

Accelerated recovery of post-operative dental implant patients by means of pulsed shortwave (SWT) therapy: An Observational Study

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Objective

The purpose of this white paper is to report on the experience and on the clinical outcome resulting from the use of a wearable electromagnetic device (*RecoveryRx® Therapy* by BioElectronics Corp., Frederick, MD USA) in post-operative implant patients and to evaluate the efficacy in reducing edema, inflammation and pain immediately after dental implant surgery. The device is known to promote faster than normal healing process, anticipating masticatory function.

Background

Pulsed electromagnetic therapy has been widely used in hospital settings to promote wound healing and decrease pain and inflammation for several decades(Guo, Kubat et al. 2011). Numerous clinical studies support its therapeutic benefits(Brook, Dauphinee et al. 2012; Rawe, Lowenstein et al. 2012; Rawe and Vlahovic 2012). However, only recently, this therapy has become familiar to the general population, thanks to the fact that it has been made widely available through small wearable devices, capable of delivering the same beneficial results as large hospital equipment. Small devices such as *RecoveryRx® Therapy* can now be used in the privacy of one's home and comfortably worn day and night while providing a sustained positive effect.

Wound healing is a rather complex biological process occurring in several distinct phases: inflammation, cell proliferation and tissue remodeling. Electromagnetic energy has been shown to affect wound healing and to significantly shorten each phase of the process(Bentall 1986; Rawe and Vlahovic 2012). *RecoveryRx® Therapy* is a miniaturized medical device capable of generating a therapeutic electromagnetic field which stimulates both cell and tissue repair processes, thus promoting faster healing.

Dental implant therapy is a therapeutic option that requires a rather invasive surgery, especially in the treatment of totally edentulous (toothless) patients. Factors directly associated with such surgery: long chair time, pain, edema, inflammation and inability to eat or smile for several days, are often strong deterrents for potential implant candidates. Current implant surgery protocols

are all geared toward reducing the invasiveness of the procedure as well as chair time. Today's implant patients, especially professional people, want to be able to return to their normal everyday activities as soon as possible and in the best possible physical condition. They welcome anything that would alleviate pain, reduce edema and inflammation and allow them to resume their normal life the day after surgery. *RecoveryRx® Therapy* is a device that can consistently achieve this: reduce edema, inflammation and pain, and, in so doing so, make implant treatment more acceptable to patients.

Study

This paper reports on the uncontrolled observational study of 32 edentulous and partially edentulous patients treated at Santo Stefano Belbo Implant Therapy Center (Dr. Tiziano Tealdo www.studiotealdo.com) in the March – November 2013 time period. The surgery that each patient underwent entailed the extraction of the remaining teeth and the immediate placement of 2 or 4 titanium implants. All patients, 23 females and 9 males, ranged between 58 and 76 years of age, were in good health and underwent a post-extraction implant placement surgical procedure. The usual postsurgical response of patients who undergo full arch implant surgery are facial swelling an hour post surgery, and they begin to complain of pain as soon as the anesthetic wears off (after 4-5 hours). After 6 hours, pain is significant in patients (retrospective estimate 8-10 VAS score value) and edema and swelling are very noticeable. These conditions normally last for 3-4 days post-surgery, often preventing patients from resuming their normal life for a period post surgery.

In this study each patient received a *RecoveryRx® Therapy* device immediately after surgery. The very light device consists in of an 8 cm oval loop connected to a small lithium battery with an on/off switch. The device was applied to the lower jaw with four Band-Aids and left in position for 12 continuous hours (Figure 1A, 1B).

Each patient was given a double score card to be filled on the basis of the pain being felt (0 indicating no pain and 10 indicating maximum pain) and on the basis of presence or absence of edema and inflammation. One of the most common instruments to measure pain is the VAS scale (visual analog scale). The scale consists in a series of numbered cartooned faces moving

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from zero (smiling and pain-free) to 10 (weeping in much pain). A VDS (visual descriptor scale) was used to indicate presence/absence of edema and inflammation. Each patient was expected to provide two series of scores, one score after 6 hours of use and a second score after 12 hours of use. The day after the surgery, the patient was expected to report back to the Implant Therapy Center with his/her two score cards.

