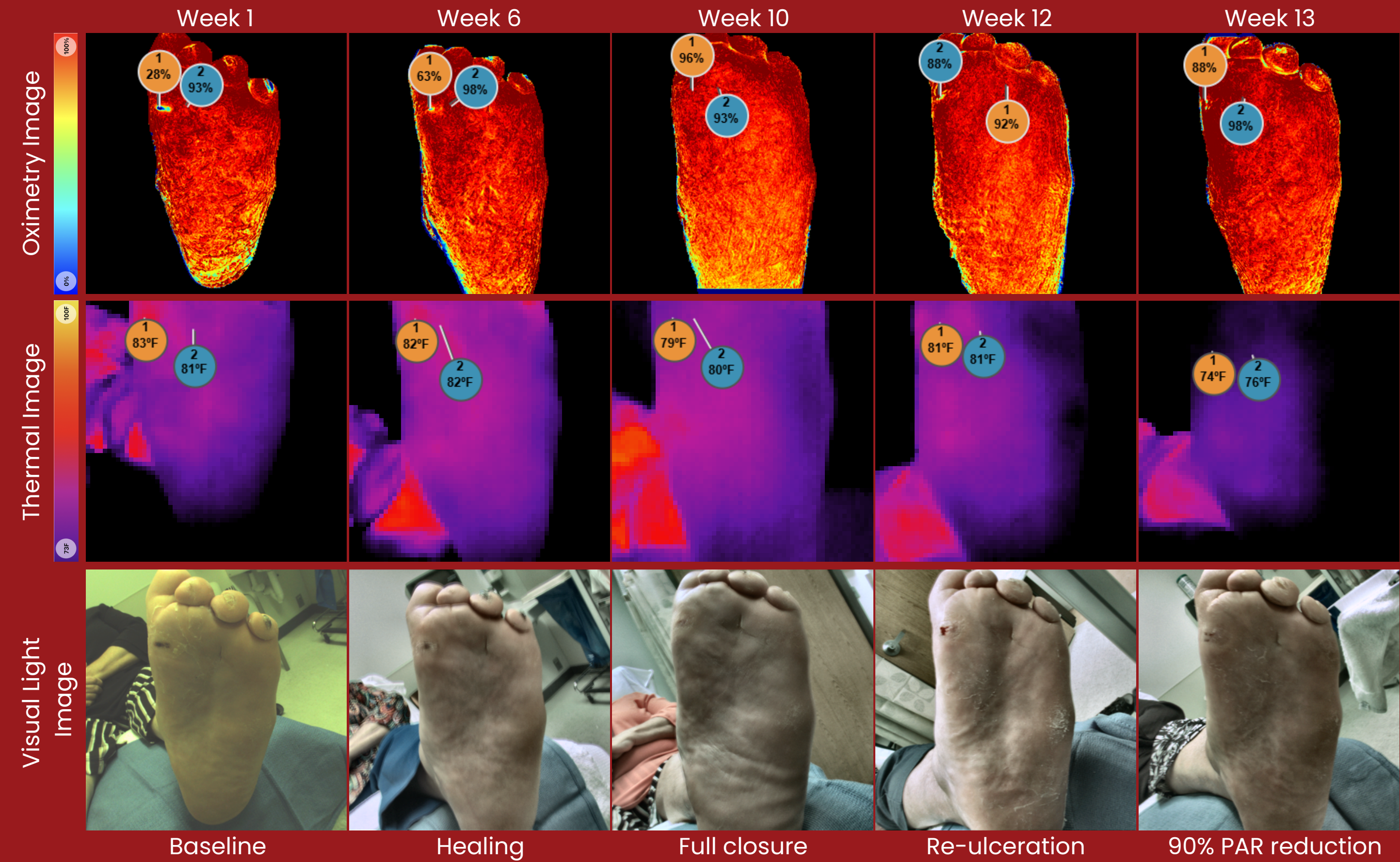
