

PHOTOBIOMODULATION WITH BLUE LIGHT IN THE OUTPATIENT MANAGEMENT OF HARD TO HEAL WOUNDS: CLINICAL OBSERVATIONS

Md. Maria Elena Abati, Anna Maria Asperti, Alevtina Vasilieva
Wound Care Surgery, Humanitas Gavazzeni Hospital, Bergamo, Italy

Wound Care Surgery at Humanitas Gavazzeni Hospital is in charge of diagnosis and treatment of chronic and hard-to-heal wounds.

Patients aren't hospitalized; our therapeutic strategies are based exclusively on outpatient treatments. Recently we had the opportunity to test a Medical Device for Photobiomodulation therapy, using Blue Light to **stimulate the physiological processes of wound healing in a natural and non-invasive way**. It uses LED sources that emit light within the blue range wavelengths, corresponding to the absorption spectrum of certain chromophores contained in blood and tissues, such as Protoporphyrin IX.

Blue Light acts on all phases of the wound repair process, stimulating blood coagulation, triggering a rapid onset of the inflammatory phase, promoting angiogenesis.

CLINICAL OBSERVATIONS

Duration: 3 months

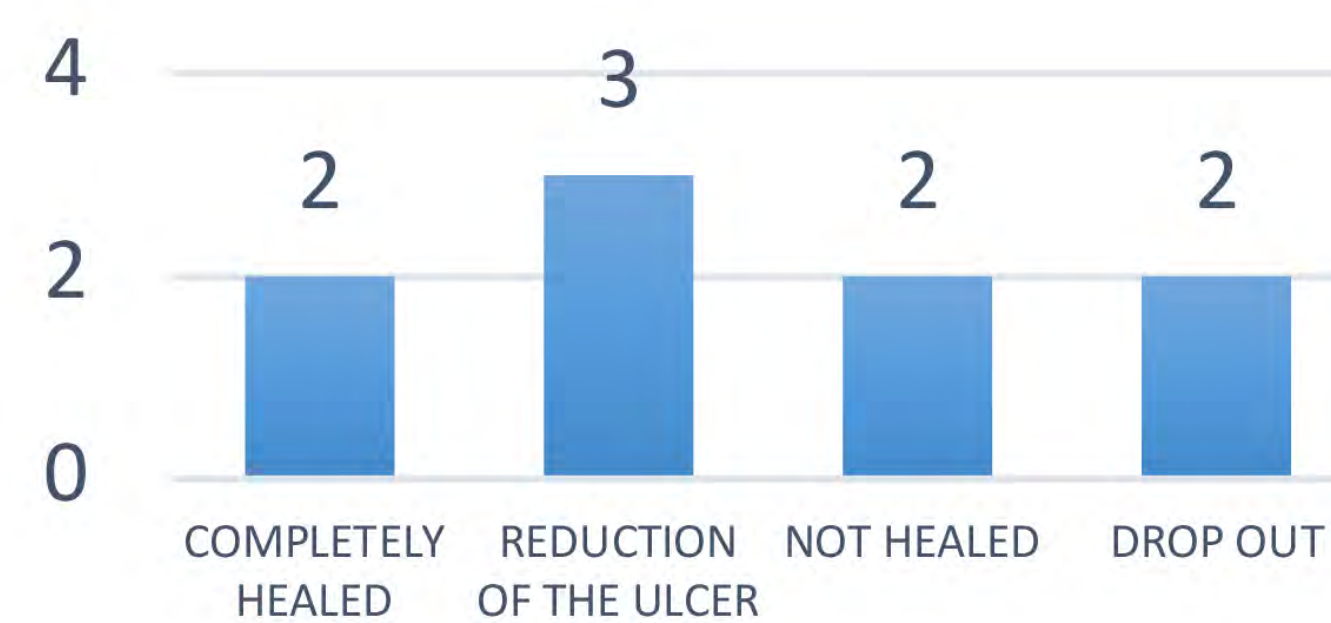
9 patients enrolled

Wounds: not responding flat (no cavitory) chronic wounds, with granulation tissue

