

Why ULTRACel?

Combination Treatments

Lucas Chey, MD, Dermatologist
DC Cosmetic Enterprise Inc., CANADA



Reasons for ULTRACel

1. Multiplatform options
→ *One machine vs Three machines*
2. **Combination Treatment**
→ *HIFU + GFR*
→ *or HIFU + SRR*
→ *or HIFU + FRM + GFR*
→ *or other methods (?)*
3. Every patient is different
→ *Need customized approach*



Reason 1

Multiplatform options

→ *One machine vs. Three machines*

1. ULTRACel (HIFU)
2. INTRACel (FRM, SRR)
3. IntraGen (15X15, 7X7)



Three Machines in ULTRACel

1. ULTRACel (HIFU)
2. INTRACel (FRM, SRR)
3. IntraGen (15X15, 7X7)



The Concept of ULTRAcel™

*Treatment Combination as of
INTRAcel™ + IntraGen™ + HIFU*



6 MHz



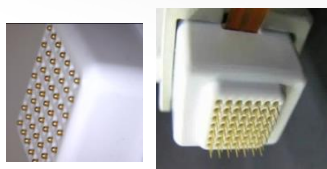
6 MHz



7 MHz

HIFU

▪ Invasive RF



▪ Non-invasive RF



▪ Non-invasive HIFU

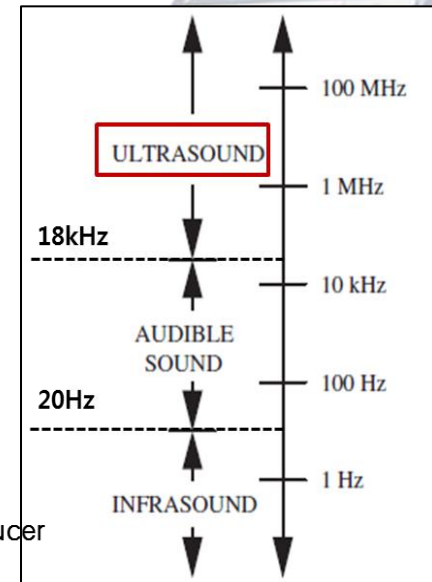
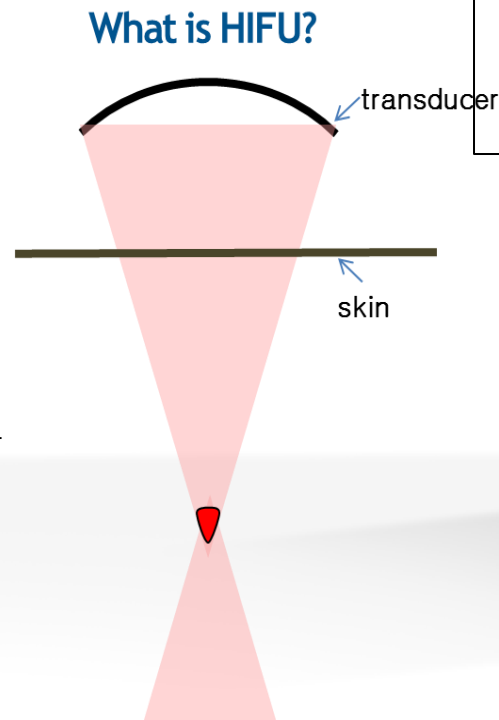


FUS (*HIFU:High Intensity
Focused US*)



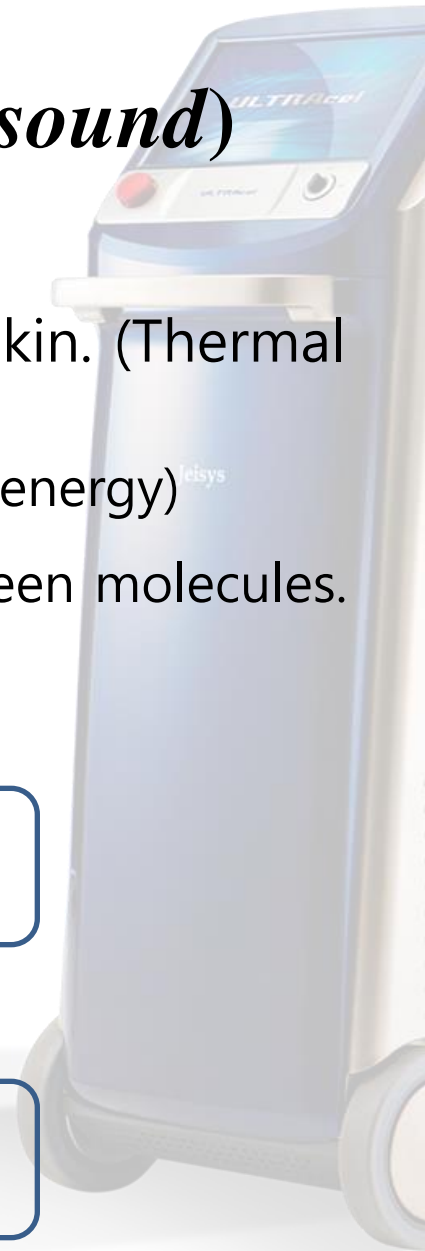
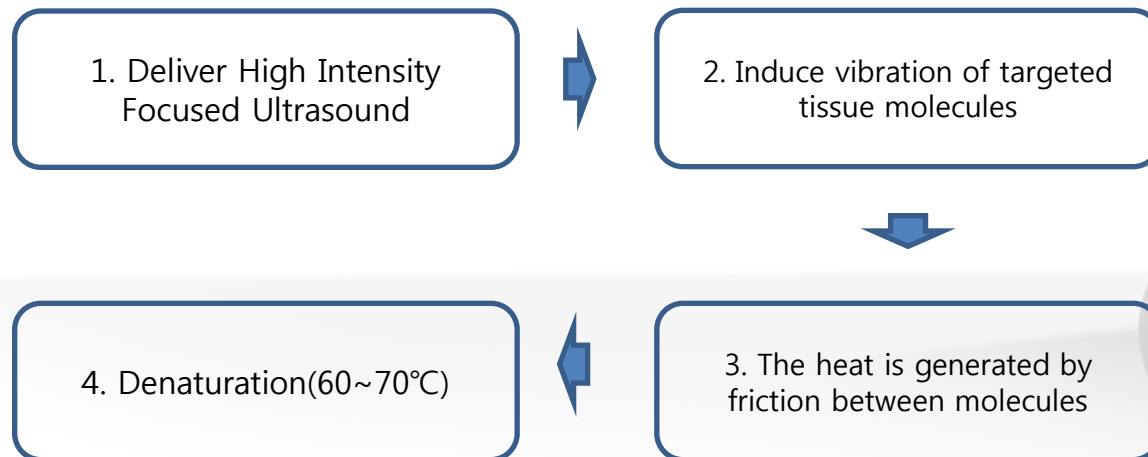
HIFU (*High Intensity Focused Ultrasound*)

- It is non-invasive treatment with thermal effect occurred by focal point(focus) which is made by ultrasounds generated from transducer into skin tissue. Liver cancer, Uterine cancer and breast cancer can be cured with HIFU technology.
- Feature of HIFU
 - Powerful energy to make coagulative necrosis
 - No damage to other area except for targeted area
 - Harmless once ultrasound passes through skin tissue
 - Non-surgical, Non-infection, Non-bleeding
 - Safe treatment without side effect



HIFU (*High Intensity Focused Ultrasound*)

- HIFU Thermal Effect
- HIFU energy is delivered into a targeted area of skin. (Thermal effect)
 - Ultrasound vibrates tissue. (Absorption of acoustic energy)
 - Absorb Mechanical energy and make friction between molecules.
 - Secondary generation of heat

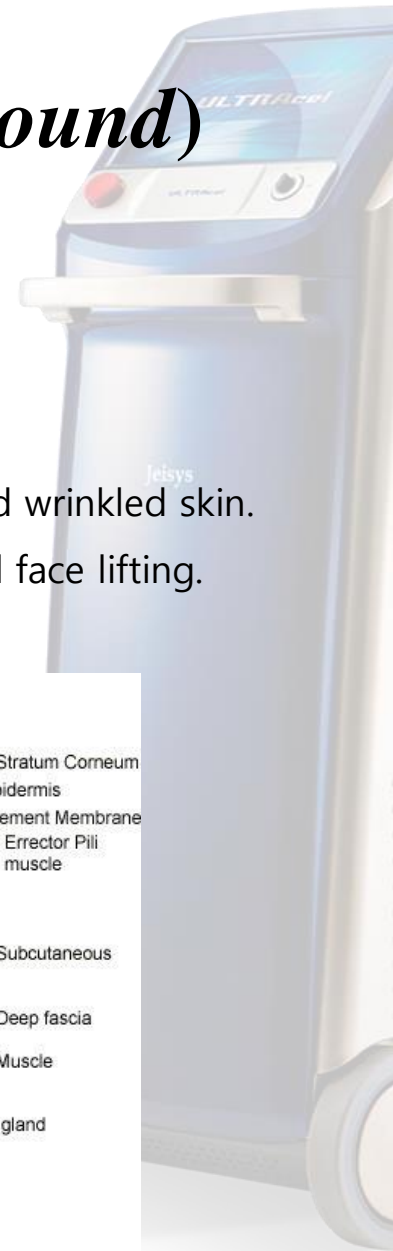
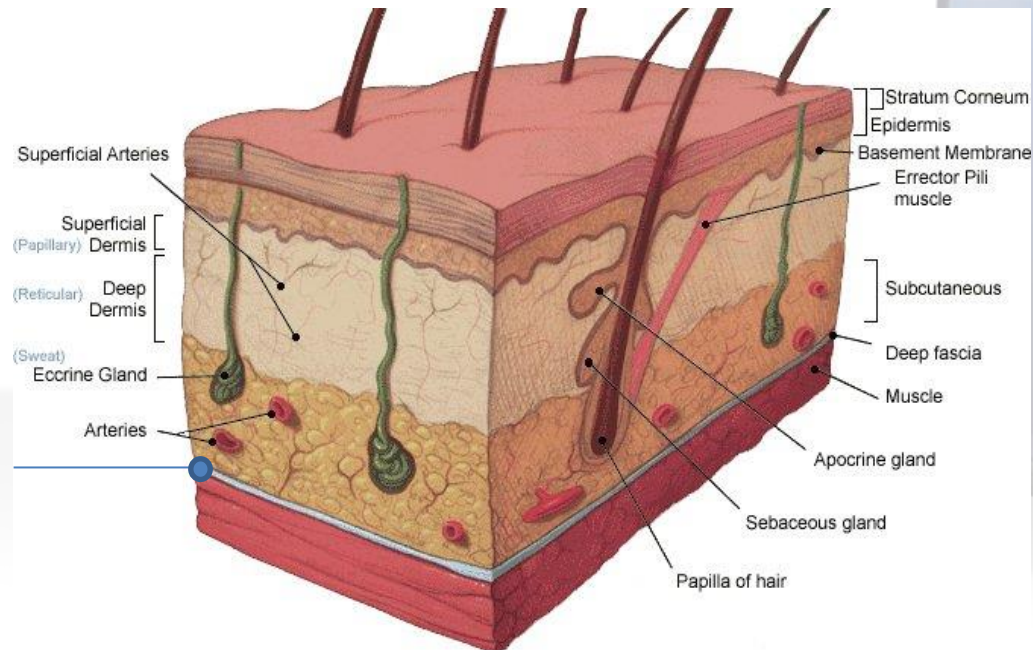


HIFU (*High Intensity Focused Ultrasound*)

● Target of FUS

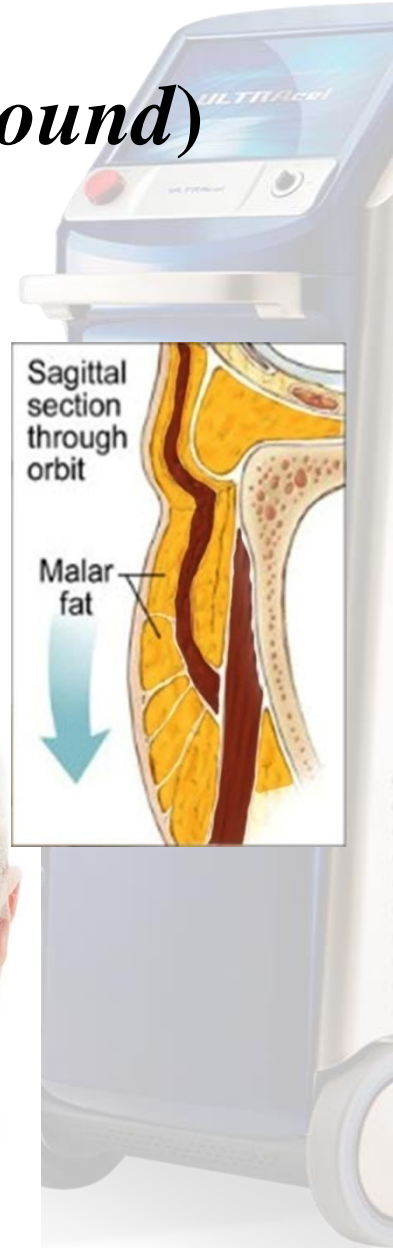
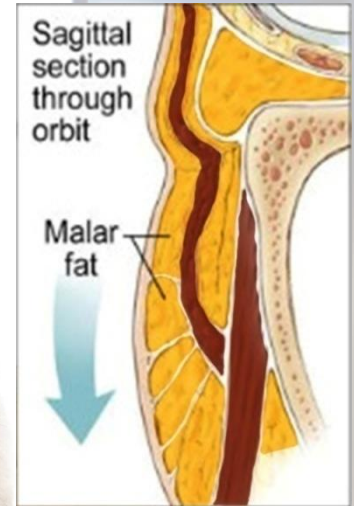
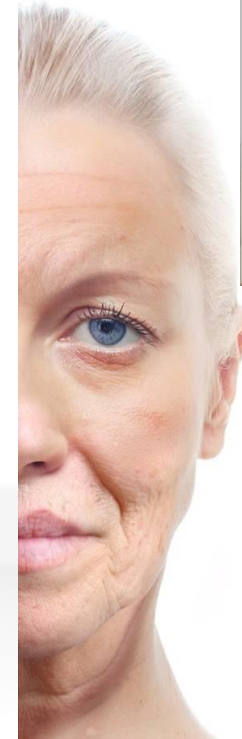
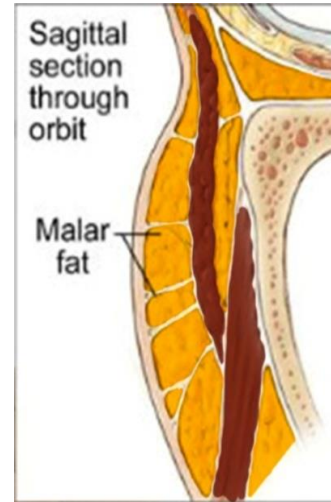
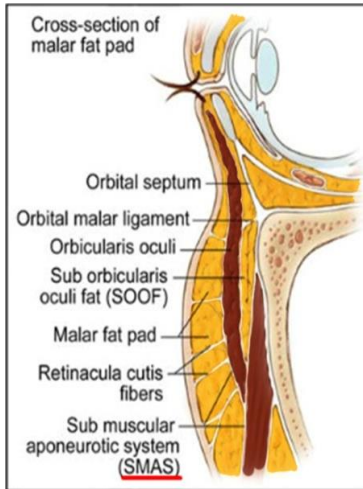
- Dermis to connective tissue in Fat layer (3.0 mm)
- SMAS (Superficial Musculo Aponeurotic System) (4.5 mm)
- ✓ It ranges from under subcutaneous to surface of muscle layer.
- ✓ It is also called muscle layer of facial expression and is related with loosened and wrinkled skin.
- ✓ It is located at a depth of 4.5mm in skin and is targeted for Botulinum Toxin and face lifting.

