EFFICACY OF MICROCURRENT AS AN ADJUNCT THERAPY IN THE TREATMENT OF CHRONIC WOUNDS

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ABSTRACT

10 patients with chronic wounds were randomly selected from the Wound Care Unit, Hospital Kuala Lumpur to assess the efficacy of Microcurrent therapy in accelerating wound healing. The patients had the following conditions-7 Diabetic Foot Ulcer (DFU), 2 Venous Leg Ulcer, 1 Pressure Injury.

METHODOLOGY

Each patient had Microcurrent therapy delivered while having their wounds cleansed. The settings used with the Pulsed Electro Magnetic Field Device attached to the Microcurrent device were MODULATE (for 10 minutes) followed by VASO (for 10 minutes). Patients were loaned a home-Microcurrent device for which they had to use adhesive pads and treat themselves using ACUTE 3:1 mode (for 20 minutes) followed by RSI mode (for 20 minutes). Each of these modes were applied around the bandaged area (thus not having to open the wound dressing to deliver treatment). The home treatments were carried out 2 to 3 times a day for a period of one month. Wound care was performed with Microcurrent Treatment as an adjunctive therapy.

The aims of the treatments were:

- reduction in wound size
- reduction in inflammation- pain, swelling, joint stiffness, frequency and dosage of analgesics
- increase in vasodilation (skin discolouration, ease in walking)

RESULTS



A 66 year old Indian gentleman presented with a Left Diabetic Foot Ulcer (DFU) with Ray's Amputation done in February 2015. Microcurrent treatment was initiated 5 months later and within 1 month of treatment, wound area reduced by 70%. Ankle pain reduced by 40%. He was pain free on Day 30 of treatment. Ankle stiffness and swelling reduced.



After 1 month

Before

Before

Before

weeks of Microcurrent treatment.

After 10 davs

After 1 month

After 1 month



Wound volume reduction (%)

Figure 1: Wound Volume Reduction after I month of Microcurrent Therapy

Average Pre- and Post-Pain Scores after 1 month of Microcurrent Therapy



Figure 2: Average Pre-and Post-Pain Scores after 1 month of Microcurrent Therapy

A 44 year old Indian gentleman presented with Left sacral ulcer since February 2013. After a few sessions of Microcurrent treatment, wound area reduced by 70%. Pain reduced by 90%.

Before



A 65 year old Indian gentleman presented with Left foot (medial aspect) DFU at the plantar aspect of the heel for the past 20 months. After 1 month of Microcurrent treatment, wound area reduced by 65%. Pain reduced by 40%. Foot stiffness and leg swelling also reduced. Requirement of Tramadol reduced from 50mg TDS to 50mg OD after 1 week of Microcurrent treatment. After 2 weeks, Tramadol was reduced to a prn basis.



A 49 year old Malay lady presented with Left DFU on

lateral hind of foot for 1.5 months. After 10 days of

Microcurrent treatment, wound area reduced by 3%. Pain

CASE 2

Ulcer on Right Lower Limb since 2014. After 1 month of

Microcurrent treatment, wound size reduced by 25%. Pain

reduced by 30% which caused a 50% improvement in

sleep pattern. Leg stiffness reduced. Requirement of

Tramadol 50mg TDS was reduced to 50mg daily after 2

CASE 4

A 29 year old Indian lady presented with Left Venous Leg Ulcer since April 2015. After 1 month of Microcurrent treatment, wound area reduced by 25%. Pain around wound reduced by 65% and ankle swelling also reduced. However, the daily pain score before treatment was always high. This could be because this patient is postulated to have psychological stress and may not know how to assess pain properly. She did however have significant reduction in pain after each treatment session. Requirement of Tramadol 50mg TDS was reduced to nil after 10 days of treatment.



A 54 year old Malay gentleman presented with a nonpainful wound over the Right medial tibia (hole) since 2005. After 1 month of Microcurrent treatment, there was a reduction of 50% in wound volume. Swelling of the leg and stiffness of the toes reduced. Since 2005 he walked using a walking stick and towards the end of treatment he could walk short distances without aid.



Before

After 1 month

A 53 year old Indian gentleman presented with a nonpainful Right DFU at hind foot aspect for past 8 months. After 1 month of Microcurrent treatment, wound volume reduced by 80%. Ankle swelling and stiffness reduced. Patient's gait improved from walking tip toed to normal gait after third day of treatment.

CONCLUSION

The combination of good wound care coupled with Microcurrent as an adjunctive therapy was proven to be effective in accelerating healing in all these cases of chronic wounds. Microcurrent devices used in this study were Avazzia ScalarQi[™] (Pulsed Electro Magnetic Field Device) attached to Avazzia Pro Sport[™] III (professional Microcurrent device) at the hospital. Patients were Ioaned Avazzia BEST-RSI[™] device which is a home based Microcurrent unit.

Avazzia Microcurrent devices using BEST[™] (Biofeedback Electro Stimulation Technology) helps redress an underlying physiological dysfunction as well as reducing its symptoms. Its mechanism of action appears to act as a trigger in the whole healing process. **VASO** mode in Avazzia Pro Sport[™] III device was invented to cause vasodilation which increases perfusion to the wound. This is by increasing levels of Nitric Oxide which is a potent vasodilator ⁽⁴⁾. In terms of Pain Management, Cortisol and TNF- α levels are reduced ⁽⁵⁾.

The ease of use of Avazzia Microcurrent devices advocate its use in accelerating wound healing. It could be applied as a first priority on the list of wound care therapy.



Before

After 1 month

A 62 year old Indian lady presented with non-painful Left lateral DFU for past 3 years. After 1 month of Microcurrent treatment, wound area reduced by 45%. Ankle swelling and stiffness reduced. Neuropathic pain stopped after 4 days of the treatment causing sleeping pattern to improve. Sleep quality improved and she did not need sleeping pills towards the end of treatment.



Before After 1 month

A 60 year old Malay gentleman presented with a nonpainful Right DFU at the plantar medial aspect of the heel for past 19 months. After 1 month of Microcurrent treatment, wound volume reduced by 50%. Leg and ankle swelling and foot stiffness reduced.

All 10 subjects had reduction in wound size and pain as shown in Figures 1 and 2 respectively. There were also reduction in other inflammatory symptoms such as swelling and stiffness due to increased vasodilatation as postulated. Gait improved as leg felt lighter and also sensation improved. All patients also had a likely increase in perfusion due to the effect of vasodilatation of the vessels. There was no adverse events reported.



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- acute and chronic pain. Dallas: Avazzia Inc
- ion Therapy) on Chronic Neuropathic Pain: Effects on Pain Score and Pain
- ack Electrostimulation Therapy (Avazzia BE ffect On Changes in Pain Biomarkers on Ng MM, Av

