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Acoustic Shockwave Device Improves Plastic Surgery Outcomes

The *Z Wave* device (Zimmer MedizinSystems, Irvine, Calif.) provides a safe, effective treatment following a wide range of aesthetic treatments, including plastic surgery. It uses high-energy acoustic sound waves that spread radially beneath the skin's surface, treating soft tissue irregularities that may occur after breast reductions, abdominoplasties, brachioplasties, liposuction, and other body contouring procedures. The body responds to the acoustic waves with enhanced metabolic activity, including lymphatic drainage and increased blood flow. The device also decreases swelling and speeds up lymphatic drainage for reduced patient pain, faster recovery, and improved outcomes.

“*Z Wave* is an essential part of my practice for addressing untreated small, localized fat collections,” said Gordon Sasaki, M.D., F.A.C.S., a plastic surgeon in Pasadena, Calif., and a Clinical Professor of Plastic Surgery at Loma Linda (Calif.) University Medical School. “These irregularities represent not only fatty nodular collections and/or fibrotic masses but also excessive collagen formation leading to soft tissue fibromatosis or thickened capsular contractures around breast implants.”

The device's high-energy radial pulses generate via an electromagnetic propelled projectile in the device's handpiece. It is believed that the impact of repetitive mechanical energy on tissue leads to the release of biochemical reactions which are not clearly established, nor its mechanisms of action understood.



Gordon Sasaki, M.D., F.A.C.S



Jon Ver Halen, M.D., F.A.C.S.

Published studies report that acoustic shockwave therapy reduces levels of plasma malondialdehyde, a biomarker of oxidative stress¹, induction of formation of neo-collagen and elastin², induction of lipolysis and apoptosis of adipose cells³, and stimulation of lymphatic drainage and microcirculation⁴.

Z Wave is also a valuable adjunct to cellulite treatment, stated Jon Ver Halen, M.D., F.A.C.S., a plastic surgeon in Southlake, Texas. “We used *Z Wave* in combination with Cellfina cellulite treatments, which is minimally invasive and uses subcision, and saw good results. Later, we added *Z Wave* to virtually all our liposuction procedures. Patients come in for four post-operative *Z Wave* treatments spaced two weeks apart. It’s helped a lot with maximizing outcomes, and they might get as much as an additional 10% fat loss. Also, those

patients get a lot of subnormal deep tissue fibrosis, and we do everything we can to minimize that subcutaneous scarring. *Z Wave* helps with that, too, as well as dealing with post-operative edema. We’ve also started using it routinely with our post-augmentation patients, just to minimize capsular contracture.”

Added Dr. Sasaki, “In a few selected breast augmentation patients, I offer *Z Wave* to cautiously manage early onset of capsular contracture three months after surgery.”

“*Z Wave* is very versatile and applies to almost any kind of recovery process,” stated Suresh Koneru, M.D., a plastic surgeon in San Antonio, Texas. “Originally, I started using *Z Wave* following CoolSculpting treatments in place of manual massage, because it provided consistent results. From there, I use it whenever there is inflammation. Currently, I’m using it post-operatively for liposuction procedures, abdominoplasties, capsular contracture, and for face and neck liposuction. With it, we’re able to get the swelling down faster, and that also helps with revascularization. We can get blood flow to increase in the areas of need and get people recovered faster.”

The device’s wide range of energy settings provides exceptional flexibility during treatments, added Dr. Koneru. “For example, liposuction patients are pretty sore following surgery, and I like to bring them in for *Z Wave* sessions within the two weeks of post-op. The nurses can turn up the energy if they need to, but they’re usually dialing it down to a level that the patients can tolerate. After the first week or two, they tolerate the higher energy levels a lot better.”



Suresh Koneru, M.D.

Patients appreciate *Z Wave* treatments because they can see an immediate correction and reduction of swelling, he added. “Our surgical packages come with five *Z Wave* treatments, but it’s not unusual to provide an extra set of treatments because of the reduced swelling. Overall, it’s been a happy journey of discovery to find out how I might use it next, and for what procedures.”

The preset treatment parameters (120mJ, 16Hz, and 3,000 pulses) developed for *Z Wave* cellulite treatments are considered “gold-standard” guidelines for most areas of the body, noted Dr. Sasaki. “In most cases, 120mJ of energy is distributed between 3 to 5 minutes across a 6-by-9-inch zone, which is no larger than a half sheet of paper. A total treatment area of the abdomen or thigh may typically involve 2 to 3

zones. However, my current protocols to manage resistant areas of nodules or fibroses deliver more energy, up to 185mJ, requiring a slower frequency rep rate of 10Hz. A flexible approach in varying energy and frequency settings allows for an adaptive, safe, and comfortable application to meet the particular conditions in the target site.”

Many plastic surgeons also employ *Z Wave* in their minimally and non-invasive treatments. A popular combination pairs *Z Wave* with cryolipolysis procedures, notably the popular CoolSculpting fat reduction device, in which *Z Wave* replaces manual post-treatment massage. As noted by Dr. Sasaki, “As a treatment protocol, I incorporate *Z Wave* immediately after cryolipolysis for localized body fat collections, and weekly for up to three weeks to smooth out irregularities and increase apoptotic fat loss for long-term effects,”^{5,6}

As related by Dr. Koneru, *Z Wave* is an extremely versatile addition to his aesthetic toolkit. “*Z Wave* brings value to the practice in other ways, too,” he said. “For a plastic surgeon, one important advantage is that it is a relatively low-cost piece of equipment compared to most energy-based devices we purchase, and you can use it for so many applications and get effective results.”

Dr. Sasaki agreed. “The *Z Wave* technique represents a safe, non-invasive method to address soft tissue concerns that range from cellulite to reactive subdermal nodules and scar formation at the site of a healing wound. Further investigations are necessary in order to understand the mechanisms of action and their interactions with skin, adipose

tissue, scaffolding and fascial networks.”

“We’ve been thrilled with the device,” expressed Dr. Ver Halen. “And we are only scratching the surface of what it can do. I believe there are applications for Z Wave that we haven’t discovered yet, especially in areas of pain management and regenerative medicine, for example. It’s really nice to have a device that exceeds your expectations.”

References:

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