SMAS

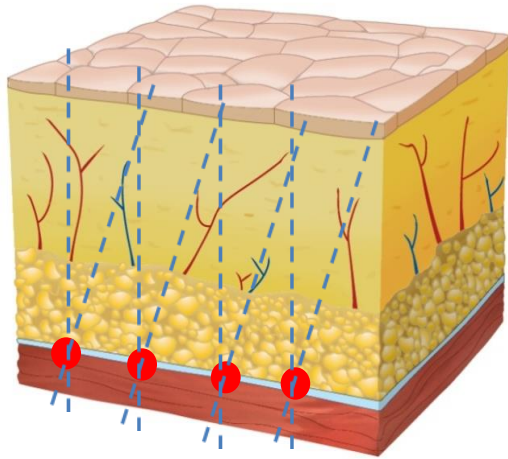


HIFU (*High Intensity Focused Ultrasound*)

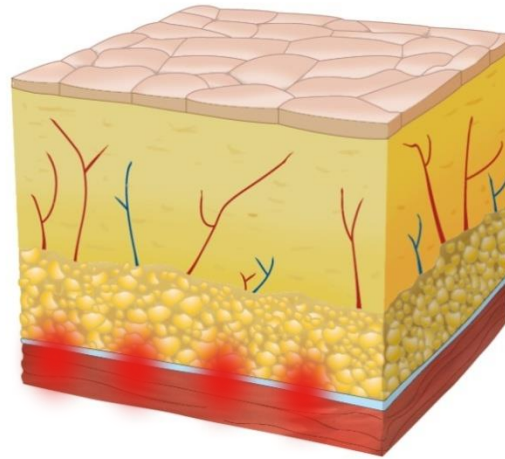
Target of ULTRAcel FUS- SMAS



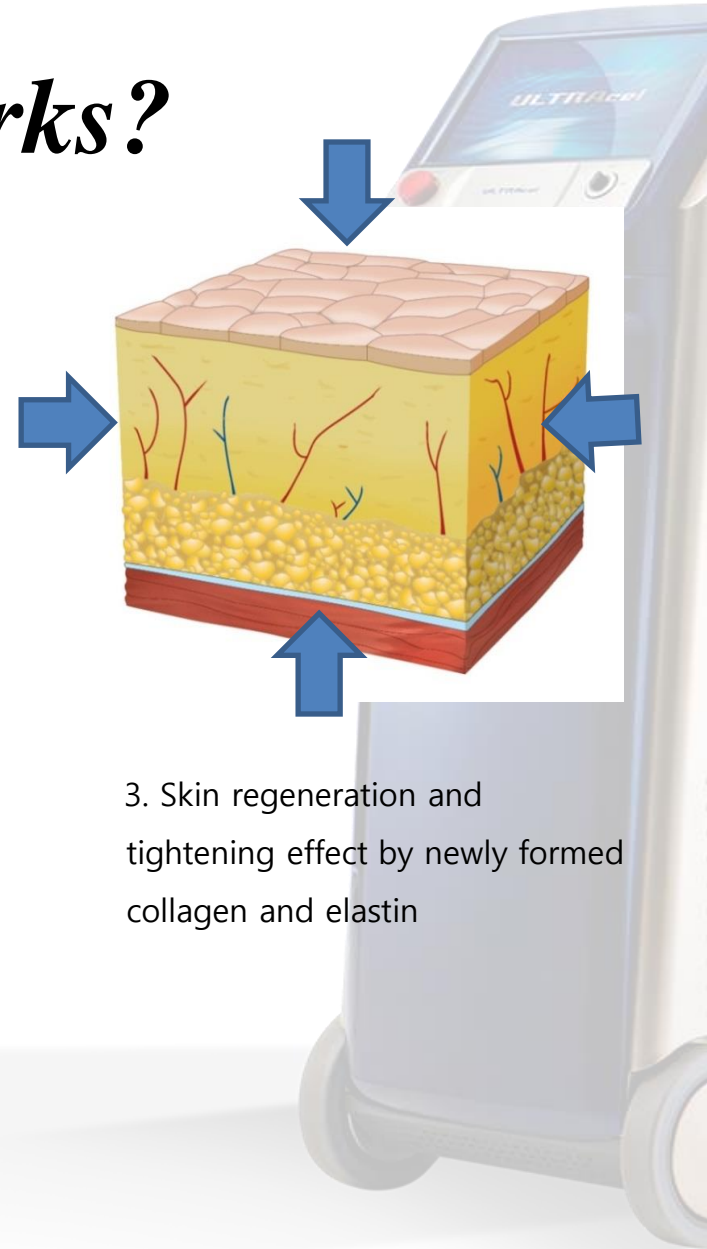
How HIFU works?



1. The HIFU (High Intensity Focused Ultrasound) is irradiated fractionally at a depth of 3.0 or 4.5mm.



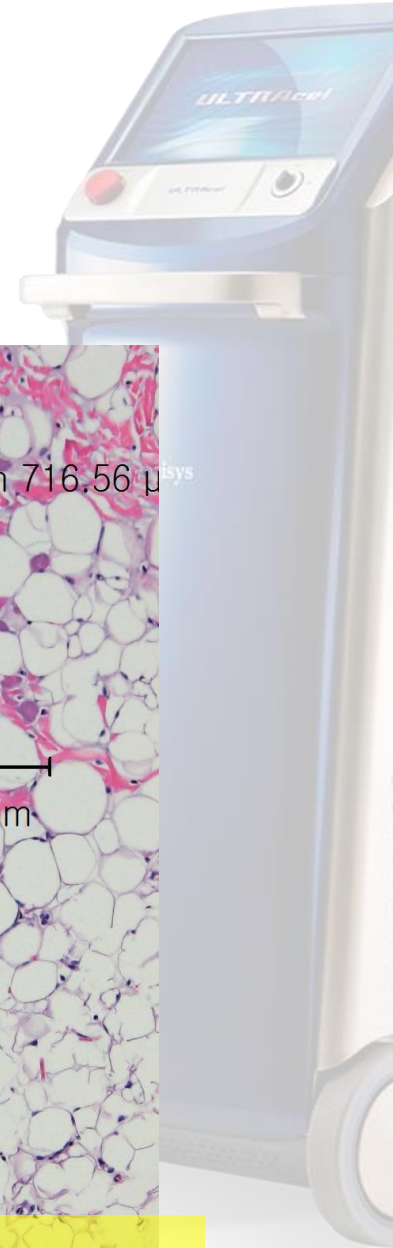
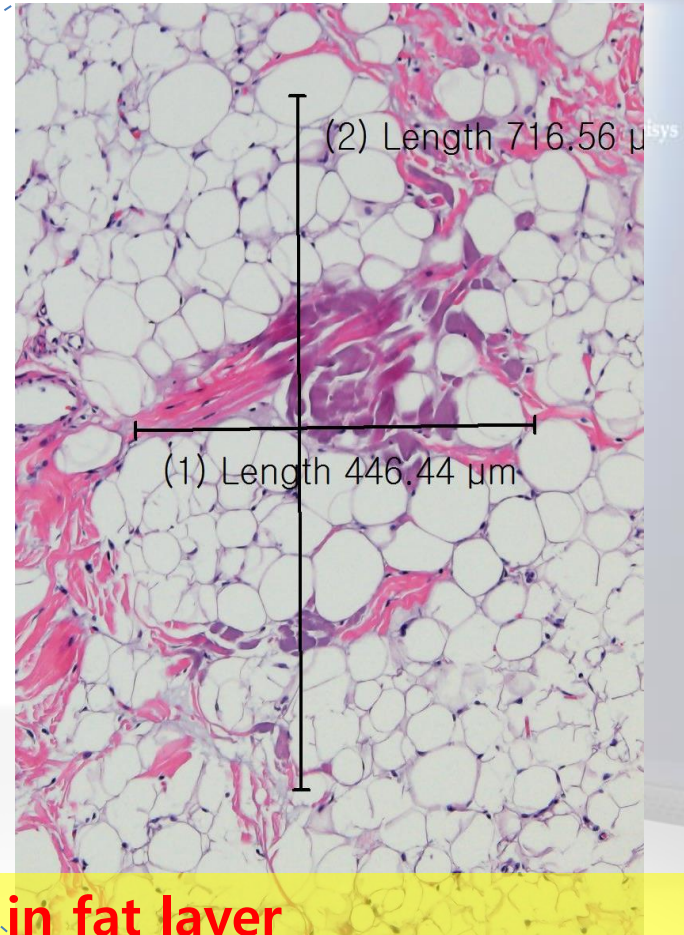
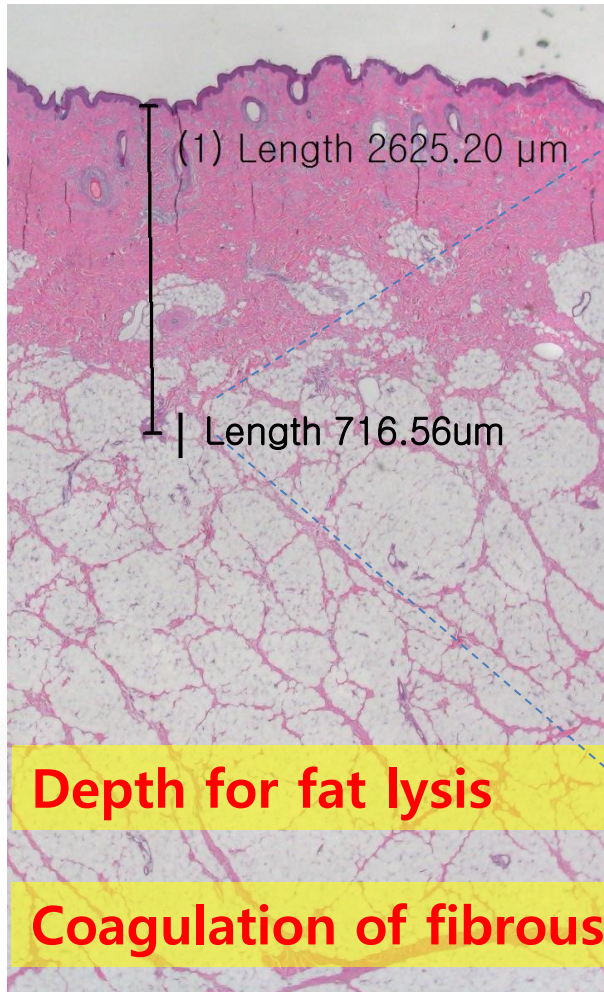
2. The SMAS (Superficial Muscular Aponeurotic System) at a depth of 4.5mm is coagulated by the focused beams of ultrasound. (fascia, SMAS, fibrous tissue of fat layer, dermal layer, dermis ~ boundary layer of subcutaneous).



3. Skin regeneration and tightening effect by newly formed collagen and elastin

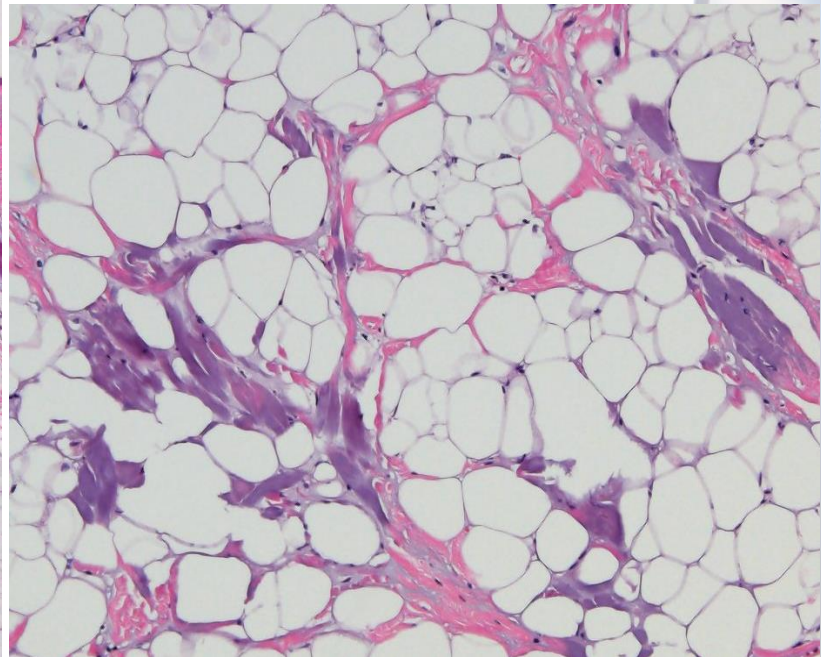
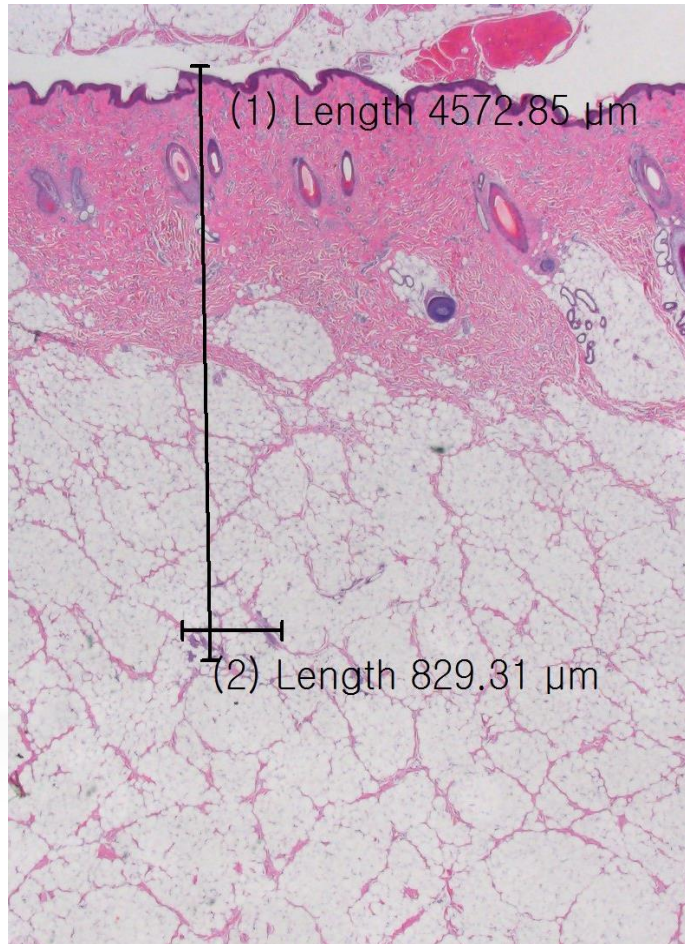
How HIFU works?

H 3.0 cartridge

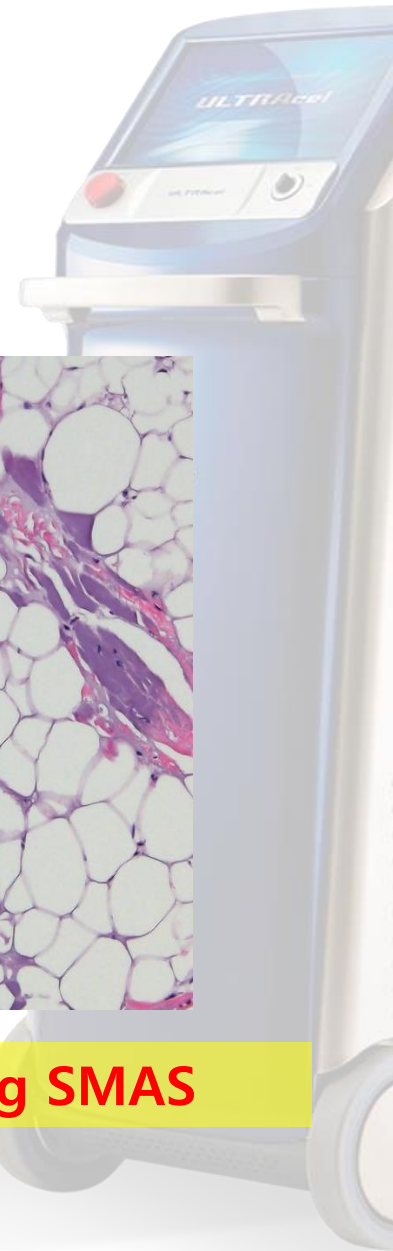


How HIFU works?