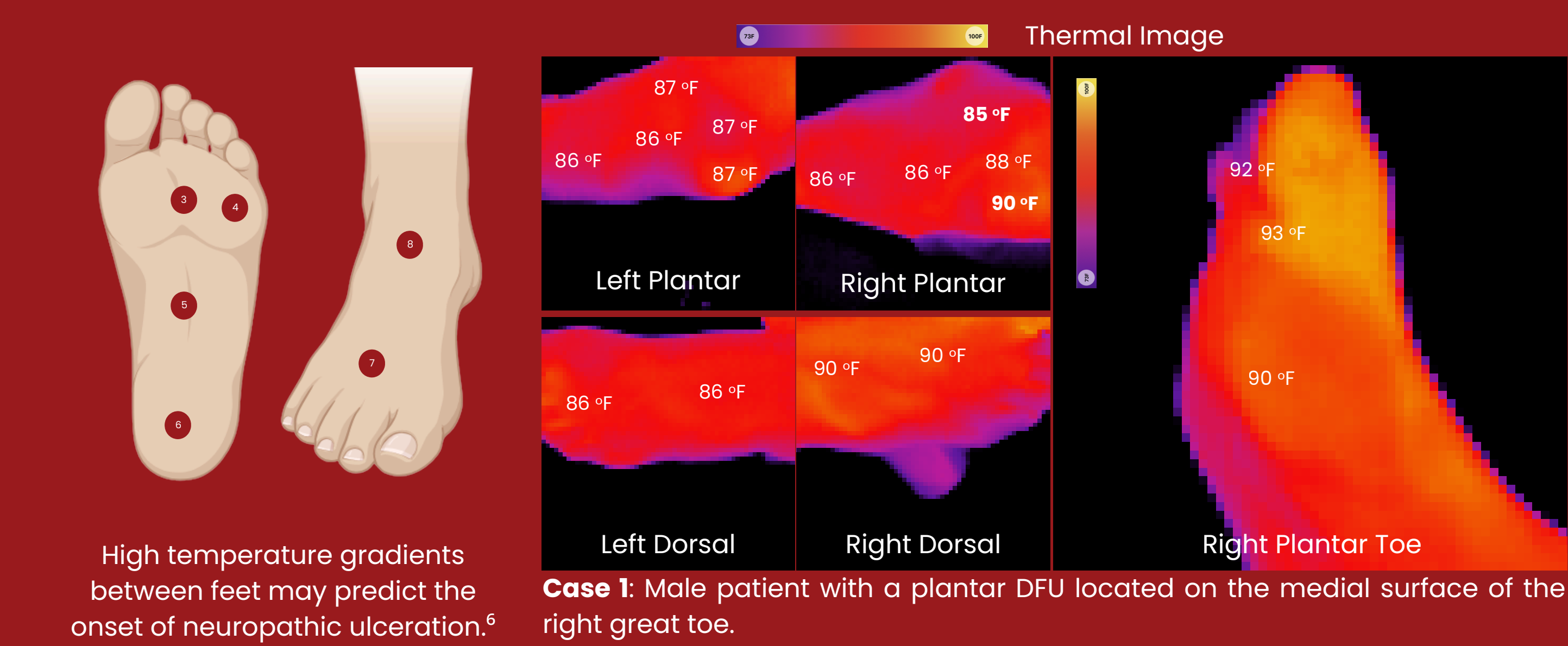
Introduction