Figure 1A. Application of RecoveryRx® Therapy postoperatively.

1B. At 24 hrs post surgery pain is minimal and facial swelling is resolved.



RESULTS

Patients Reported Well Controlled Swelling and Pain.

	Visual Analog Score (mean)	Visual Descriptor Scale
6 hour	4.0 (range 1-5)	5/32 facial swelling/inflammation
12 hour	1.0 (range 0-2)	0/32 facial swelling/inflammation

Discussion

Although this was an observational study and there were no controls, the results are very encouraging. Whilst patients undergoing a single implant can recover quickly, most patients who have multiple implants normally need to take strong analgesics and many are unable to resume normal daily activities for a number of days post-operatively. Follow up at 24-48 hours post-op showed that all patients who used *RecoveryRx® Therapy* could resume normal masticatory function. This would not normally have been possible at this stage of recovery. Further studies are needed to objectively study the observed beneficial effects in dental implant patients; even greater benefit may have been observed if the device had been used continuously and not for just twelve hours. It is difficult to avoid the conclusion that, in an area that is normally very painful and swells easily after surgery, the *RecoveryRx® Therapy* provided clinically meaningful benefit.

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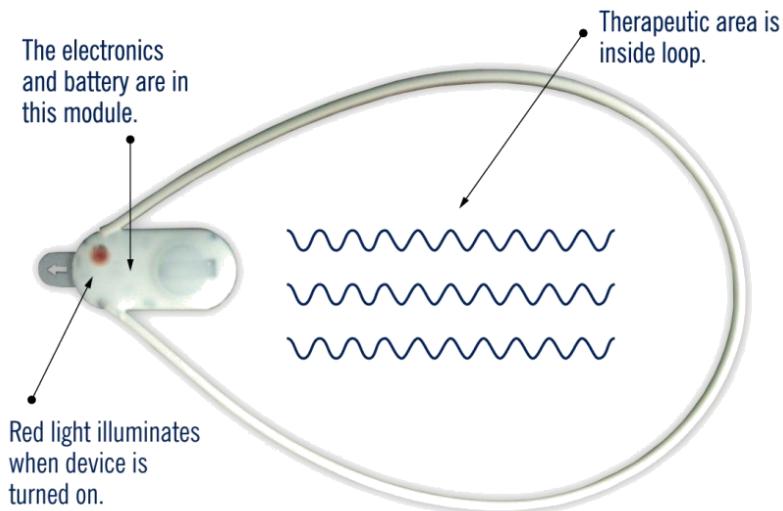
Dr Operti - Personal Note:

It all started in 2006 when a medical sales rep gave me a couple of samples of RecoveryRx® Therapy to try. I probably would never have used them, if I did not have to face a serious personal dental condition only few days later. I had to have the emergency extraction of my third impacted mandibular molar because of a sudden infection. I recall going home right after surgery in great pain and with a face that looked like a melon. I reached for the RecoveryRx® Therapy and applied it to my jaw all night long. The next morning my face looked perfectly normal and I went to work. Few hours later, however, the pain and the swelling came back and I had to look for RecoveryRx® Therapy again. This time, I kept it pinned on my face for a full day and to my surprise and pleasure, the next day pain and inflammation were completely gone.

Now after using the device on myself on several occasions and in hundreds of my surgical patients, I can vouch for the unique efficacy of RecoveryRx® Therapy. It is a very efficient alternative to prescription drugs and to over the counter analgesics.

I am an anesthesiologist, working in two public hospitals (C.T.O and Ospedale Maria Adelaide of Torino) and in several private practices. I work primarily with Orthopedic, Plastic Surgery, Maxillofacial and Oral surgery doctors. I make a routine use of RecoveryRx Therapy in all surgical cases that I assist, providing tremendous relief and satisfaction to all patients.

Figure 2. RecoveryRx Device – Therapeutic area diagram



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