H 4.5 cartridge



Depth for targeting SMAS



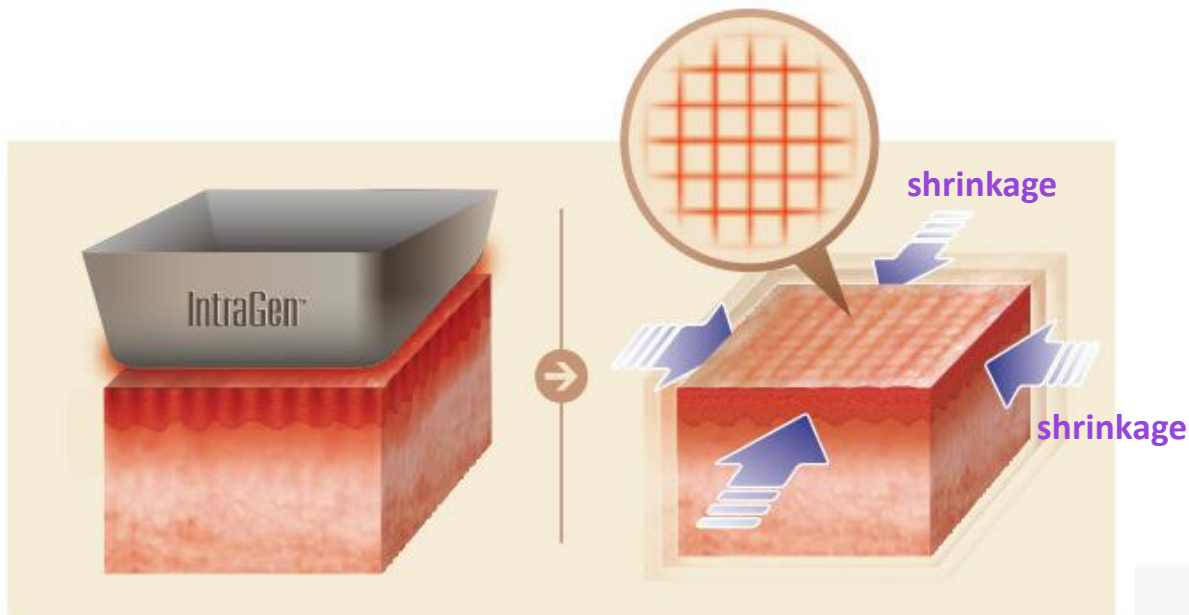
***GFR (Monopolar
Radiofrequency)
>> IntraGen<<***



GFR™ | *Grid Fractional Radio frequency™*

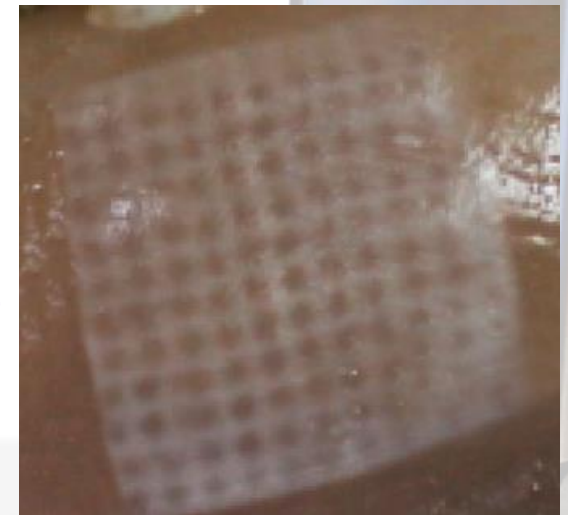
- Grid-RF™ Technology**

Grid fractional radio frequency energy creates thermal grid shapes on epidermis and thermal uniform zone in upper dermis during RF emission.

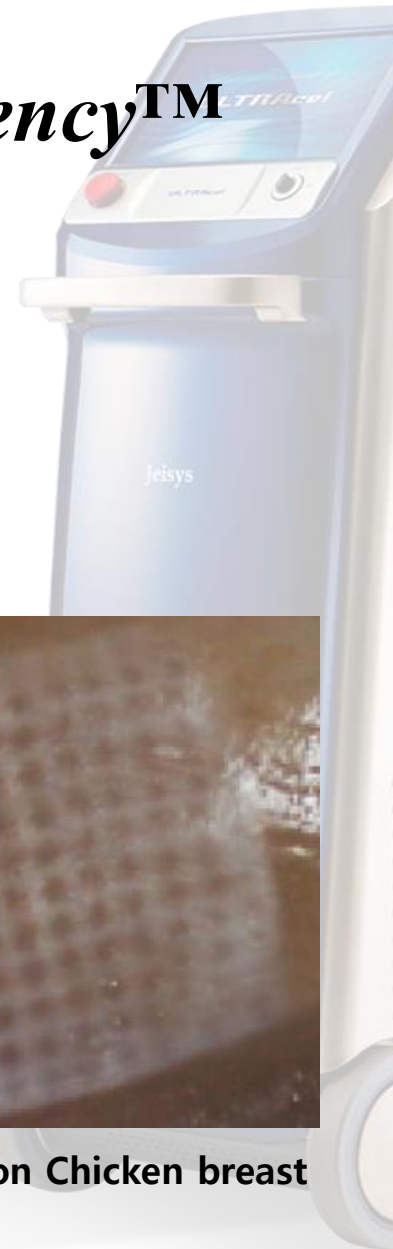


RF Emission

Grid shaped heating on Epidermis
Thermal uniform zone in upper dermis

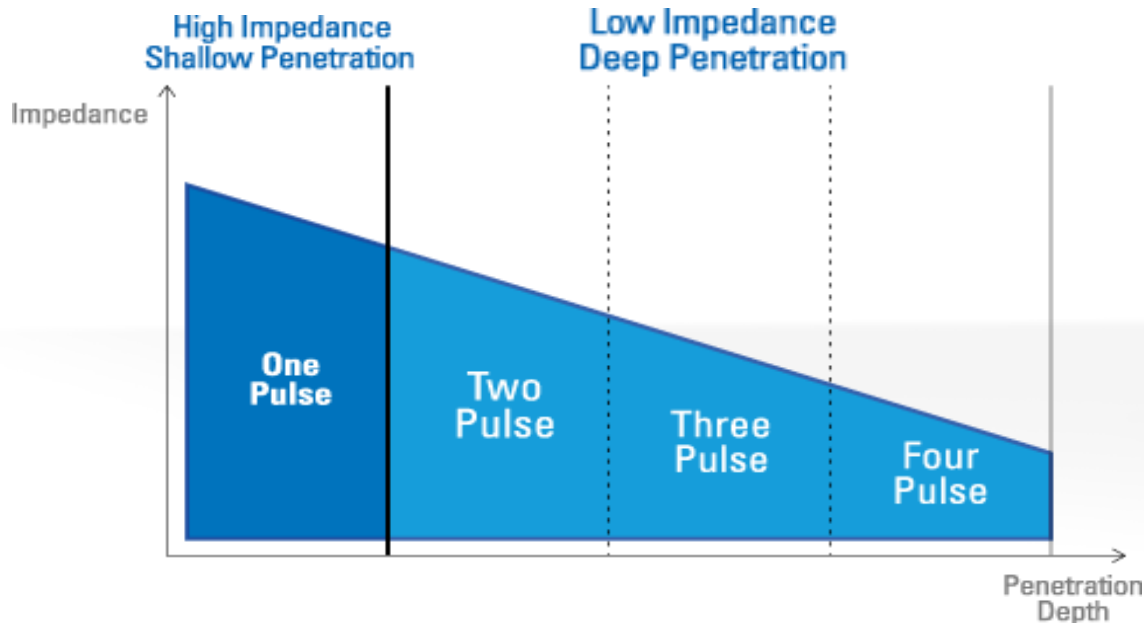
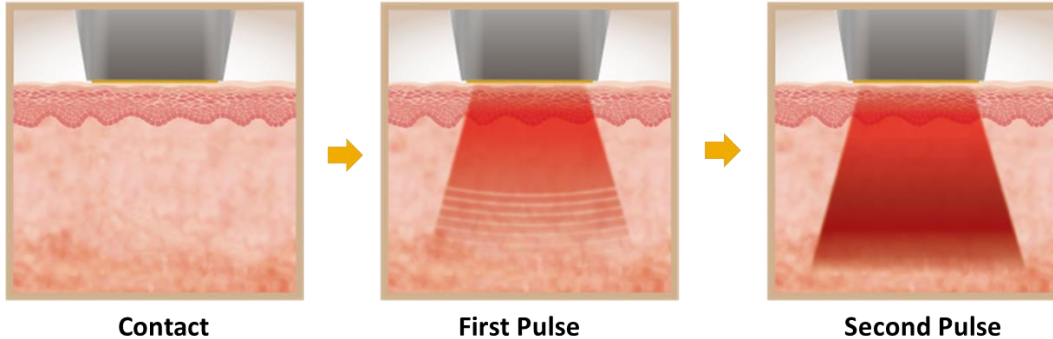


test on Chicken breast

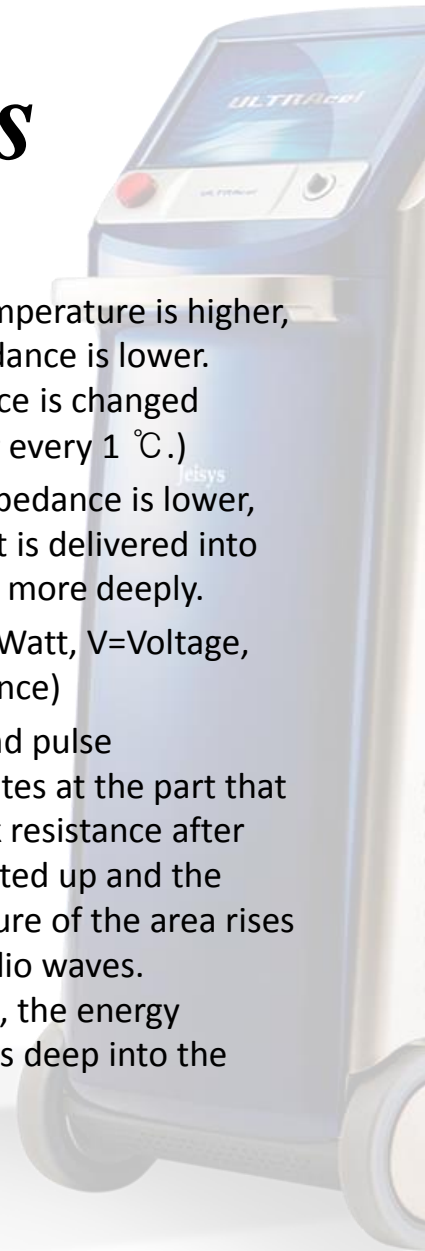


GFR™] *Multi – pulses*

- Multi-pulse targets deeper area.

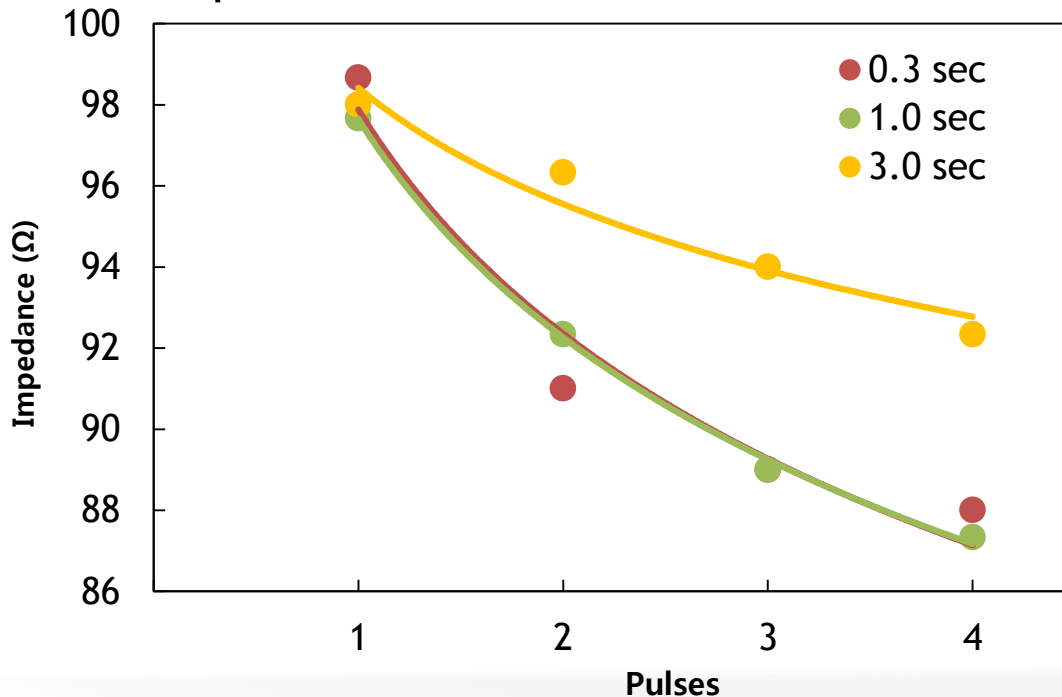


- As the temperature is higher, the impedance is lower. (Impedance is changed by 2% per every 1 °C.)
 - As the impedance is lower, more heat is delivered into the tissue more deeply.
- ($W=V^2/R$, W =Watt, V =Voltage, R =Resistance)
- The second pulse concentrates at the part that gets weak resistance after being heated up and the temperature of the area rises by the radio waves. Therefore, the energy penetrates deep into the skin.



