

A Comparison of Facial Revitalization Experience with Novel Potenza™ Radiofrequency Microneedling Customization: Bipolar vs. Monopolar Mode

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Dr. Robert D. Murgia III, DO, FAAD actively participate in a multitude of clinical studies, authors numerous peer-reviewed journal publications in both medical and cosmetic dermatology, and presents at conferences both nationally and internationally. He is a fellowship-trained cosmetic dermatologic surgeon and board-certified dermatologist, who practices adult and pediatric dermatology. Following medical school, he received multiple prestigious advanced clinical trainings, to include an American Society for Dermatologic Surgery Cosmetic Dermatologic Surgery Fellowship at Maryland Dermatology, Laser, Skin, and Vein under the mentorship of Robert Weiss, MD, a world-renowned leader in the field. During his fellowship, he received advanced training in laser and energy-based devices for skin rejuvenation, non-invasive body contouring, and varicose vein treatments.

AN INTRODUCTION TO KEY INDUSTRY NEEDS

The 2019 annual survey conducted by the American Society of Dermatologic Surgery revealed that upwards of 70% of surveyed participants considered a cosmetic procedure;¹ this represents a remarkable increasing trend, up from 2015 when only 50% of patients expressed interest in cosmetic procedures.² Fueled by a general desire to avoid traditional surgical procedures, radiofrequency (RF) technology continues to see a rapid expansion of indications (due to growing demand for non-invasive techniques with little to no downtime).³ As further evidence, nearly 16 million of the approximate 17.7 million total cosmetic procedures performed in the United States in 2018 represented minimally-invasive cosmetic procedures.⁴ According to the 2018 annual survey conducted by the American Society of Dermatologic Surgery Skin, tightening and wrinkle smoothing treatments, using non-invasive techniques such as ultrasound, laser, light, or radiofrequency, represented nearly 60% of cosmetic procedures in 2018.³

Collectively, research supports the continued use of innovative non-invasive cosmetic devices to address industry and patient needs.¹⁻¹³ The development of microneedle arrays for targeted delivery of energy, to precise depths of skin, limits injury to surrounding tissue, and also improves the ability to address many common aesthetic concerns.⁵⁻¹³ The mechanisms behind improved skin remodeling include induction of cytokines and growth factors (that stimulate collagen and elastin).⁵⁻¹⁰

INNOVATION IN RADIOFREQUENCY MICRONEEDLING TECHNOLOGY WITH POTENZA™

As a leader in the next generation of fractional RF microneedling devices, Potenza™ (Cynosure, LLC, Westford, MA) represents a unique advancement in RF technology. As the world's first RF microneedling system that combines monopolar and bipolar RF at 1 or 2 MHz frequencies, this 4-mode device permits both superficial and deeper treatments in 1 system.¹¹⁻¹³

Partnering with the body's natural healing processes, the technology is designed to stimulate collagen and elastin.⁵ With the ability to deliver energy/heat deep into the dermis, the resulting micro-injury also enhances skin-tightening (through soft-tissue coagulation).⁵ It is indicated for use in dermatological and general surgical procedures for electrocoagulation and hemostasis. The only technology to offer these multiple options, Potenza provides customizable treatments with either bipolar RF or monopolar RF that can be delivered at 1 MHz or 2 MHz frequencies.

EXAMPLE OF POTENZA TREATMENT FOR SKIN TIGHTENING*



Pre Treatment 1



Pre Treatment 2



Pre Treatment 3



1 Month Post Treatment 5

In addition, the Potenza device offers customizable handpieces and tips to best fit specific conditions. The device's two handpieces accommodate multi-needle or single-needle tips. Nine different types of tips provide a high level of precision, tailored to patients' unique needs. Innovations include the semi-insulated tips, insulated tips, the new uniquely insulated Tiger Tip™ technology, and single-unit tips with multiple depths. Options for multi-needle arrays include densities of 16, 25, and 49 (available in insulated or semi-insulated varieties), to deliver energy to precise areas.

