The Effect of Twice-Weekly Treatments with the Ceralas D15 Diode Laser on Wound Healing

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PROGRESS REPORT

Purpose:

The purpose of this ongoing study is to evaluate the effect of the Ceralas D15 diode laser on healing of ulcers of the foot and lower leg when the wounds are treated with the laser two times a week.

Methods:

The patients for this study were selected from individuals who presented to the Wade Park or Brecksville divisions of the Cleveland VA Medical Center with ulcers on the foot or lower leg. The patient was required to return for follow-up treatments two times per week.

At each visit, the wound was cleaned and, if necessary, mechanically debrided with a scalpel. The maximum length and width were measured, and then the maximum area was calculated. The laser power was set to 5 watts, and the laser energy was applied to the wound in a criss-cross pattern to ensure complete exposure of the ulcerative area. After laser treatment, a photograph was taken of the ulcers and the patients continued with their previously-prescribed treatments, including medication and dressings.

To analyze wound healing, the percent change in area from the initial visit was calculated for each follow-up visit, according to the following equation:

$$\%\Delta A_i = ((A_{FUx} - A_i)/A_i) \times 100$$

where A_{FUx} is the area of the ulcer at follow-up visit #x, and A_i is the area of the ulcer at the initial visit.

Results:

A total of 12 ulcers from 12 patients have been enrolled in the study thus far. Ten of the patients are diabetic, while two are not diabetic. One ulcer, from a diabetic patient, was completely healed after ten laser treatments, or five weeks. Currently, all remaining patients have returned for at least 12 follow-up visits, but the study is ongoing.

The data recorded at the most recent follow-up visit was analyzed for all patients. According to this data, the area of the ulcers decreased by an average of 53.07% from the initial visit. For the diabetic patients, the area of the ulcers decreased by an average of 61.90% from the initial visit. For the non-diabetic patients, the area of the ulcers decreased by an average of 8.89% from the initial visit.

Discussion and Conclusions:

The results to date indicate that, on average, the wounds have decreased to less than half the original size of the ulcer. This finding is more pronounced in diabetic patients. The current results are very encouraging. It should be noted that the study is continuing at this time and more data is being collected.