GFR™] *Multi – pulses*

- Comparison test: Single Pulse Vs. Multi Pulse
- Impedance trend



【Method】

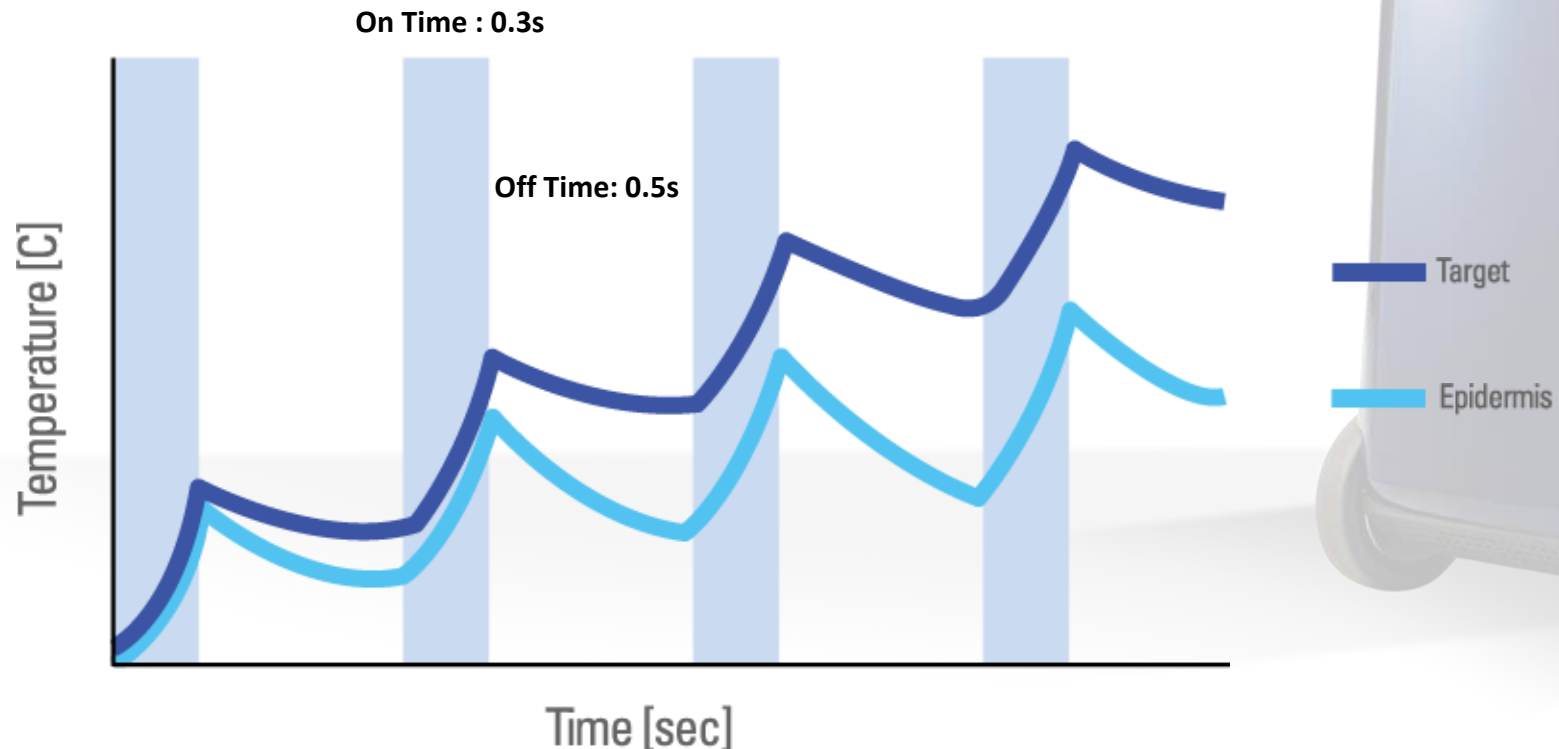
RF was treated with Pulse duration 0.3, 1.0, and 3.0 sec to a piece chicken breast over the return pad. Impedance was checked from each shot. (150J/cm²)

- As accumulated pulses, the impedance getting be lower.
- Off time 0.3 sec and 1.0 sec settings are better for lower impedance rather than Off time 3.0 sec.
- For larger heat applying, Off time 0.3 sec. and 1.0 sec. settings are suitable.
- No visible difference with Off time 0.3~1.0 sec. settings so **Off time will be between 0.3 ~ 1.0 sec. at 4 pulses.**

GFR™] *Multi – pulses*

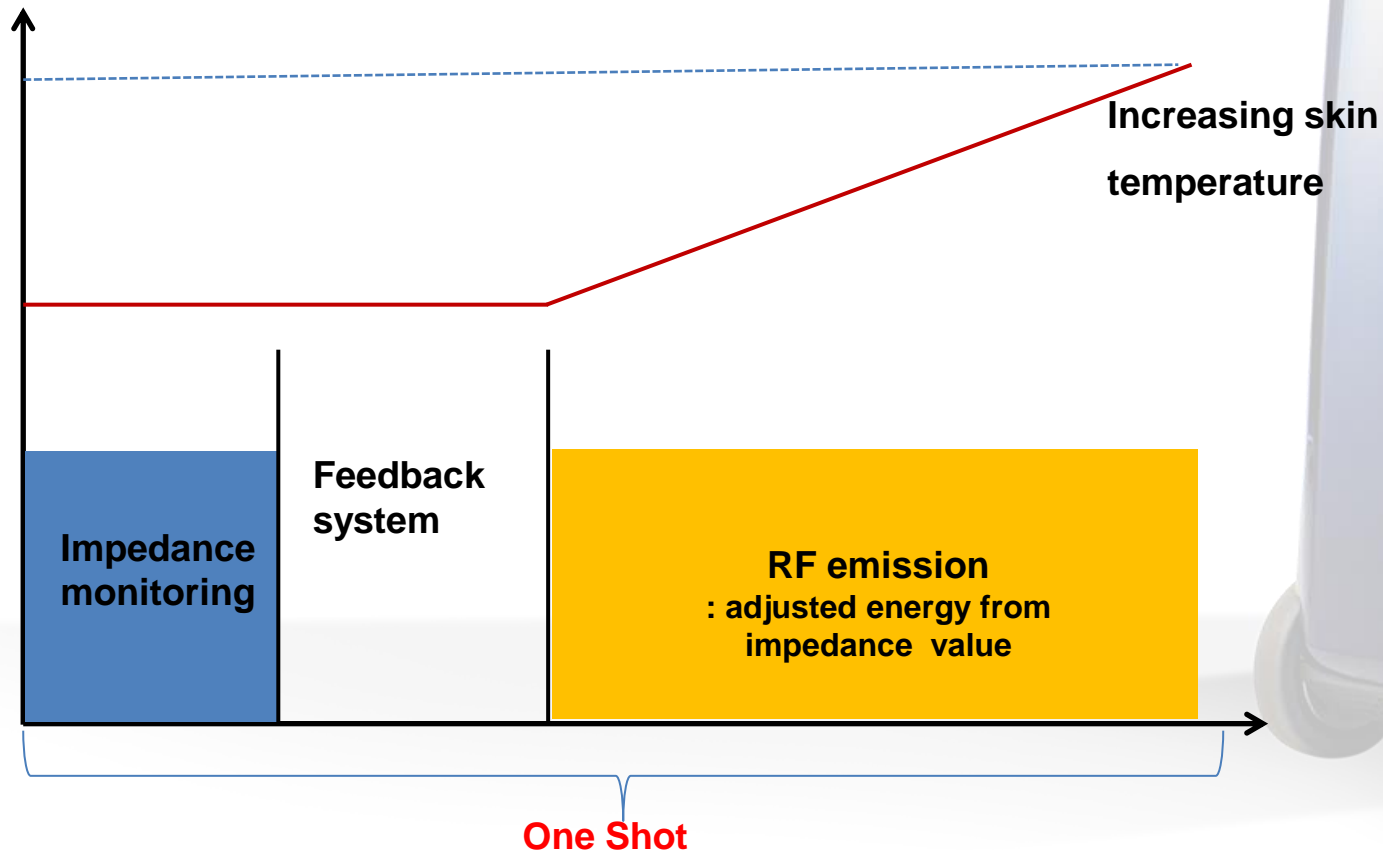
Multi-pulse protects the epidermis.

- Heated tissue is cooled down during Off Time, which protects the epidermis.
- Multi pulse, unique feature of IntraGen can make the temperature of targeted area rise with protecting the epidermis.



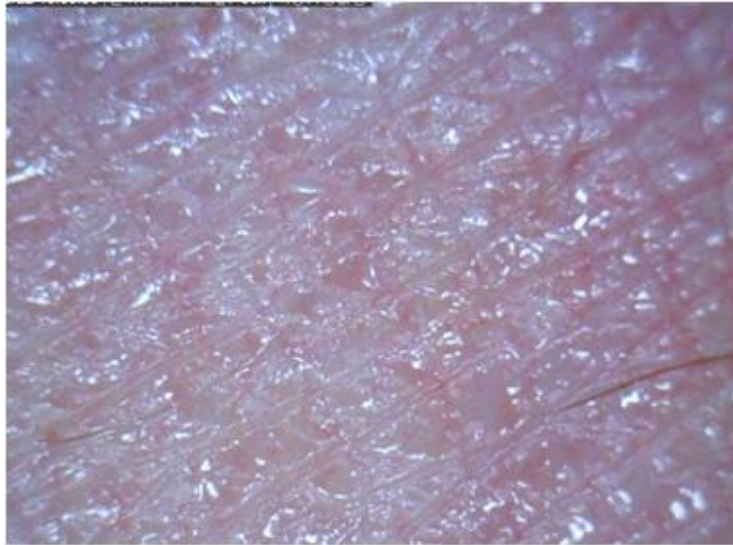
GFR™] *Real-time Impedance Feedback System*

Appropriate energy to heat dermal area is emitting with real time impedance checking.

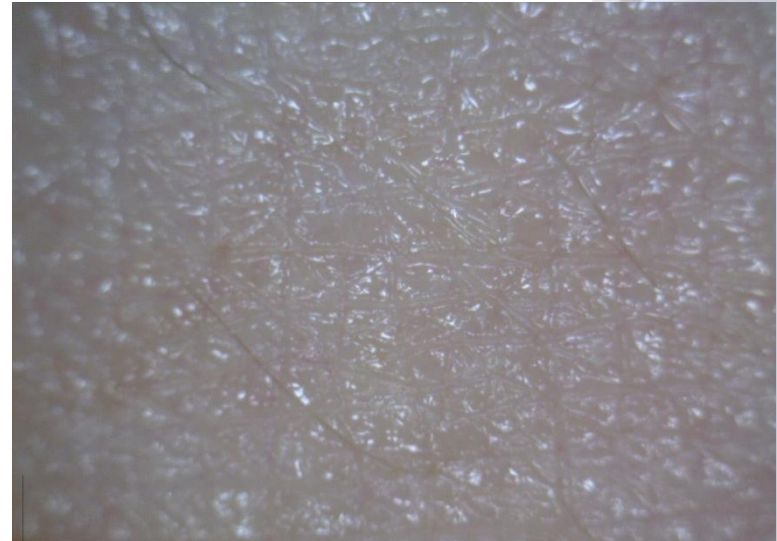


GFR™] *Real-time Impedance Feedback System*

Experiments in Same energy level



LOW Impedance (100Ω) => High thermal energy



HIGH Impedance (200Ω) => Low thermal energy

- ✓ Thermal energy is varied by impedance value.
- ✓ In high impedance, thermal energy is low because the current is not properly flowing in the skin
- ✓ Different thermal energy by impedance makes different clinical result.



GFR™ | *Optimizing Treatment Tip*



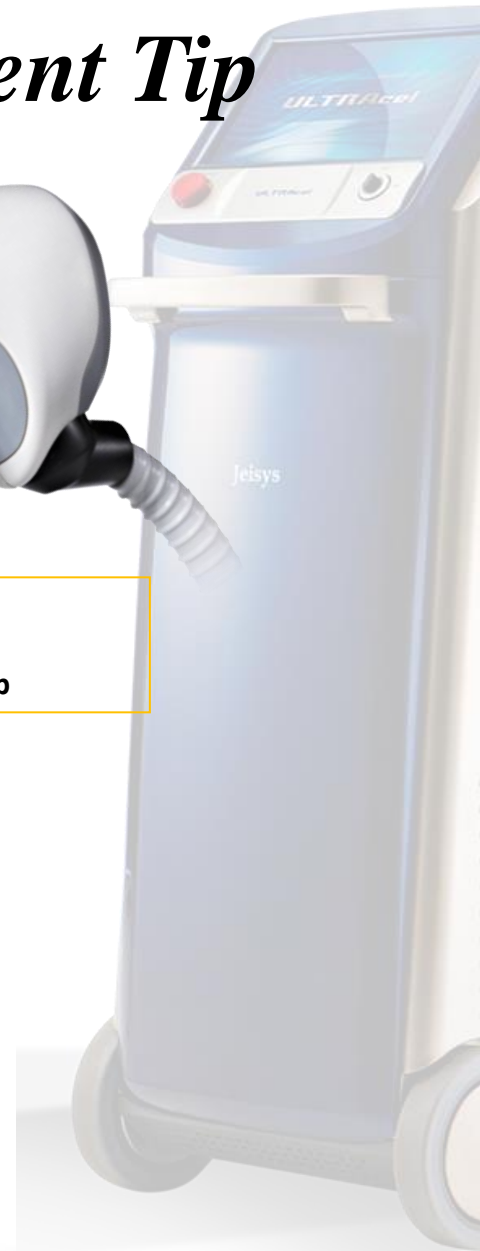
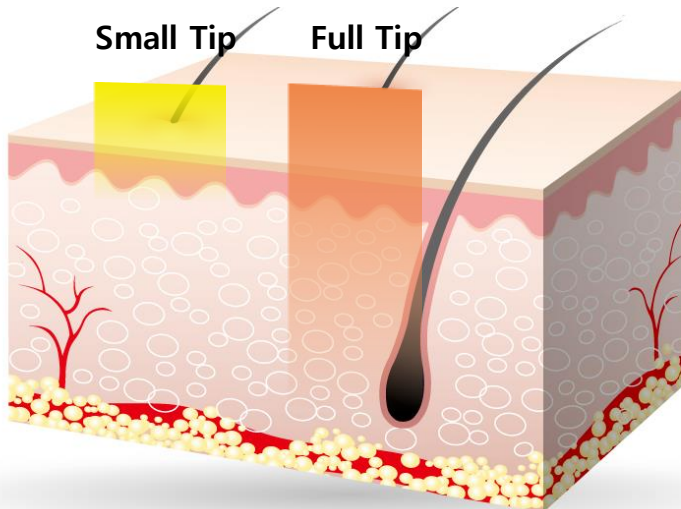
Small Tip





Full Tip

RF Enable/Disable
Finger Switch

Disposable
/Sterile
Treatment Tip



GFR™] *Optimizing Treatment Tip*

	Full Tip	Small Tip
Tip Type		
Shot	4,000 shots/tip	4,000 shots/tip
Usage	Reusable	Reusable
Treatment Area	15 X 15 mm	7 X 7 mm
Application	Full Face Body	Orbicularis Oculi, lip, hand
Features	<p>* GFR™ provides various treatment from a very shallow or very small treatment area to a very large or deep treatment area.</p> <p>* GFR™ tip set is equipped with RF card and tip. Each set is composed the most optimized parameter for the highest performance</p>	