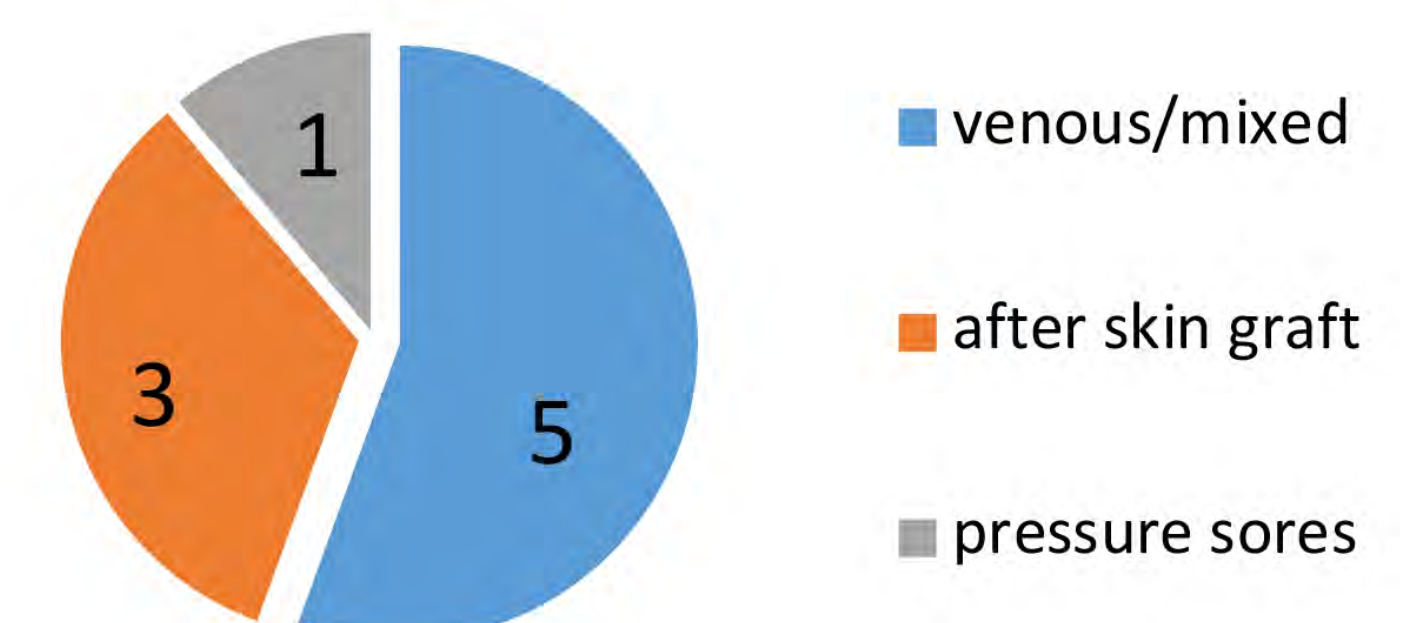
Treatment: one application of Blue Light on the lesion's area for 60 seconds once a week

Method: data reported on clinical form at each visit and acquisition of photographic images

RESULTS



TYPE OF WOUNDS



EmoLED® medical device

- compliant with outpatient care: it is portable, easy to use, instantly ready for use, without the use of mediators (chemical additives or medicines).
- no-contact with the patient, without pain;
- fast: each EmoLED application has a duration of 60 seconds and is performed on a circular area with a diameter of 50 mm. For larger wounds subsequent applications must be performed on the adjacent areas to cover the entire damaged area.



CASE REPORT: TRAUMATIC ULCER TREATED WITH BLUE LIGHT

Patient: male, 81 years

Pathologies: CVI, arterial hypertension, atrial fibrillation (therapy with NOACs)

Wound type and site: traumatic ulcer, 9x4cm, lower third of leg

Age of the ulcer: 2 months

Therapy: 8 EmoLED treatments, once a week.

Healing rate: healed



CONCLUSIONS

From our preliminary results **Blue Light treatment in addition to standard of care is an effective therapeutic strategy; recommended as part of outpatient treatment of flat chronic wounds, with granulation tissue and different size:** in these type of wounds it accelerates the healing process, without pain.

References:

- Mosti G et Gasperini S, Observations made on three patients suffering from ulcers of the lower limbs treated with Blue Light, Chronic Wound Care Management and Research 2018;5 23-28;
Cicchi R. et al, Observation of an improved healing process in superficial skin wounds after irradiation with a blue-LED haemostatic device, J. Biophotonics 9, No. 6, 645-655 (2016) / DOI 10.1002/jbio.201500191;
Rossi F. et al, Healing process study in murine skin superficial wounds treated with the blue LED photocoagulator "EMOLED", Medical Laser Applications and Laser-Tissue Interactions VII, Proc. of SPIE-OSA Biomedical Optics, SPIE Vol. 9542, 95420F, 2015 ·doi: 10.1117/12.2183670