

© Lasers Med Sci. 2015 Dec;30(9):2251-8.

Coagulation and ablation patterns of high-intensity focused ultrasound on a tissue-mimicking phantom and cadaveric skin

Hee-Jin Kim ¹, Han Gu Kim ², Zhenlong Zheng ^{3,4}, Hyoun Jun Park ⁵, Jeung Hyun Yoon ⁶, Wook Oh ⁷, Cheol Woo Lee ⁸, Sung Bin Cho ^{9,10}

1 Division of Anatomy and Developmental Biology, Department of Oral Biology, Human Identification Research Center, Yonsei University College of Dentistry, Seoul, Korea.

2 Baekseol Gonju Clinic, Seoul, Korea.

3 Department of Dermatology and Cutaneous Biology Research Institute, Yonsei University College of Medicine, Seoul, Korea.

4 Department of Dermatology, Yanbian University Hospital, Yanji, China.

5 Maylin Clinic, Seoul, Korea.

6 Yonseifams Clinic, Seoul, Korea.

7 Samsung Feel Clinic, Seoul, Korea.

8 WITH ME Clinic, Incheon, Korea.

9 Department of Dermatology and Cutaneous Biology Research Institute, Yonsei University College of Medicine, Seoul, Korea.

10 Kangskin Dermatology Clinic, Seoul, Korea

High-intensity focused ultrasound (HIFU) can be applied noninvasively to create focused zones of tissue coagulation on various skin layers. We performed a comparative study of HIFU, evaluating patterns of focused tissue coagulation and ablation upon application thereof. A tissue-mimicking (TM) phantom was prepared with bovine serum albumin and polyacrylamide hydrogel to evaluate the geometric patterns of HIFU-induced thermal injury zones (TIZs) for five different HIFU devices. Additionally, for each device, we investigated histologic patterns of HIFU-induced coagulation and ablation in serial sections of cadaveric skin of the face and neck. All HIFU devices generated remarkable TIZs in the TM phantom, with different geometric values of coagulation for each device.

Most of the TIZs seemed to be separated into two or more tiny parts. In cadaveric skin, characteristic patterns of HIFU-induced ablation and coagulation were noted along the mid to lower dermis at the focal penetration depth of 3 mm and along subcutaneous fat to the superficial musculoaponeurotic system or the platysma muscle of the neck at 4.5 mm. Additionally, remarkable pre-focal areas of tissue coagulation were observed in the upper and mid dermis at the focal penetration depth of 3 mm and mid to lower dermis at 4.5 mm. For five HIFU devices, we outlined various patterns of HIFU-induced TIZ formation along pre-focal, focal, and post-focal areas of TM phantom and cadaveric skin of the face and neck.

*Source : Coagulation and ablation patterns of high-intensity focused ultrasound on a tissue-mimicking phantom and cadaveric skin | SpringerLink [VIEW ►](#)

© Jeisys

Clinical Analysis on ULTRAcel Q+ Linear

Dr. Rasool Shaik Mohamed

Radiant Clinique, Malaysia



Background : In Malaysian aesthetic market, non-surgical lifting and tightening procedure has been one of the most sought after form of treatment. In the past, radiofrequency, ultrasound and infrared light based devices have been very popular owing to their skin tightening effect. However, the need for multiple sessions to achieve the desired effect usually becomes a limitation to both doctors and patients. The introduction of High Intensity Focus Ultrasound (HIFU) for skin tightening could help achieve better clinical results because they act by heating targeted tissues at various depths which results in stronger tissue remodeling and produce longer lasting results in lesser number of sessions.

Introduction : Previously, High Intensity Focused Ultrasound (HIFU) has already been established as a tool for the treatment of solid benign and malignant tumors for many systemic disorders for decades.

In recent years, HIFU was explored in the cosmetic industry as a new treatment modality for skin tightening and lifting. It is an acoustic energy, known to propagate much deeper through tissue than laser or RF energy. Although HIFU was used for lifting and tightening purposes, many have also experienced skin brightening and fat reduction. Thus, ULTRAcel Q+ Linear has been introduced in which it is a HIFU-based device which uses linear technology to achieve skin brightening effect and fat reduction on top of the non-surgical lifting and tightening effect.

*Source : Q+_200218_b.indd (jeisysms.com) [VIEW ►](#)

© Jeisys

Clinical Analysis on the New HIFU Treatment

Dr. Je Hyuk Lee MD.

Dr. Bom Skin & Laser Clinic, Seoul, Korea



In the recent domestic aesthetic market, HIFU prevalence has been fully phenomenal. Various celebrities have received the HIFU lifting treatment and words have spread to the general consumers to seek it. The HIFU equipment, originally developed for lifting purposes, has led to emerging indications as more and more people began adopting it. Many people had experienced brightened skin tone and fat reduction with HIFU treatment. In order to maximize these effects, Jeisys Medical Inc. introduced an upgraded version of the ULTRAcel Q+, which is a HIFU-based device by adding a treatment with Linear function.