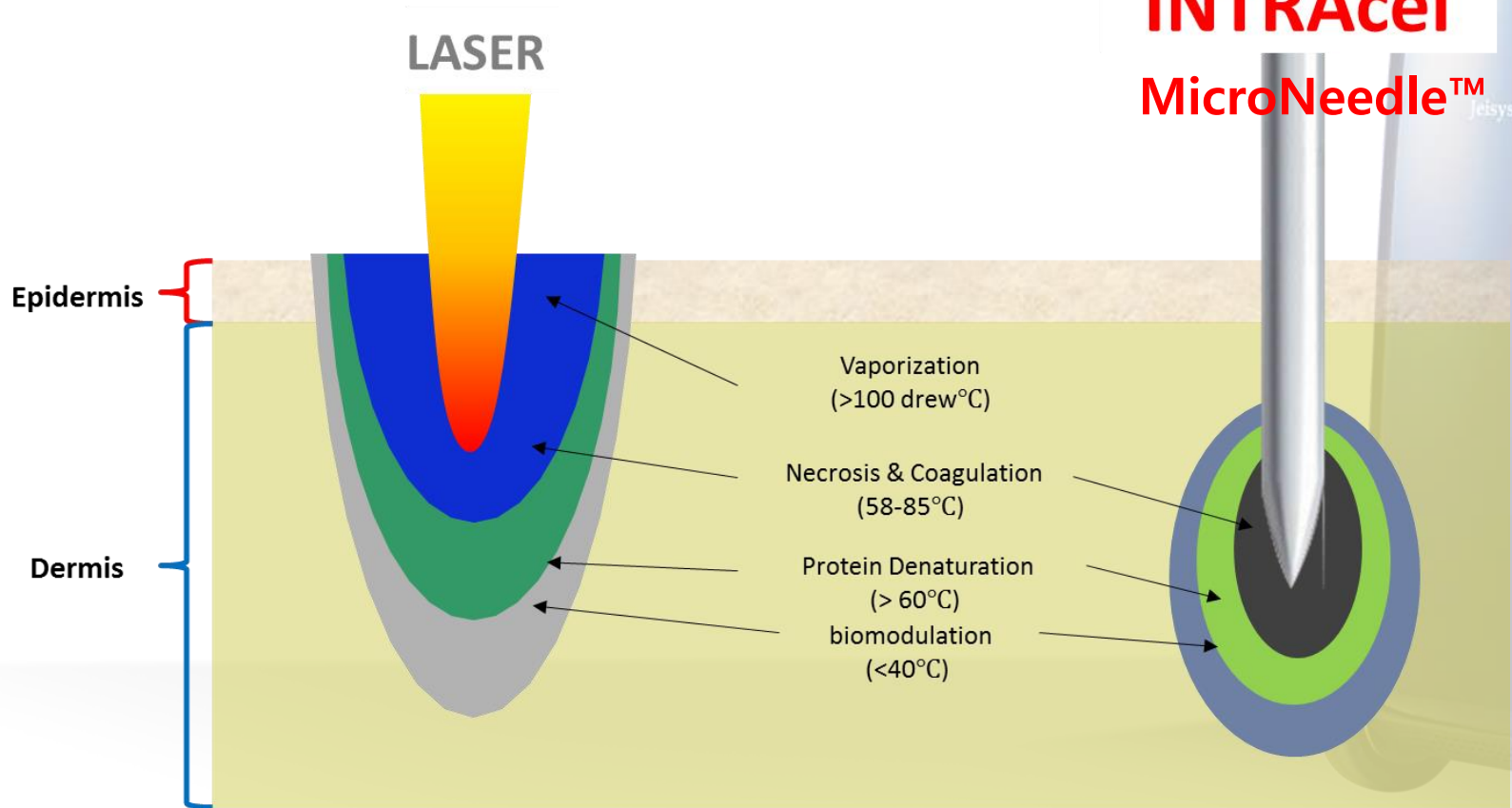


FRM (*Fractional RF MicroNeedle*)
>> INTRACel<<



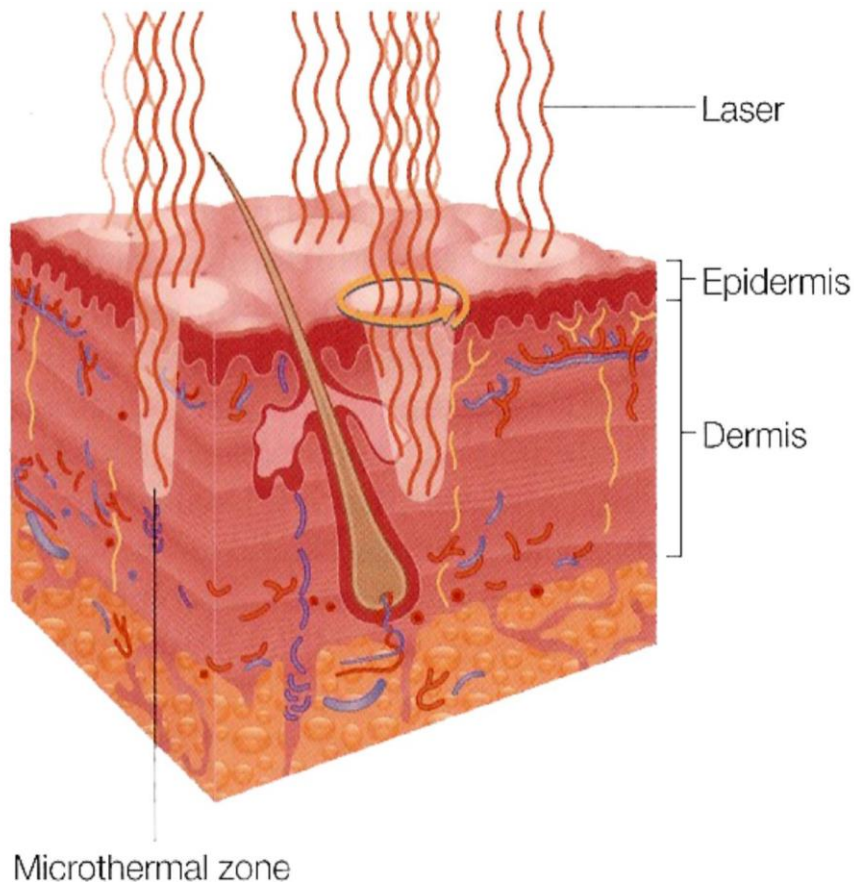
FRM™] Fractional Radiofrequency MicroNeedle™

- Laser/FRM and Tissue Interaction



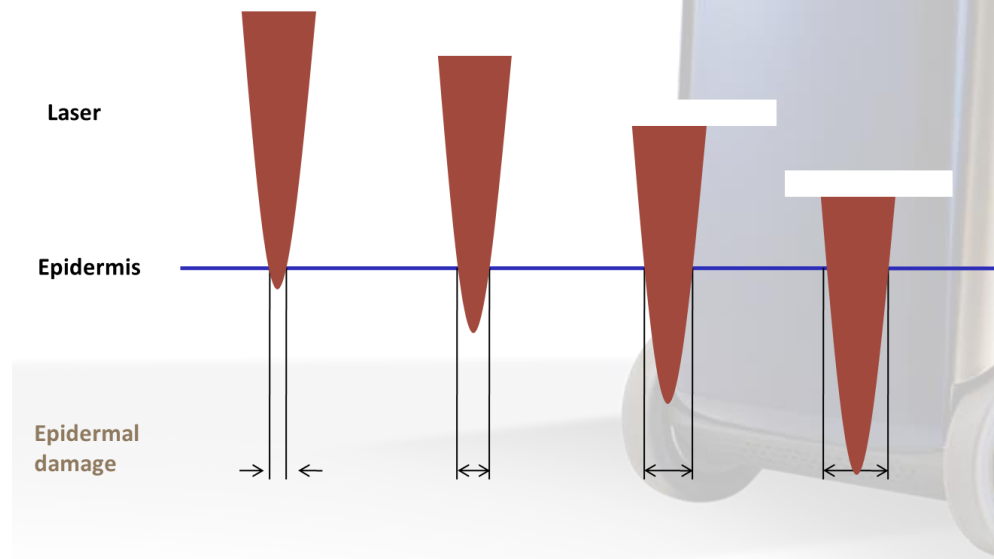
FRM™] Fractional Radiofrequency MicroNeedle™

- Fractional irradiation on skin



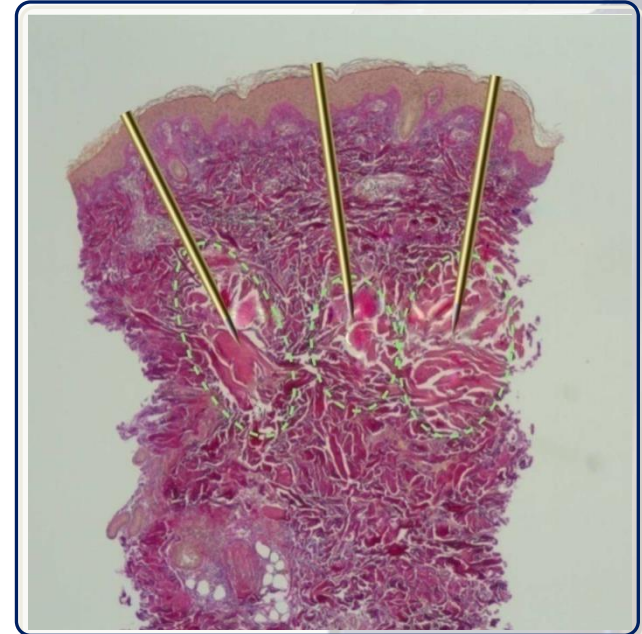
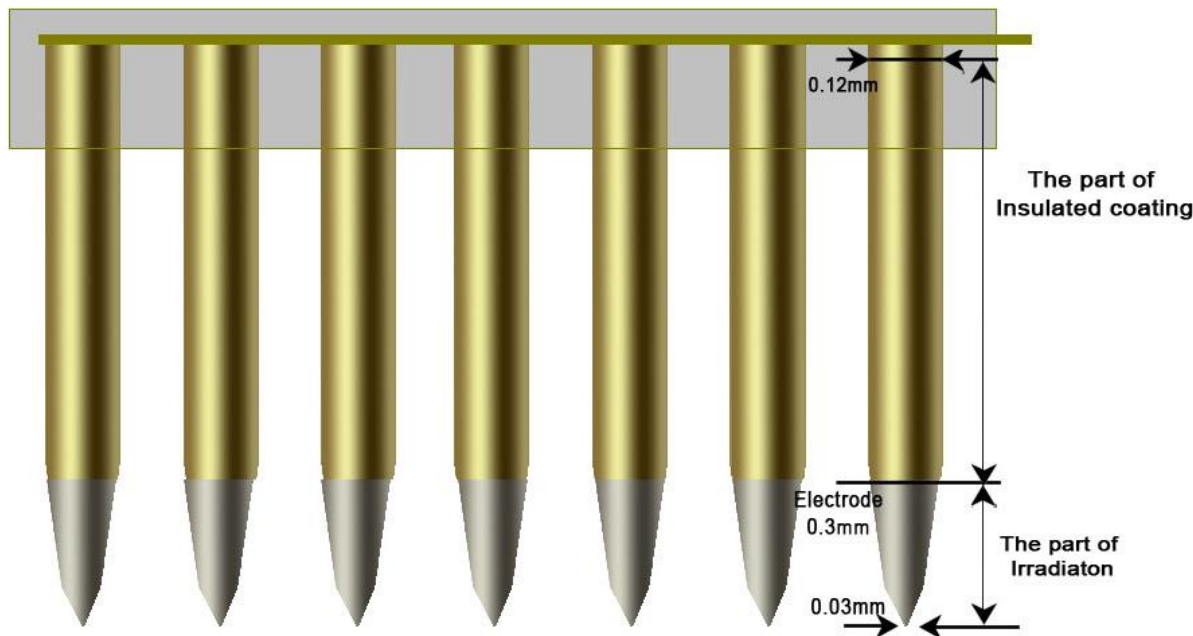
- Ablative Laser (CO₂ , Er:YAG)

- Fractional laser gives lots of damage on the epidermis because, it stacks up the energy to reach the dermis



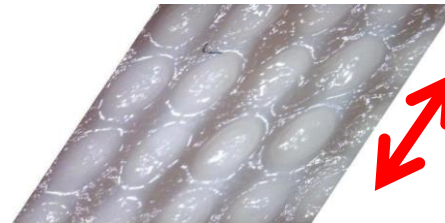
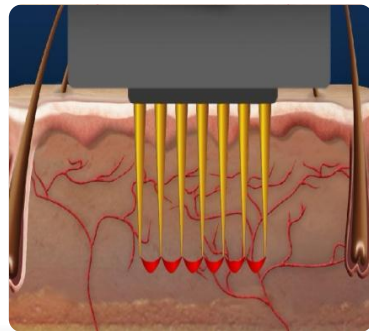
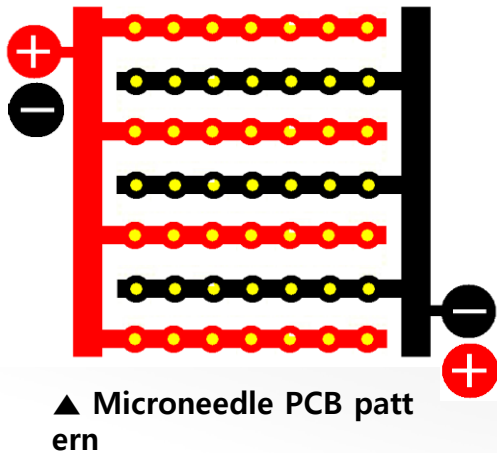
FRM™] Fractional Radiofrequency MicroNeedle™

- World best accurate needle RF system
- Wound healing induced system; ***precise targeting***
- Needle material : Stainless steel
- RF insulation coating, Jeysis patented material (FDA approved)
- Penetrated depth : 2.0mm, 1.5mm, 0.8mm, 0.5 mm

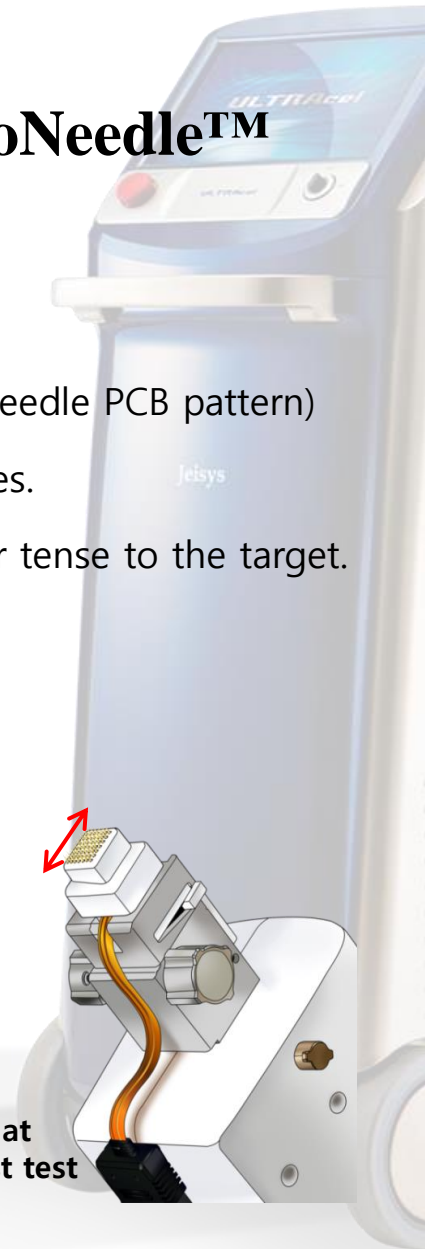


FRM™] Fractional Radiofrequency MicroNeedle™

- Bi-polar / Mono-polar mode
- Skin Tightening by Microneedle Bi-polar Treatment
 - Bi-polar mode; the +, - needle electrode sequences are crossed. (Microneedle PCB pattern)
 - The electric current initiated from the + poles moves to the nearest – poles.
 - Also + and – poles are consistently changed. This system induces stronger tense to the target.

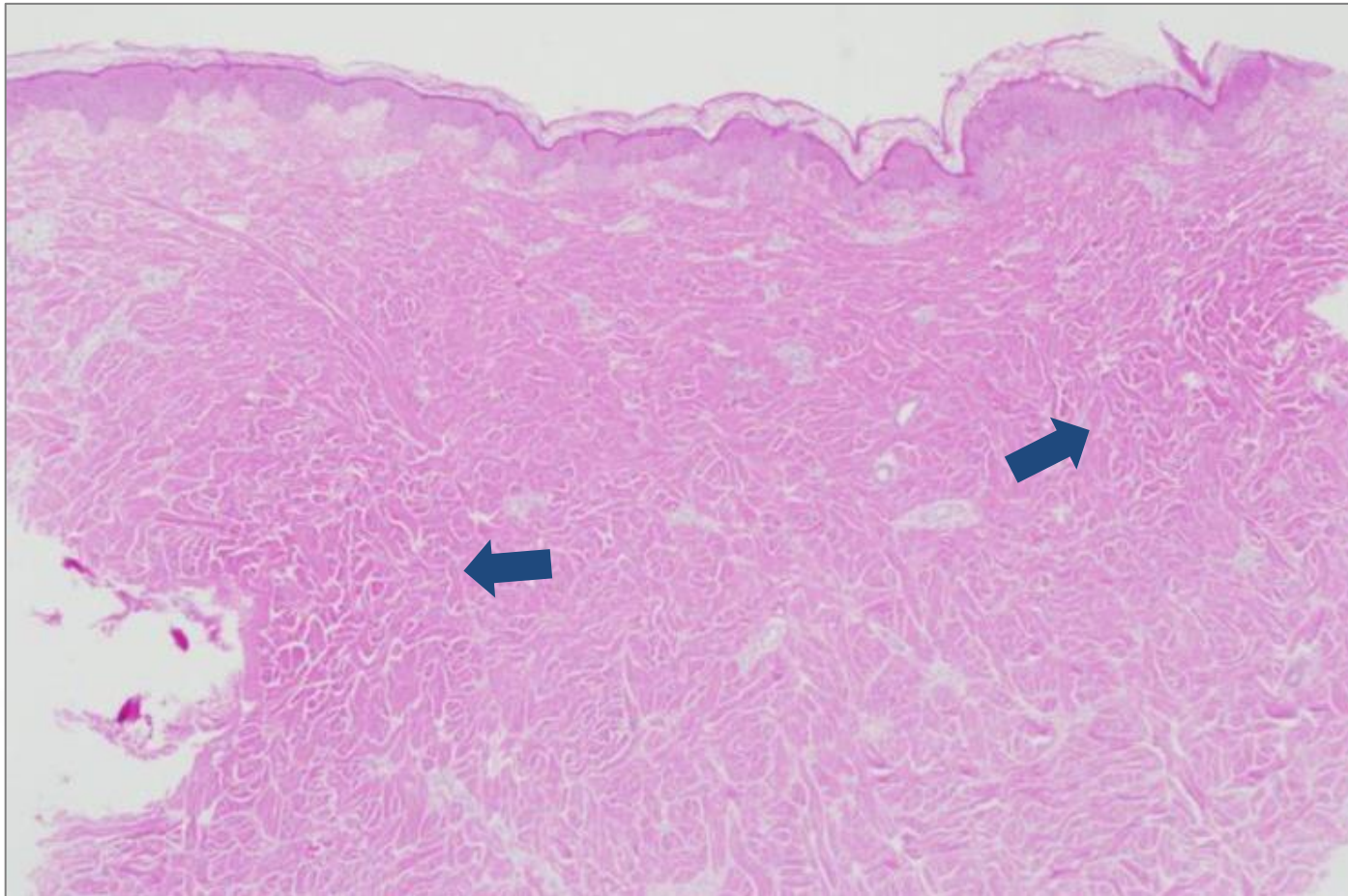


▲ Direction compatibility at chicken breast test



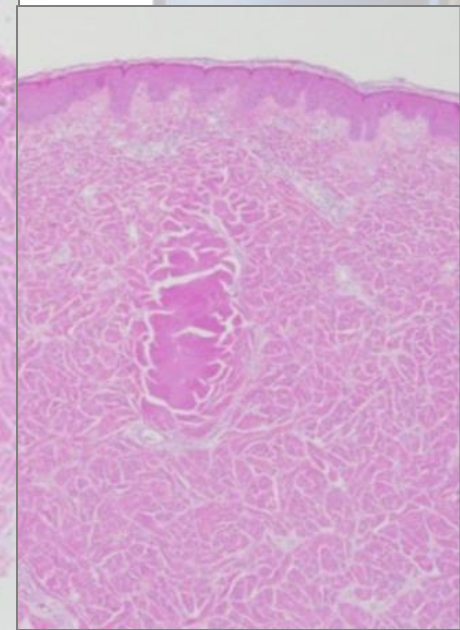
FRM™] Fractional Radiofrequency MicroNeedle™