Chronic wounds affect over 10 million U.S. Medicare beneficiaries, resulting in significant morbidity and healthcare costs.<sup>1</sup> Accurate, objective assessment is essential for guiding treatment and optimizing outcomes.<sup>2-3</sup> Mobile multispectral near-infrared spectroscopy (NIRS) and thermography offer non-invasive methods to evaluate tissue oxygenation (StO<sub>2</sub>) and surface temperature, respectively. These technologies may complement traditional wound measurements in tracking healing.<sup>4-7</sup> This case series explores the utility of NIRS and thermography across diverse wound types.

Methods

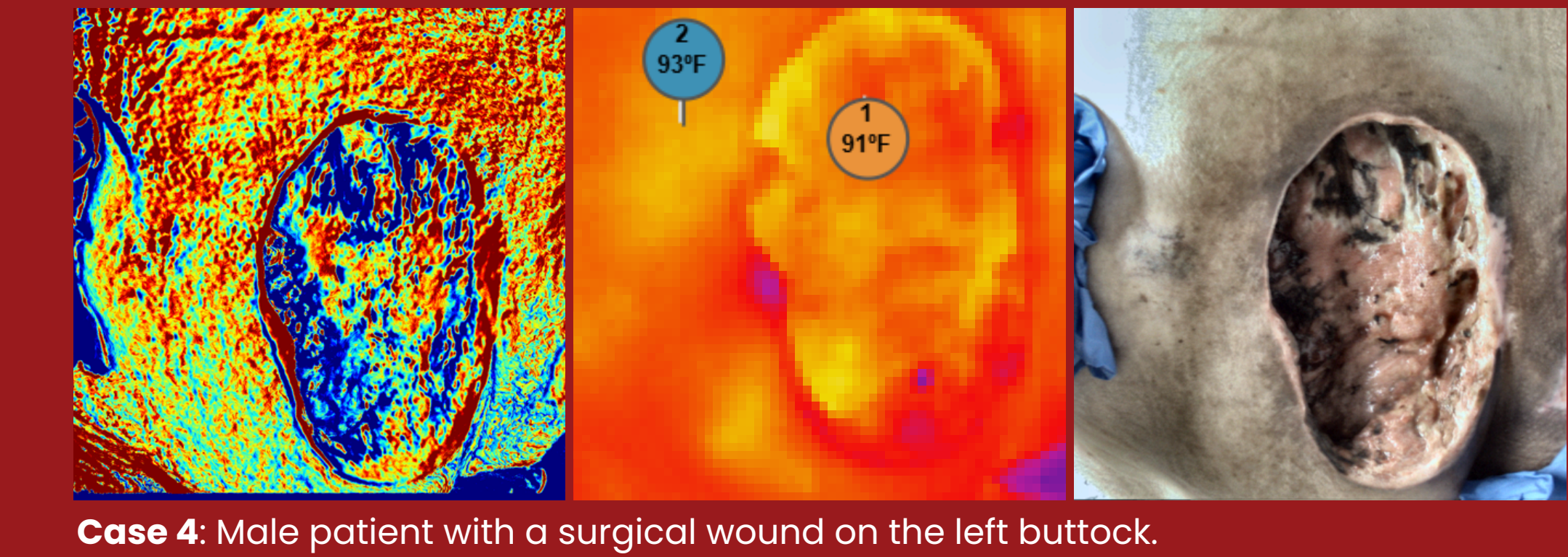
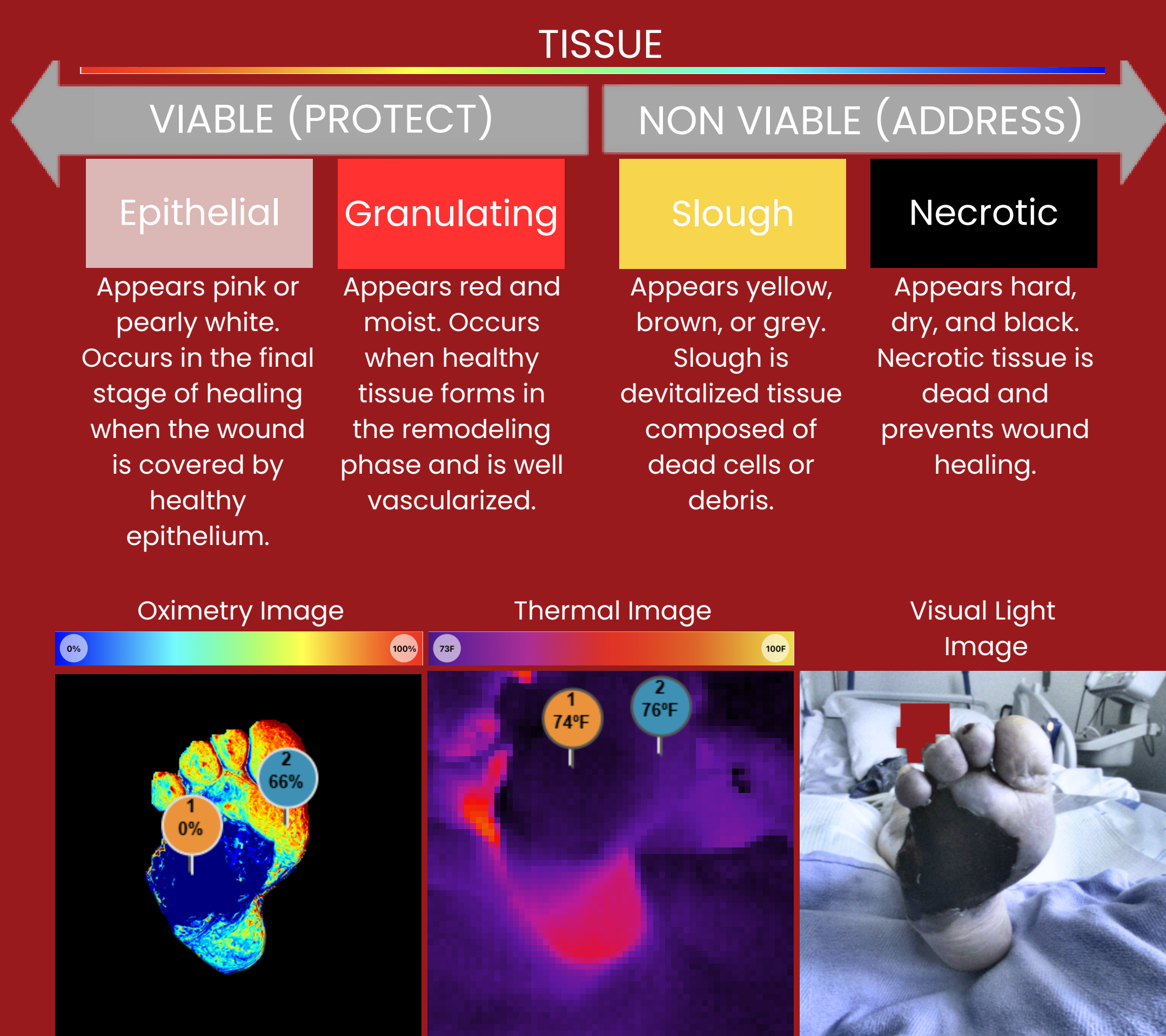
This case series included individuals with wounds of varying etiologies (e.g., diabetic foot ulcers (DFUs), arterial insufficiency, pressure injuries (PIs)). A pocket-sized multispectral imaging device (MIMOSA Pro, MIMOSA Diagnostics Inc., Toronto, ON) was used to measure tissue oxygenation and skin temperature. Data collected included demographics, wound characteristics, imaging metrics, and healing progression.