Linear function is a novel technology to HIFU that distinguishes itself from the conventional Dot function. It can be applied not only for lifting purpose but also for skin brightening and double chin reduction. The upgraded ULTRAcel Q+ includes new Linear 2.0 and Linear 4.5 cartridges in addition to the existing Q1.5, Q2.0, Q3.0, Q4.5, Q6.0, Q9.0, Q11.0, and Q13.0. Moreover, treatment duration has been shortened in the new version and takes about 3 minutes to perform 300 shots.

The aim of this report is to demonstrate the clinical effect of skin brightening and fat reduction of the Linear function of the ULTRAcel Q+.

*Source : Q+_article_190310.indd (jeisysms.com) [VIEW ►](#)

© Jeisys

ULTRAcel Q+ : Theoretical evidence and clinical application of newly developed linear cartridges

Dr. Nark-Kyoung Rho. MD.

Leaders Clinic Chung Dam, Seoul, Korea

Recently developed HIFU device, ULTRAcel Q+ (Jeisys Medical, Korea) has continuous scanning transducer, and thermal damage of tissue can be controlled by modifying scanning speed. (Manufacturer uses 'Dot transducer' for sequential discrete scanning transducer, and 'Linear transducer' for continuous scanning transducer. So those names will be used in this article.)

There are 2 types of linear transducer depending on treatment depth: 4.5mm and 2.0mm. Linear 4.5mm and 2.0mm transducer uses frequency of 4MHz and 7MHz, respectively. I use Linear transducer for non-invasive fat reduction at lower part of face and double chin. It is logical to use 4.5mm Linear transducer primarily for fat layer volume reduction considering thickness of superficial to fat layer at face and neck.

In addition, it is thought that using 2.0mm Linear transducer induces elasticity of skin. After reviewing medical records of 30 patients total (5 male, 25 female), age range was 22-89 (average 44.8) years old. Local fat deposition and saggy part of lower face and double chin was mainly treated. For 4.5mm Linear transducer, average energy used was 0.66J (0.5-0.8J), average number of lines was 328.1 (100-800). For 2.0mm Linear transducer, average energy used was 0.25J (0.2-0.4J), average number of lines was 370.8 (150-700). Total number of lines for both transducer was 523.9 average.

As results, there was clear improvement of sagging and face line of lower face with treatments of 3 sessions 4-6 week interval, compared to 1 or 2 sessions. It was seen that higher energy level with more numbers of lines, better the results. This trend was even clearer on patients with more fat. Yet TCP size is not correlated with intensity of energy, it is known that pain level is correlated with intensity of energy in conventional HIFU treatment. That is why 'low energy, multiple pass' protocol is used. It is realized that multipasses result in better results and satisfaction with ULTRAcel Q+ from experiences. Moreover, Linear transducer has fluence (energy/area) lower than that of Dot transducer, so pain is almost rare. Also, speed of scanning is so fast that it fits with trend of 'low energy, multiple passes'. From the experiences, higher energy is better than lower energy for fat destruction effect, and treatment with Linear 4.5mm transducer, higher than 0.8J, 400 lines creates some ache. And for Linear 2.0 mm transducer with 0.3-0.4J, some feeling of heat, erythema, or edema were found.

*Source : Q+_200219.indd (jeisysms.com)

[VIEW ►](#)

© Jeisys

The New Generation HIFU (ULTRAcel Q+) : Much Faster and More Effective

Dr. Lucas Chey

DC Cosmetic Enterprise Incorporated, Surrey, BC, Canada



Background

Since its introduction into the market, High Intensity Focused Ultrasound(HIFU) has now been globally recognized by most aesthetic practitioners as arguably the most effective non-surgical face lift methods available. Using HIFU thermal energy targeted in a specific depth helps to improve different clinical cases and it is most commonly used for lifting and tightening of different parts of the face and neck. Over the years, many improvements have been made to the HIFU technology to benefit not just clinical subjects but also aesthetic practitioners who deliver the treatment. However, remaining issues such as procedure time, treatment depth, treatment zone, and the cost of procedure have yet to be enhanced for more effectual delivery of HIFU treatment.

Recent upgrades to ULTRAcel

I have been doing HIFU treatments since 2010 and have used ULTRAcel for over 18 months until now. Recently, there have been some upgrades to the ULTRAcel that made my time with the patients extremely easier. ULTRAcel Q+ system, the upgraded version of ULTRAcel, would definitely be my choice in that it profusely decreases procedure time and more elaborate procedure with cost-effectiveness.

Future Visions

Jeisys has always been a pioneer in delivering good and reliable aesthetic equipment for aesthetic practitioners worldwide. I really appreciate the constant efforts in bringing us better equipment for both the patients and the practitioners. The aesthetic market is very competitive and even more so nowadays. I am really thrilled that I am able to provide the same effective HIFU treatment to my patients with better features. Although this is a recent upgrade, I am really noticing a more favorable feedback from my patients and the satisfaction rate has become even lighter.