- Bi-polar / Mono-polar mode



✓ Same parameter with two types of tips

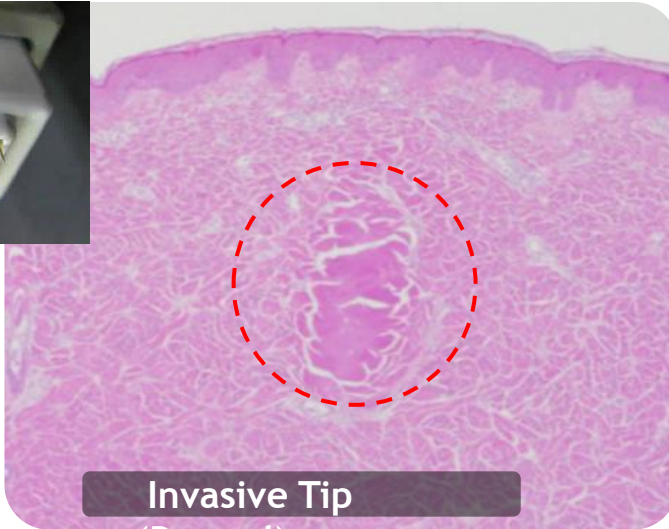
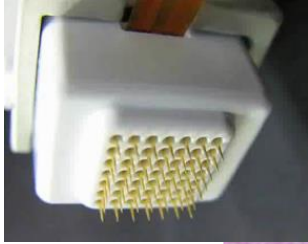
< Mono-polar >



< Bi-polar >



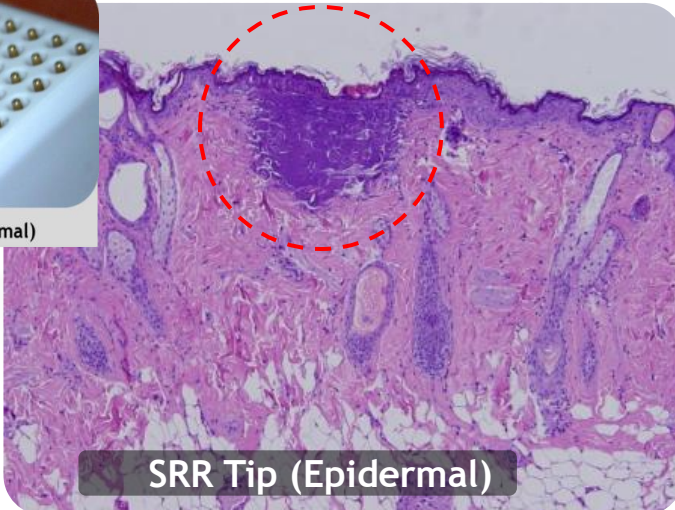
FRM™ | Handpiece & Tips



Invasive Tip



SRR Tip (Epidermal)



SRR Tip (Epidermal)

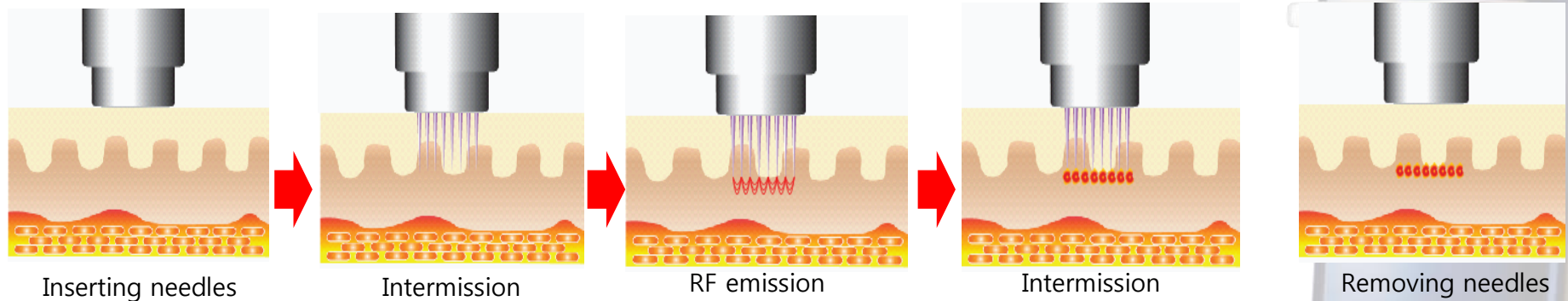
- SRR; superficial resurfacing rejuvenation
- Skin resurfacing by SRR Tip

Coagulation on epidermal areas

- Damaged skin
- Improving skin tone
- Improving skin texture
- Large pore care



How FRM™ works?



1st, Contact the hand-piece on epidermis.

2nd, Needles penetrates into the skin. (possible to control it's depth)

3rd, Wound induction;

Bipolar RF transmits 30ms ~ 100ms depending on the parameter after insertion.

4th, Needles are removed from a body after RF emission.

5th, Removing Microneedles safely;

It transmits energy selectively as shown on the picture.

Reason 2

Combination Treatment

→ *HIFU +/- GFR +/- SRR +/- FRM*
for the perfect all layer therapy(ALT)

HIFU Only (for small selected cases)



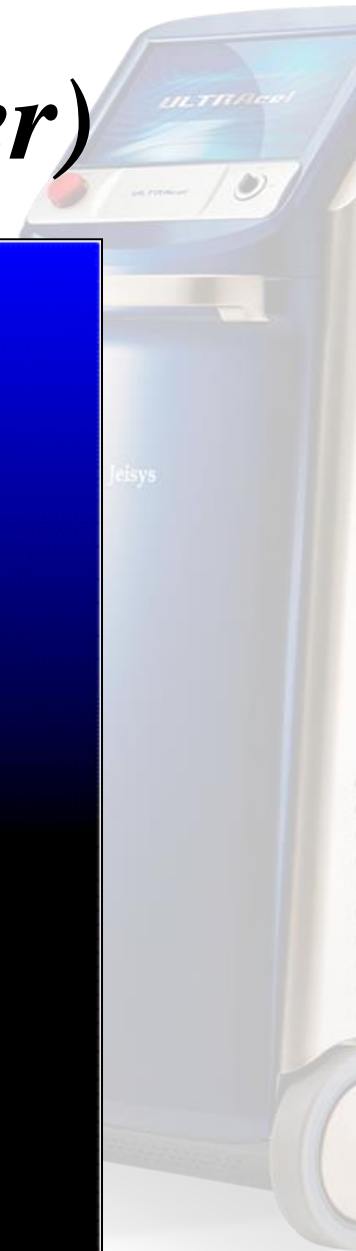
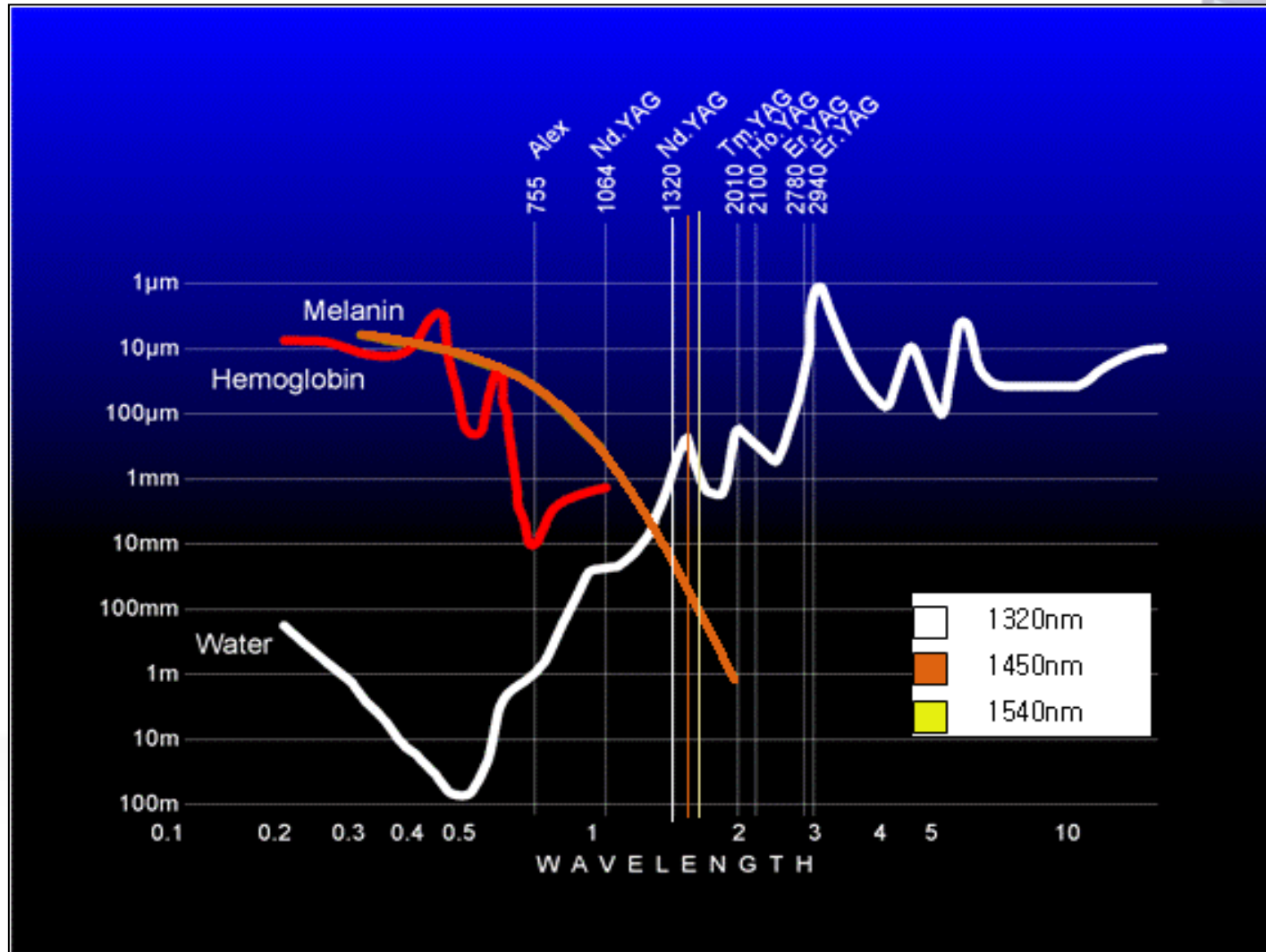
Combination Therapy

Things to consider



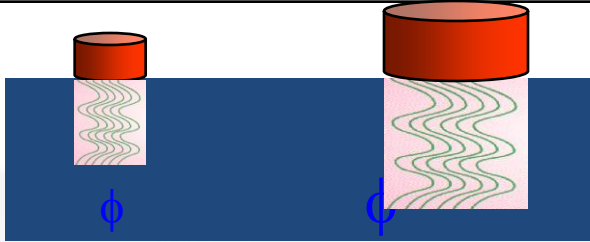
- Target Depth (Level)
- Amount of Damage (Temperature Level)
- Recovery (Wound Healing)
- Result

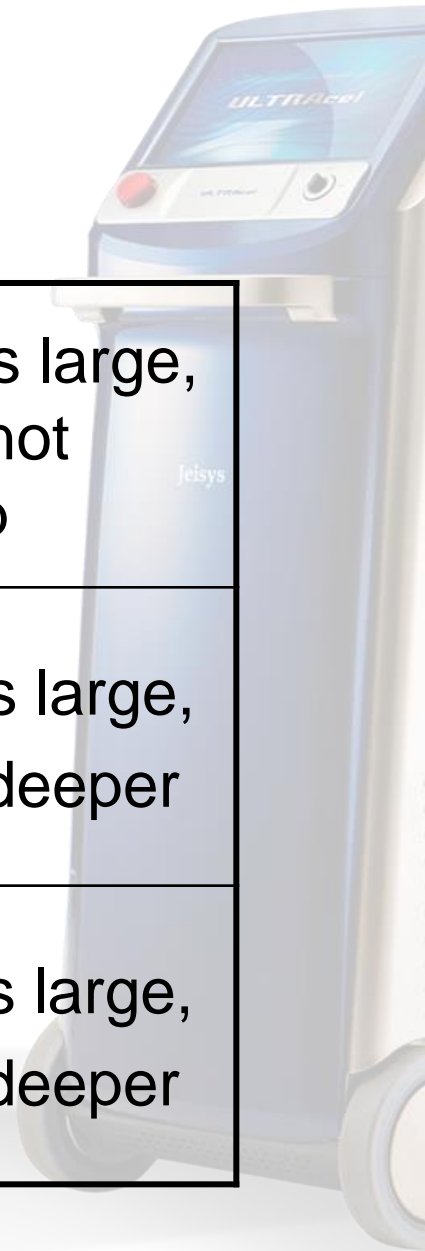


Depth of Penetration (Laser)