COMPARING THE UNIQUE POTENTIAL OF RADIOFREQUENCY MODES

The Potenza customizable RF modes expand the energy delivery options in a convenient and easy-to-use interface. The bipolar mode is a more superficial delivery of energy, as the RF passes from positive (+) pole to negative (-) pole on the needle tips.^{5, 11-13} During this process, heat-delivery is more concentrated in the target area and can be uncomfortable when used in the upper dermis of the facial tissue (but deliver desired results, see study below). Therefore, bipolar mode is characterized as accurate targeting that is ideal for the mid-dermis to deep-dermis; it is suitable for skin tightening through soft-tissue coagulation mechanisms.^{5-6, 11-13}

In contrast, the monopolar mode allows energy to travel from the source (tip) to a grounding NEM pad to create a deeper, wider, treatment area (from a more diffuse pattern of heat distribution)^{5-6, 11-13} This mode is versatile, targeting the superficial to deep-dermis for revitalization and skin tightening (through soft-tissue coagulation and denaturation) with shorter downtime and less pain.¹¹⁻¹³

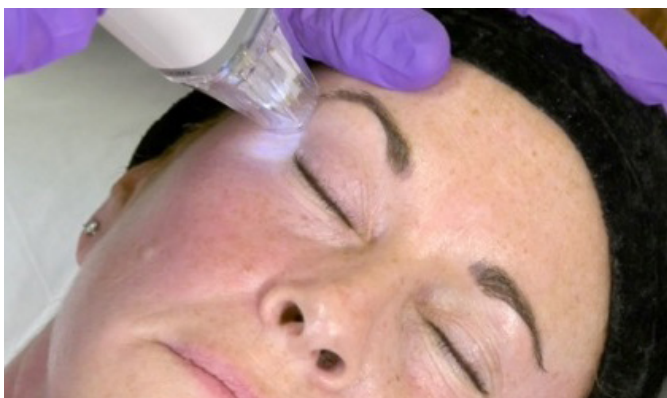
EXAMINING THE MULTI-MODE ACTIONS IN PATIENT EXPERIENCE

In a study to compare the efficacy and overall patient experience between monopolar and bipolar modes using the novel four-mode RF microneedling device Potenza, a total of 5 participants were treated with both monopolar and bipolar settings using a full split-faced approach. Using standardized conditions and digital clinical photography, participant images were taken at baseline and multiple post-treatment increments (immediately, 15 minutes, 30 minutes, and 24 hours post-treatment).

Irrespective of energy mode (monopolar versus bipolar), settings and treatments were consistent for both treatment sides. Topical anesthetic was applied to treatment areas prior to each procedure. Using an insulated 25 needle tip at a depth of 2mm and impact factor of 5/7, an 800 mJ/pulse was delivered over a pulse duration of 40 ms with 20 W of power.

Treatments were well tolerated by all participants, with minimal downtime. Participants were asked to report their pain score (0-10) for each side of their facial treatment, and reported a median pain score of just 3/10 and 4/10 (for monopolar and bipolar modes respectively).





to the monopolar treated side. Side-effects subsided quickly. Monopolar treatments were preferred by the majority of participants. However, patients reported healthier, smoother, firmer (through soft tissue coagulation), and more youthful looking skin with improved texture with both modalities.

CLINICIAN AND PATIENT EXPERIENCE

Delivery of either monopolar or bipolar energy, using the novel four-mode RF microneedling device Potenza provides effective treatment for facial revitalization and customization of patient experience. Although participants in this study preferred monopolar treatments, both methods were well-tolerated. The innovative, multi-functional device Potenza addresses individual patient needs through highly customizable technology, where single-modality devices are less versatile.