*Source : Article_171106 (jeisysms.com)

[VIEW ►](#)

© Jeisys

“ULTRAcel Q+ - The Fastest and Finest Lifting Technique

Dr. Hyunjun Park

Maylin Clinic, Apgujeong branch, Seoul, Korea

ULTRAcel Q+ system is a newly designed high intensity ultrasound system based on Jeisys' technology that proved its effectiveness and stability through various existing clinical trials. With the latest HIFU lifting technique that can produce very effective results in a short time compared to existing HIFU equipment, it takes about eight minutes to perform the full lifting of the face. It enables patient use the lunch time (“lunch time lifting”), as it is the fastest and finest lifting technique that is optimized for busy modern people.

The ULTRAcel Q+ system procedure uses high intensity focused ultrasound (HIFU) to coagulate about 70 degrees of heat in a thin fascia layer called the Superficial Musculo-Aponeurotic System (SMAS), an important structure for skin lifting under the skin. It can also induce lifting through contraction of tissue and bring about skin tightening effect through skin regeneration by the collagen denaturation of dermal layer. This technique enables a deeper layer approach than the radiofrequency or laser lifting treatment reached only to the skin dermal layer, so you can simultaneously target the SMAS layer and the dermis layer, which are important structures of the face lifting. Furthermore, the lifting operation is performed without surgery, allowing its procedure to finish in a short time. During the procedure, a slight tingling may accompany, but it will disappear within 1 to 2 hours after the procedure.

Upon the experience of using ULTRAcel Q+ system, I found it is very convenient to use as the size of the cartridge bottom that touches skin is narrow for making it possible to perform a more delicate operation on the curved part with good grip of the handpiece button and its location.

ULTRAcel Q+ system is a customized procedure for upper, lower dermis, and SMAS layers of skin with various depth targeting, enabling skin texture improvement, tightening, pore treatment, lifting and fine lines improvement. In addition, ULTRAcel Q+ system can be combined with traditional programs to enhance patient satisfaction because it is easy to perform complex operations such as botulinum toxin or filler injection, thread, laser and radiofrequency procedures. This is “Wannabe” equipment that is essential for anti-aging clinic.

Since there are no special precautions after the procedure, there is no burden on the patient and the effect after the procedure lasts for up to one year, so that the effect can be seen not only immediately after the procedure but also continuously.

*Source : Testimonial_171106 (jeisysms.com)

[VIEW ►](#)

© Jeisys

A New HIFU for Body Tightening & Fat Reduction, ULTRAcel Q+

Dr. Lucas Chey

DC Cosmetic Enterprise Incorporated, Surrey, BC, Canada

In early 2010, as Ulthera was released for its 'eyebrow lifting' purpose, the interest in HIFU treatment has increased worldwide, and many manufacturers started to release HIFU equipment. In addition to an eyebrow lifting indication, this innovative aesthetic tool can also achieve significant clinical results in major augmentation, Jowl lifting, nasolabial fold reduction, periorbital wrinkle reduction, and overall skin tightening and rejuvenation in targeted areas.

ULTRAcel Q+, recently introduced by Jeisys Medical, is the latest HIFU treatment device that can produce very effective results in a short treatment session as a solution for skin tightening and fat reduction treatments in one system. The cartridges with 7MHz (Q1.5, Q3.0) and 4MHz (Q4.5) of ULTRAcel Q+ targets a thin fascia layer called SMAS (Superficial Musculo-Aponeurotic System) by coagulating and transferring heat of approximately 70°C, which make skin tightening effect as well as collagen denaturation and regeneration. This technique allows lifting procedure to be done comfortably in a short period of time, without surgery or anesthesia. The Q6.0 cartridge is effective in areas requiring fat reduction, such as double chin. QS2.0 cartridge is, so far, the smallest one among the products currently available on the market and can more precisely manipulate the front of the eye, the nose, and the curved area, which has been difficult to approach with the conventional cartridge.

The ULTRAcel Q+ also has a new cartridges for body using 2 MHz (Q9.0, Q11.0, Q13.0), which allows body fat reduction and tightening. 2MHz frequency is used as the appropriate option for reaching to the deep fat layer without damping because HIFU energy has to be transferred to the deeper fat layer unlike the face. ULTRAcel Q+ generates sufficient, gentle and safe energy output to destroy fat. In addition, since the cartridge can be used selectively depending on the fat thickness of the treatment site, it enables to perform the treatment within a relatively short period of time. At least 400 shots are required for the upper arm and it will require only 11 minutes for the entire procedure. Since it does not require anesthesia before treatment as is the case with liposuction, the patient can be treated without the burden. It can be the best equipment giving the effect of killing two birds with one stone which can reduce the fat and tighten the skin at the same time without any restriction of the treatment area in a short treatment time.

*Source : ULTRAcel Q+_article_180315.indd (jeisysms.com)

[VIEW ►](#)