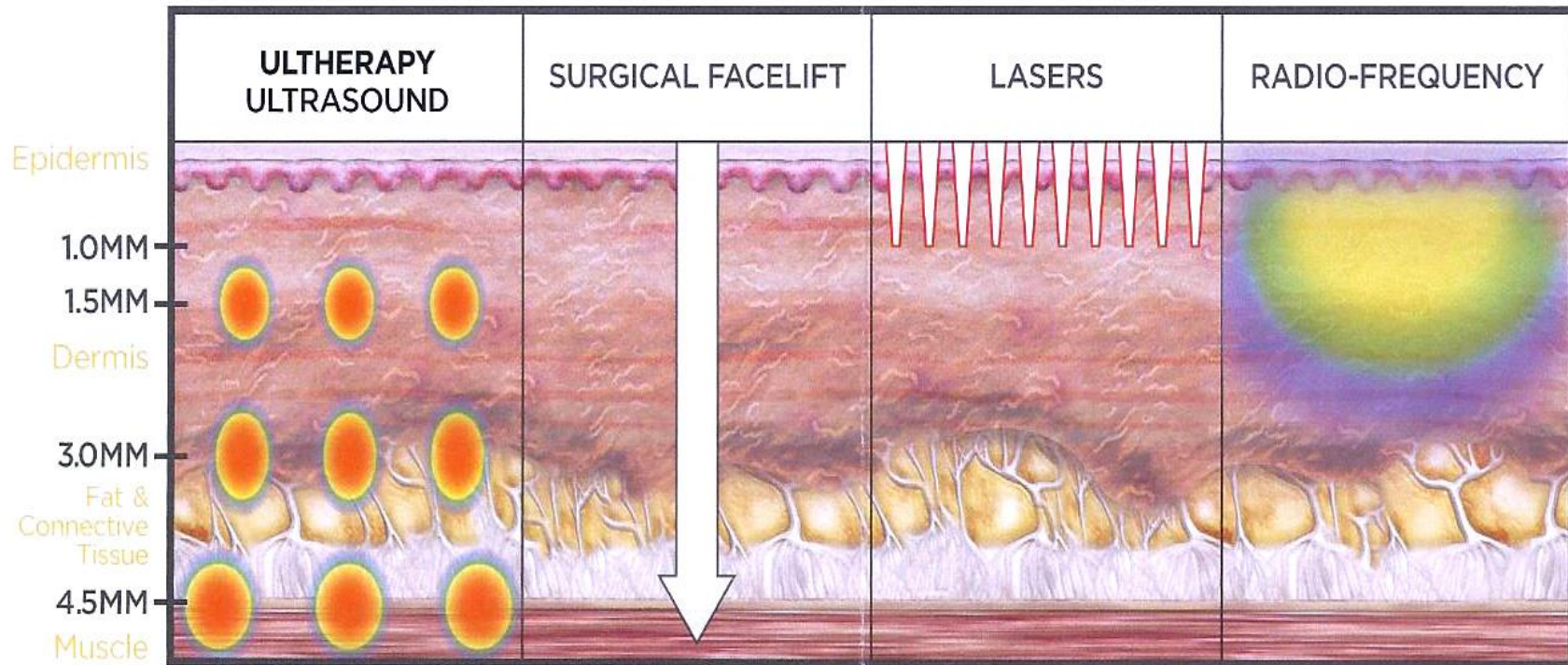


Depth of Penetration

ABSORPTION COEFFICIENT (α)		If α is large, it is not deep
WAVELENGTH		If λ is large, it is deeper
SPOT SIZE		If ϕ is large, it is deeper

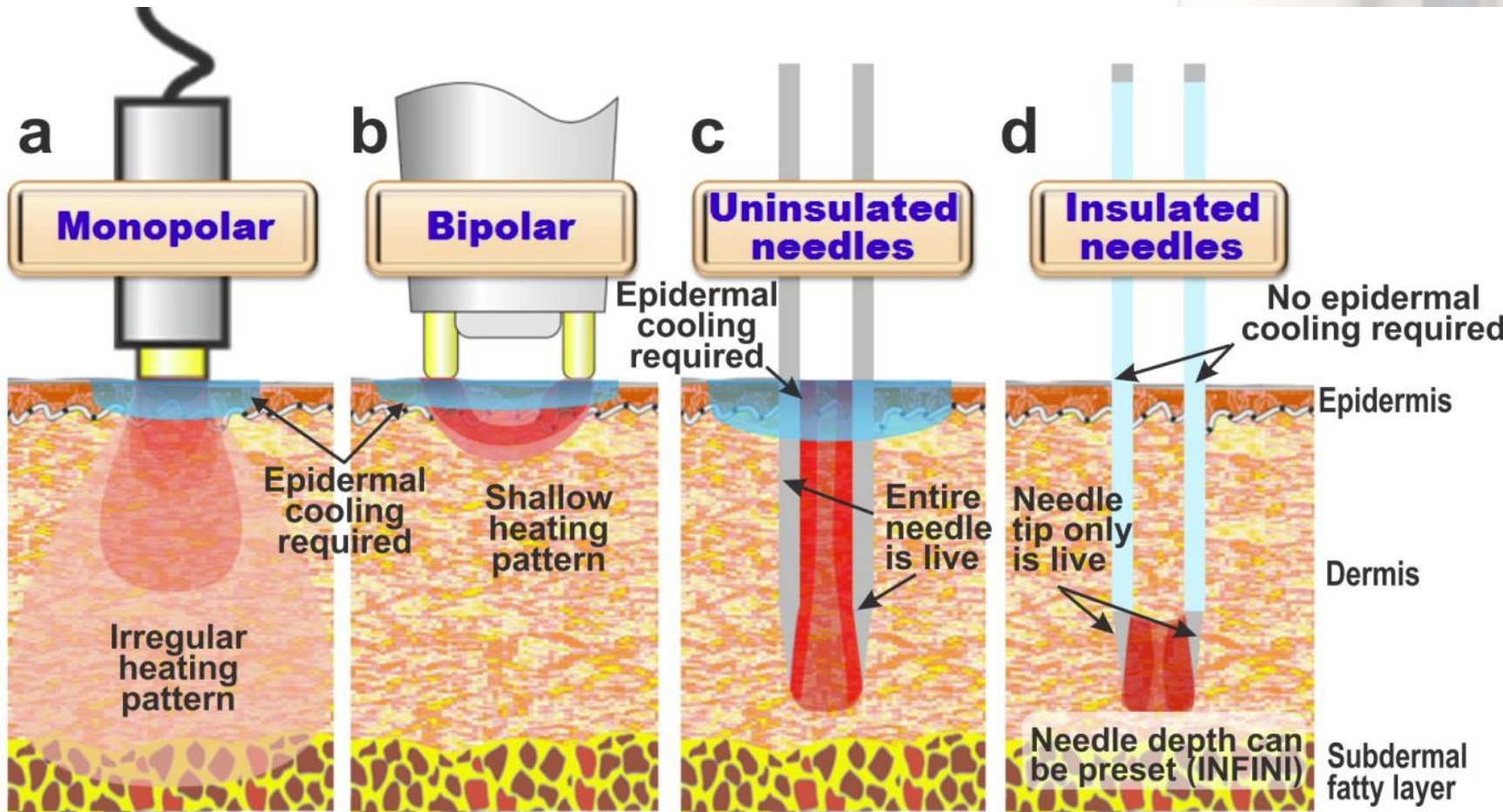


Depth Penetration (US & RF)



Representative image of skin tissue layers. Different areas of the face and body will have varying depths and thicknesses of tissue layers.

Depth Penetration (RF)

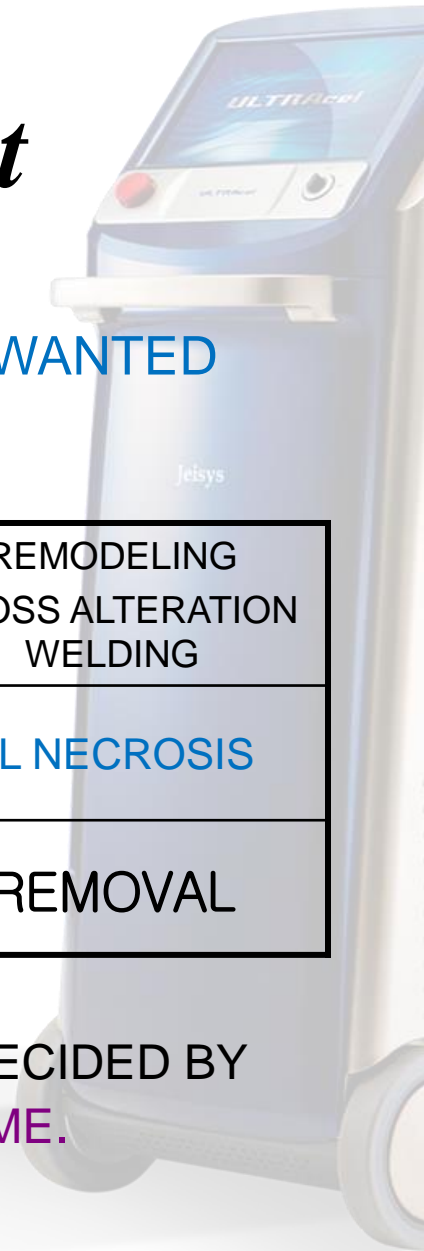


Temperature of the Target

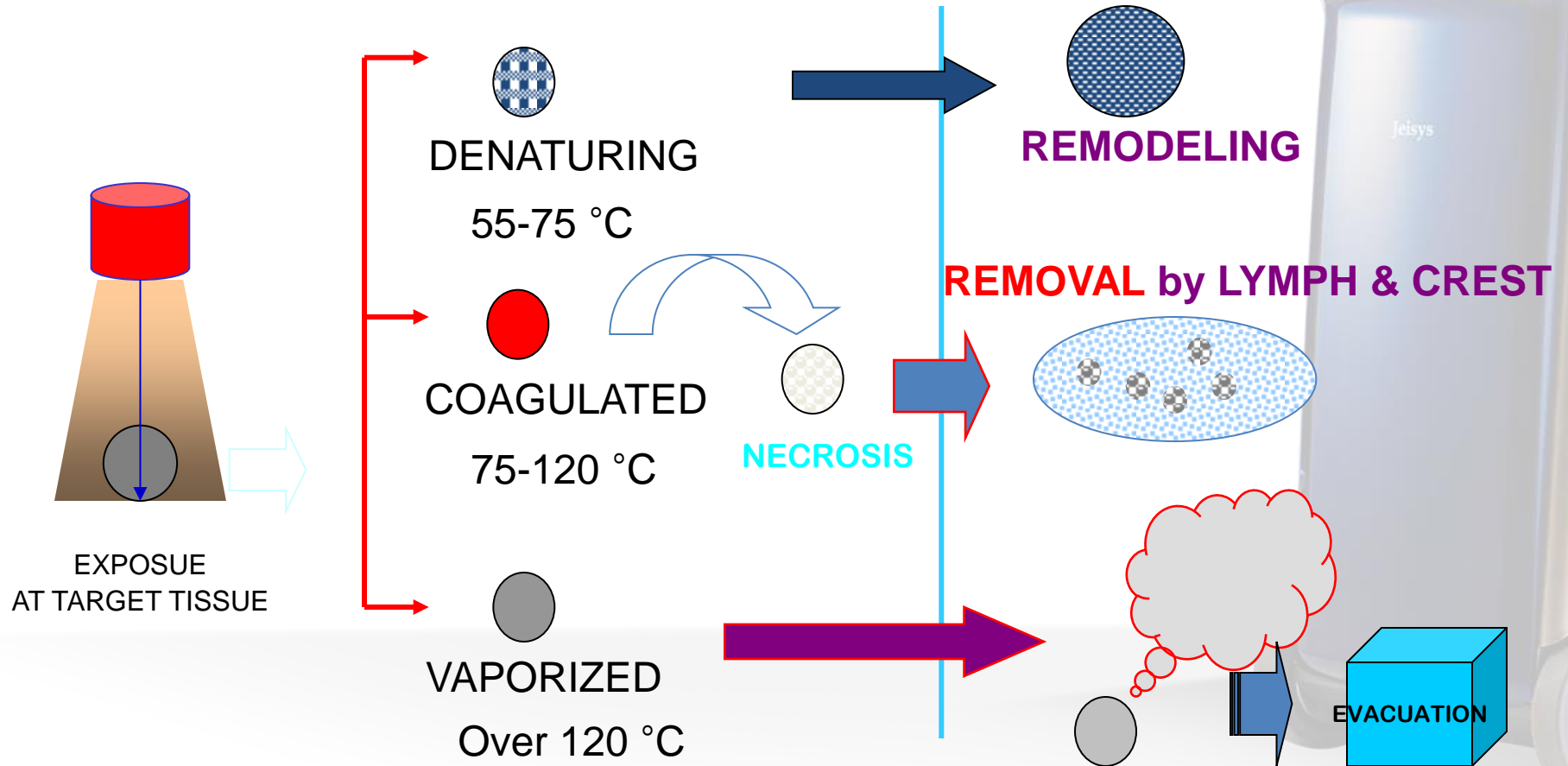
THE OPTIMUM DOSE IS PROPORTIONAL TO THE WANTED COAGULATION RATE (CLINICAL NEEDS).

LOW TEMP	55-75	THERMAL EFFECT	REMODELING GROSS ALTERATION WELDING
MEDIUM TEMP	75 - 120	COAGULATION	CELL NECROSIS
HIGH TEMP	ABOVE 120	VAPORIZATION	REMOVAL

THERMAL EFFECT, COAGULATION and VAPORIZATION IS DECIDED BY COMBINATION OF SPECIFIC TEMPERATURE & COOKING TIME.



(Photo)Thermal Effect Mechanism



Reason 3

Every patient is different

→ *Need customized approach*





The truth about HIFU

Can HIFU be applied to everyone??

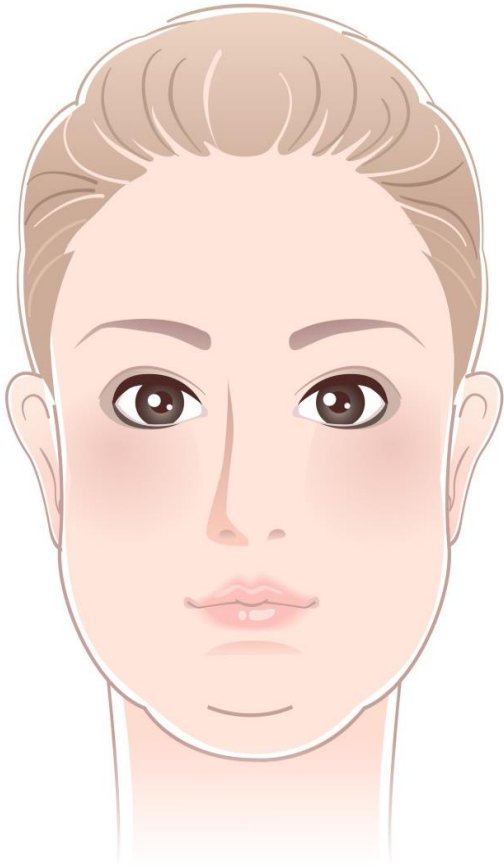
Can HIFU be applied on all parts??

