

Z Wave for the Treatment of Post-Inflammatory and Post-Non-Inflammatory Nodules after Hyaluronic Acid Injectable Fillers

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Radial Sound (Shockwave) Technology (RSWT) has been used for many years in the treatment of soft tissue injuries like tendinitis, fasciitis, and panniculitis. More recently, RSWT has been used in aesthetics for cellulite and to treat injuries, side-effects, and complications after aesthetic procedures like noninvasive lipolysis, surgical liposuction, capsular contractures, and abdominoplasty. Reports are that patients can experience a quicker and easier recovery, and even an improved outcome.

Zimmer MedizinSysteme is a 50 year-old, German-based company that makes several different versions of RSWT, however, their Z Wave is best suited for use in aesthetics. Zimmer's Soft Shot Technology provides a remarkably more comfortable patient experience with equal effect compared to competitive devices. All Zimmer RSWT devices feature Soft Shot Technology.

For non-invasive lipolysis, I use BTL Vanquish ME™, a non-contact, non-invasive Radio Frequency device. In order to metabolize the cell debris from the lysed fat cells, macrophages will flood the treated area due to the acute inflammation caused by the radiofrequency-induced apoptosis effect. In areas of more marked inflammation, macrophages may "clump" around larger areas of lysed fat cell debris in the subcutaneous fat layer and form a nodule. These nodules are usually 1-3 cm in size and are hard and tender to the touch, especially in areas that rub under clothing, and may cause mild to significant discomfort for patients.

I do a Z Wave treatment immediately after Vanquish in order to increase lymphatic drainage, and for accelerated cell debris "clean-up", achieving a more consistent outcome and an enhanced experience for my patients. Additionally, it is helpful to prevent and/or treat non-infectious granulomatous panniculitis, a rare, though known side-effect after lipolysis.

Since BTL Vanquish patients show no signs or symptoms of systemic infection, post-procedural management has been reasonable for my patients using Zimmer shockwave therapy. Z Wave treatment theoretically prevents macrophages from "over-clumping" in the first place, however, if the nodules do form, I am able to achieve an easier and quicker recovery for my patients. These shockwaves cause the macrophages to "un-clump" or scatter more quickly by forcing them to break apart. If left untreated, nodules usually resolve in 1-4 weeks, depending on their severity. However, Zimmer shockwave therapy, when employed over the nodules, causes resolution for my patients in 1-4 treatments using 120mJ/60Hz for 2000 pulses, taking approximately 5 minutes per area. The nodules become less sore immediately post treatment and can noticeably decrease in size by varying amounts. For 1-2cm nodules, one treatment may be enough for resolution and patients may typically resume Vanquish treatments by the following week. If nodules are larger in size, more treatments may be needed weekly or bi-weekly until the nodules are either completely resolved, or small enough that they are now non-inflammatory and pose no discomfort for the patient.

My success using ZWave for post-lipolysis nodules led me to determine if RSWT could assist with the side-effects we practitioners can sometimes face after injecting hyaluronic acid fillers known as post-inflammatory or post-non-inflammatory granulomatous nodules.

unknown causes. Standard of care for treating these types of post-filler nodules varies and can include the use of antibiotics and/or oral or injectable corticosteroids and hyaluronidase injections to degrade the filler. These treatments can be successful, but the cost of these treatments can be high for the patient or, more often, for the practitioner who wants to help their patients without additional charges. Though patients are upset about the unexpected side effect happening to them, they are usually more upset at having to melt the filler they paid for and otherwise liked.

In my experience with 3 such patients, 2 of my own and 1 referred to me, infection was not suspected. Patients



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did not present with fever or other signs of infection, and the nodules were localized to palpation. In all cases, the nodules presented 4-6 months post filler treatment, well after acute infection would be expected. One patient went to her primary care doctor for treatment prior to returning to my office and her biopsy report showed “sterile, multinucleated giant cells” which was further evidence that infection was not a high concern. Both patients had been treated with HA fillers in nasolabial folds and/or circumorally.

Considering the lack of any evidence of infection and my success treating inflammatory nodules post Vanquish lipolysis, I decided to try using my Z Wave RSWT device on the face for my first patient (Case 1), at low, comfortable settings, to break up what I hypothesized were tight cell bonds or clumped macrophages. Case 1 presented 3 months post Volbella™ (Allergan) HA filler injections with 5 circumoral nodules in her right and left oral commissures and upper lip. The patient reported that the nodules felt “hot and tight under the skin.”

“Immediately post-treatment, the patient reported that she could feel that the nodules were “less tight” and were “less uncomfortable.”

The patient was afebrile and had no systemic signs of infection. Treatment settings with Zimmer were 80mJ/10Hz x 2500 pulses. In order to protect the patient’s teeth (since nodules were circumoral) the patient covered her teeth with her tongue and in areas close to the lip, I pulled the patient’s lip away from the teeth by gripping the lip with two gloved

fingers. Immediately post-treatment, the patient reported that she could feel that the nodules were “less tight” and were “less uncomfortable.” I felt that they were also smaller and softer post-treatment, though difficult to measure. With such a positive outcome, the patient and I decided to treat daily with Z Wave at these low settings (80mJ/10Hz x 2500 pulses) and to delay the use of hyaluronidase or oral or injectable steroids. Case 1 received 4 total treatments within 2 weeks, and her nodules were completely resolved after Treatment 4. The patient was very happy, and as her provider, this was the best possible outcome one could hope for.

After the success of Case 1, I have been able to achieve similar outcomes for other patients using the Zimmer Z Wave. Treatment settings ranged from 80mJ/10Hz x 2500 pulses and for one, more sensitive patient at 60mJ/6Hz x 2500 pulses. In two cases, a small amount of hyaluronidase or sterile water was injected in persistent nodules, not to completely melt out their filler, but to use it as an agent to further help break up the nodules. In all cases, no antibiotics or steroids were necessary to achieve resolution. One of the patients lived far enough away that we had to treat weekly or bi-weekly, for 4 total treatments. Z Wave has most certainly expedited recovery for my happy patients.

Studies show that if left untreated, non-infectious nodules will resolve on their own in 4-6 months, as was the case for one of my patients who lived out of state and we were unable to treat with Z Wave. As providers we should always use best practice with strict aseptic technique to avoid complications such as post-inflammatory nodules. Standard of care now includes the use of hypochlorous acid as an antiseptic before, during and after the placement of dermal fillers. However, should an unforeseen complication with post-inflammatory nodules occur, Z Wave has proved a safe and useful treatment option.

It is important to note that this technique should only be employed on nodules that have been ruled out as potential biofilm infection.

FOR FURTHER READING

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