Results

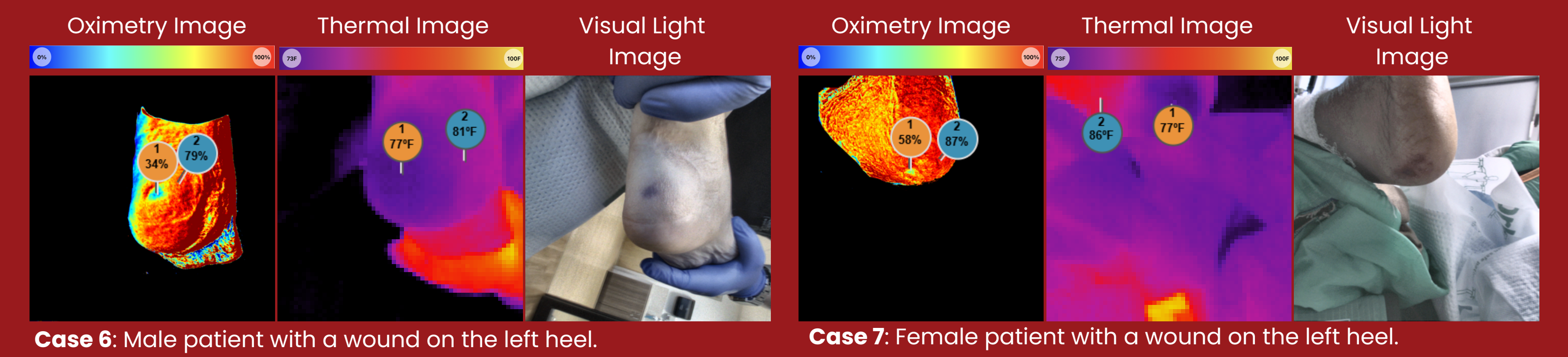
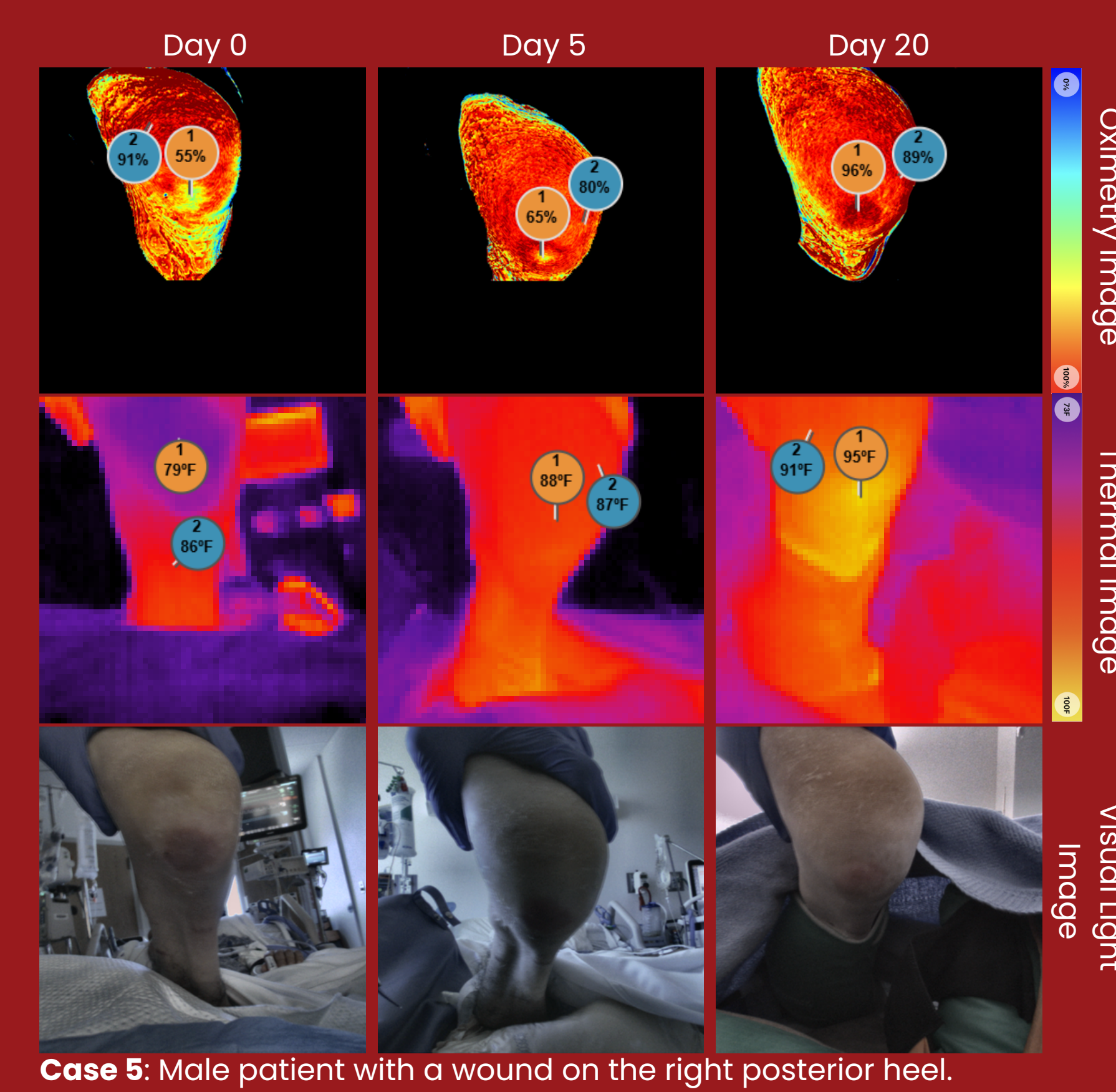


**Case 2:** Female patient with bilateral plantar DFUs over the metatarsal heads—one on the right and one on the left. The data shown is for the left foot.

By identifying localized temperature changes that may signal early infection, inflammation, or pressure-related tissue stress before clinical signs appear, thermographic imaging serves as a valuable non-invasive tool for monitoring DFU recurrence and wound progression.



Wound tissue is often classified by color — **viable**, **slough**, **necrotic** — but this method is subjective and influenced by lighting and skin tone. NIRS and thermography offer objective insights: black tissue typically shows low oxygenation and cooler temperatures, reflecting poor perfusion. NIRS provides a more direct measure of tissue perfusion, while thermography may be influenced by external factors.



Deep Tissue Pressure Injury (DTI)

- On **visual light imaging**, a DTI typically appears as a localized area of purple or maroon discoloration.
- On **thermography imaging**, a DTI often presents as a cold spot — a localized area where skin surface temperature is at least 3 °F lower than surrounding tissue.
- On **NIRS imaging**, a DTI is typically seen as a localized area of decreased oxygenation.

Discussion & Conclusions

Multispectral NIRS and thermography provide a multifaceted, objective assessment of wound healing. NIRS offers real-time insight into tissue oxygenation and thermography detects early signs of inflammation or infection. Together, these tools enhance clinical decision-making, support timely interventions, and can be readily integrated into patient care. Using these technologies can offer new diagnostic potential for clinicians, improving patient outcomes.

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