Following each treatment, participants also reported on their adverse event profile. Participants reported that the bipolar treated side felt more swollen, red and sensitive compared

REFERENCES

1. American Society for Dermatologic Surgery. 2019 ASDS Consumer Survey on Cosmetic Dermatologic Procedures. <https://www.asds.net/medical-professionals/practice-resources/asds-consumer-survey-on-cosmetic-dermatologic-procedures>. Published July 21, 2019. Accessed April 1, 2021
2. American Society for Dermatologic Surgery. 2015 ASDS Consumer Survey on Cosmetic Dermatologic Procedures. <https://www.asds.net/Portals/0/PDF/consumer-survey-2015-infographic.pdf>. Published 2015. Accessed April 1, 2021.
3. American Society for Dermatologic Surgery. 2018 ASDS Consumer Survey on Cosmetic Dermatologic Procedures. <https://www.asds.net/Portals/0/PDF/consumer-survey-2018-infographic.pdf>. Published 2018. Accessed April 1, 2021
4. ASPS. 2018 National Plastic Surgery Statistics. [Plasticsurgery.org. https://www.plasticsurgery.org/documents/News/Statistics/2018/plastic-surgery-statistics-report-2018.pdf](https://www.plasticsurgery.org/documents/News/Statistics/2018/plastic-surgery-statistics-report-2018.pdf). Published 2019. Accessed April 1, 2021.
5. Weiner SF. Radiofrequency Microneedling: Overview of Technology, Advantages, Differences in Devices, Studies, and Indications. *Facial Plast Surg Clin North Am*. 2019 Aug;27(3):291-303. doi: 10.1016/j.fsc.2019.03.002. Epub 2019 May 22. PMID: 31280844.
6. Alessa D, Bloom JD. Microneedling Options for Skin Rejuvenation, Including Non-temperature-controlled Fractional Microneedle Radiofrequency Treatments. *Facial Plast Surg Clin North Am*. 2020 Feb;28(1):1-7. doi: 10.1016/j.fsc.2019.09.001. PMID: 31779933.
7. Shin JW, Park JT, Chae JB, et al. The efficacy of micro-insulated needle radiofrequency system for the treatment of lower eyelid fat bulging. *J Dtsch Dermatol*. 2018. DOI: 10.1111/ddg.13736.
8. Kim ST, Lee KH, Sim HJ, Suh KS, Jang MS. Treatment of acne vulgaris with fractional radiofrequency microneedling. *J Dermatol*. 2014 Jul;41(7):586-91. doi: 10.1111/1346-8138.12471. Epub 2014 May 8. PMID: 24807263.
9. Min S, Park SY, Yoon JY, Suh DH. Comparison of fractional microneedling radiofrequency and bipolar radiofrequency on acne and acne scar and investigation of mechanism: comparative randomized controlled clinical trial. *Arch Dermatol Res*. 2015;307(10):897-904. doi:10.1007/s00403-015-1601-z
10. Clementoni MT, Munavalli GS. Fractional high intensity focused radiofrequency in the treatment of mild to Moderate laxity of the lower face and neck: A pilot study. *Lasers Surg Med*. 2016;48(5):461-470. doi:10.1002/lsm.22499
11. Perez-Rivera F. Pilot study for permanent resolution of axillary hyperhidrosis: elimination of sweat glands with intradermal microneedle radiofrequency. *European Journal of Plastic Surgery*. 2019;42(2):161-168. doi:10.1007/s00238-018-1470-8
12. Jeon H, Geronemus RG. Successful Noninvasive Treatment of Fostoons. *Plast Reconstr Surg*. 2018;141(6):977e-978e. doi:10.1097/PRS.0000000000004400
13. Zheng Z, Goo B, Kim DY, Kang JS, Cho SB. Histometric analysis of skin-radiofrequency interaction using a fractionated microneedle delivery system. *Dermatol Surg*. 2014;40(2):134-141. doi:10.1111/dsu.12411

* Through soft tissue coagulation.

The Potenza radiofrequency microneedling device is intended for electrocoagulation and hemostasis of soft tissue for dermatologic conditions. Potential side effects include temporary redness, temporary tingling, and burning sensation while receiving treatment. Like all medical procedures, not all patients are suitable for the treatment. Talk to your medical provider about the risks and benefits of this procedure. A qualified practitioner is solely responsible for evaluating each subject's suitability to undergo treatment and for informing those being treated about any risks involved with the treatment, pre-and postoperative care, and any other relevant information. Individual results may vary and are not guaranteed.

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