→ ***NO!***

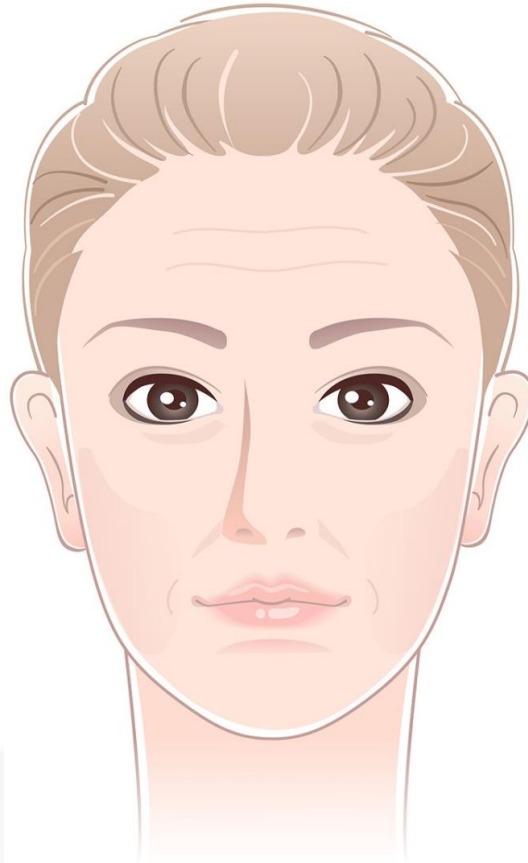




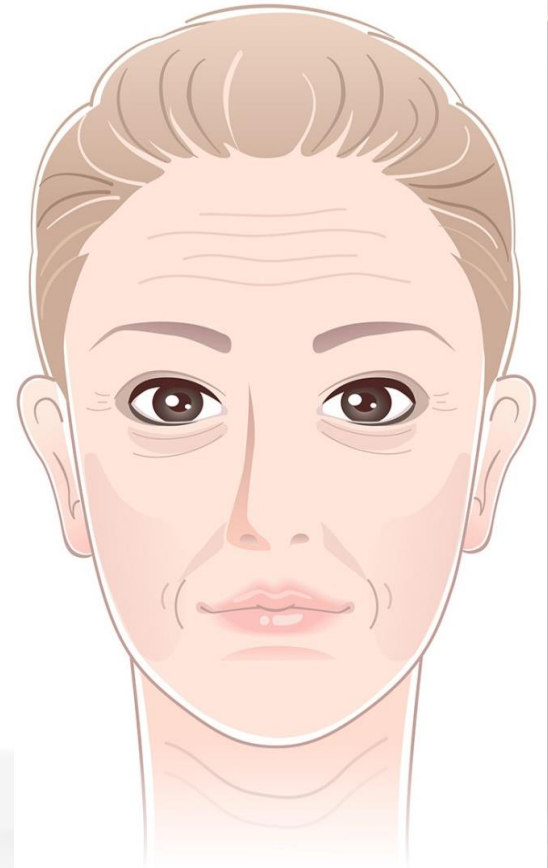
Tx Program by Skin type & parts



Younger Skin & Fat(↑)
HIFU for all area



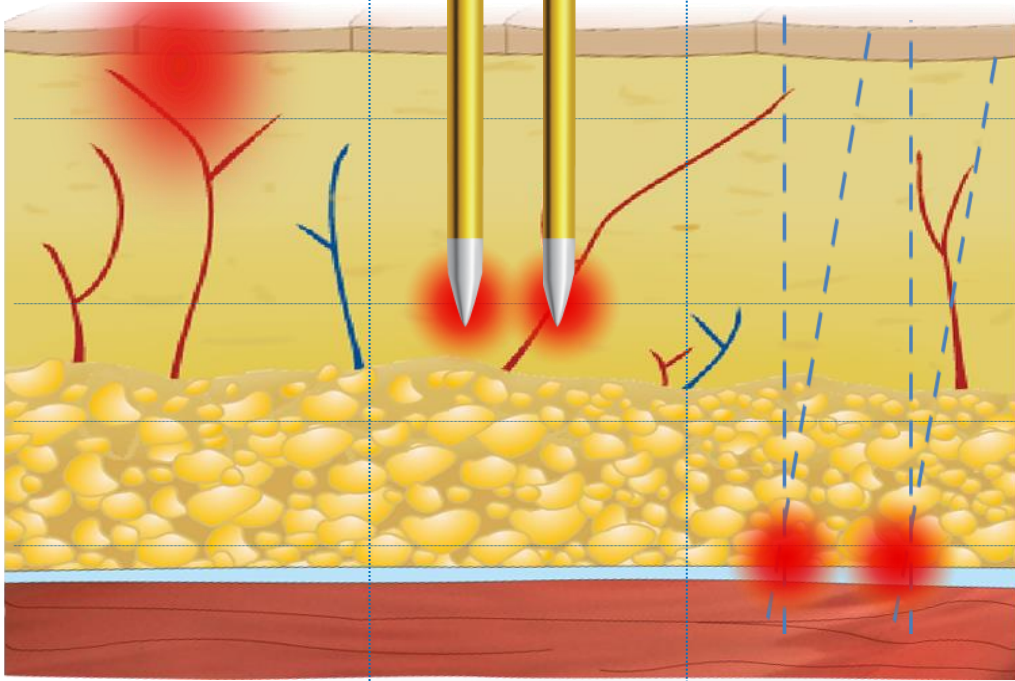
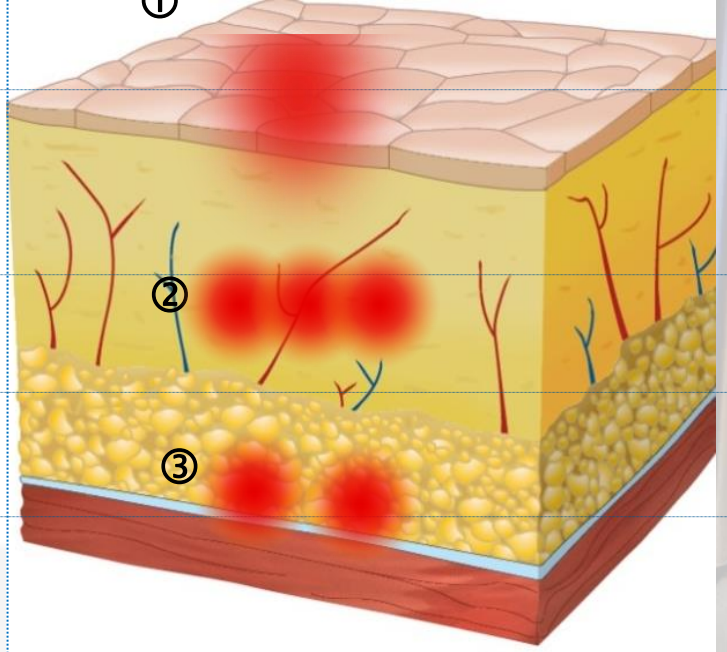
Older skin & Fat(↓)
mostly RF operation
with limited HIFU

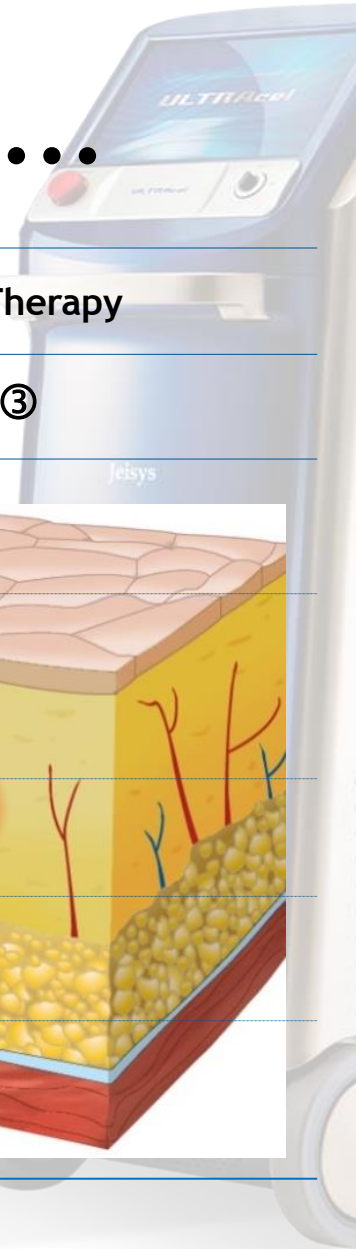


Older skin, Uneven fat
HIFU and RF need to be combined

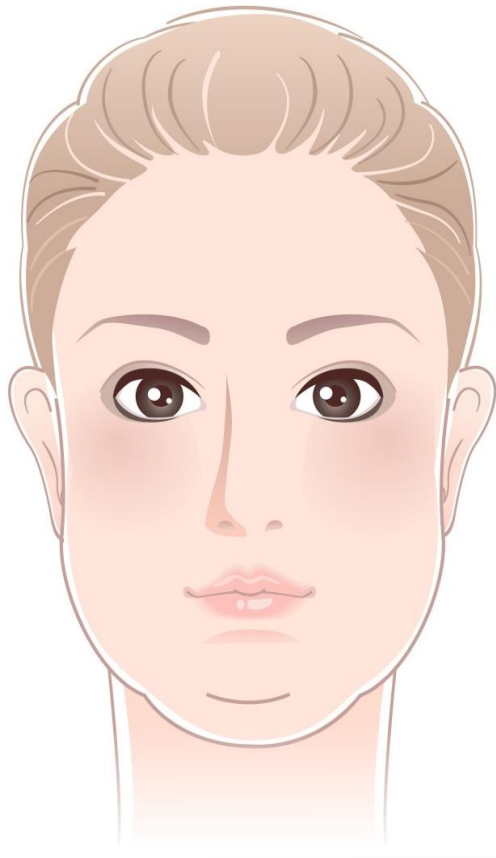
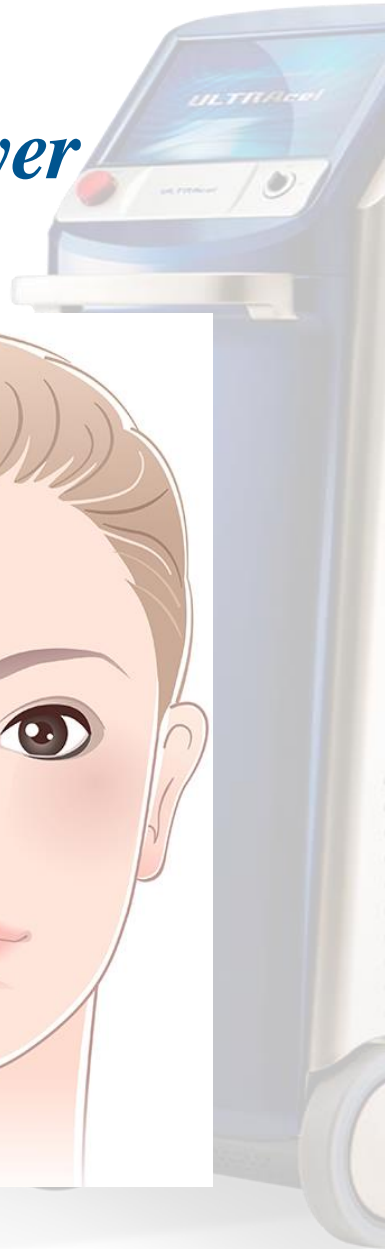


Aimed for All Layered Therapy...

Non-invasive, Invasive RF		Non-invasive HIFU	All Layered Therapy
①GFR or SRR ; Epidermis	②FRM ; Dermis	③FUS ; SMAS	①+②+③
			



Younger Skin (under 50) & Thick Fat Layer



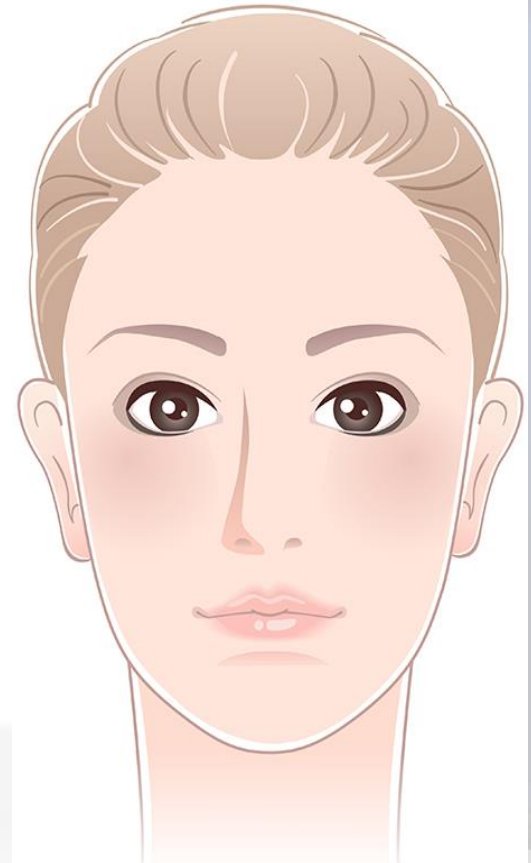
HIFU Only



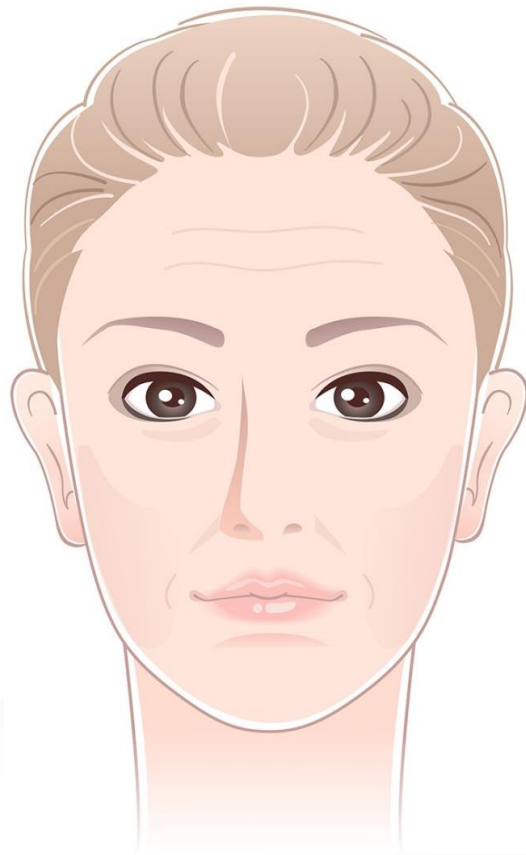
V-line

Slimmed face

**HIFU can destroy
fat tissue**



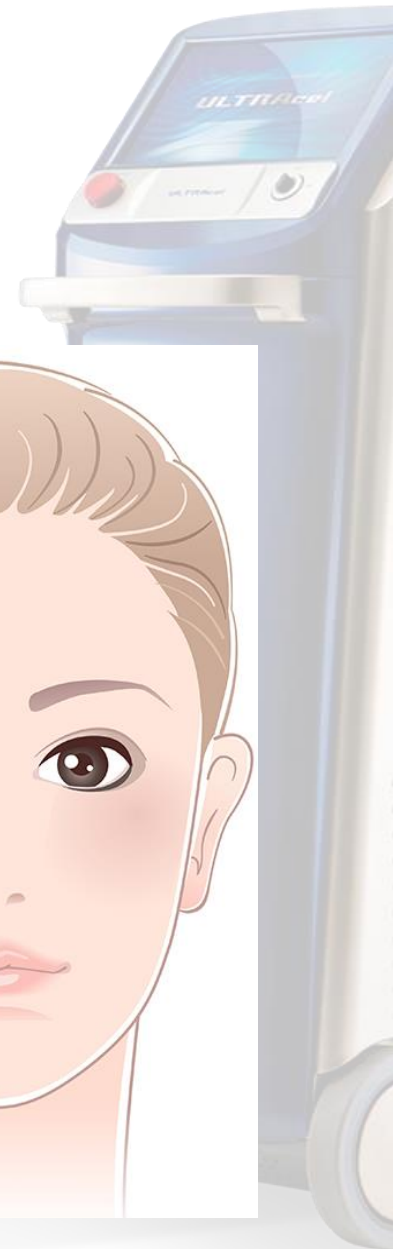
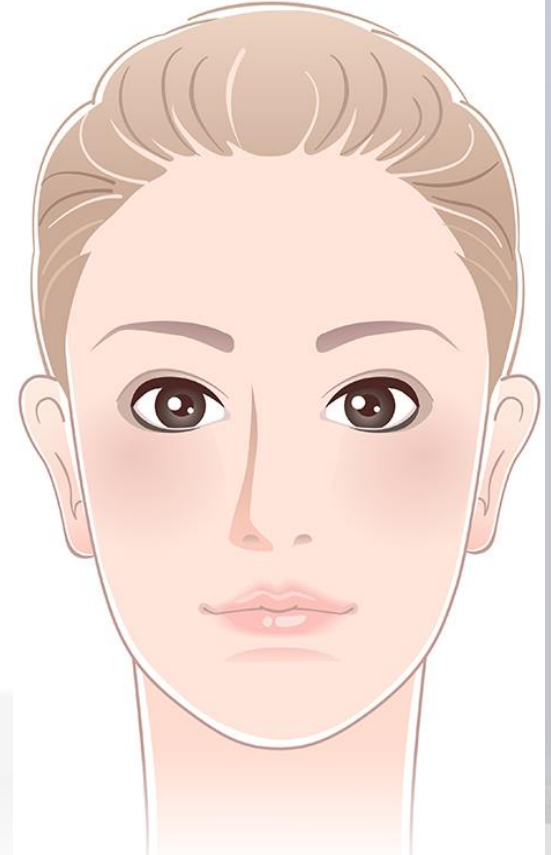
Older (over 50) Skin & Thin Fat Layer



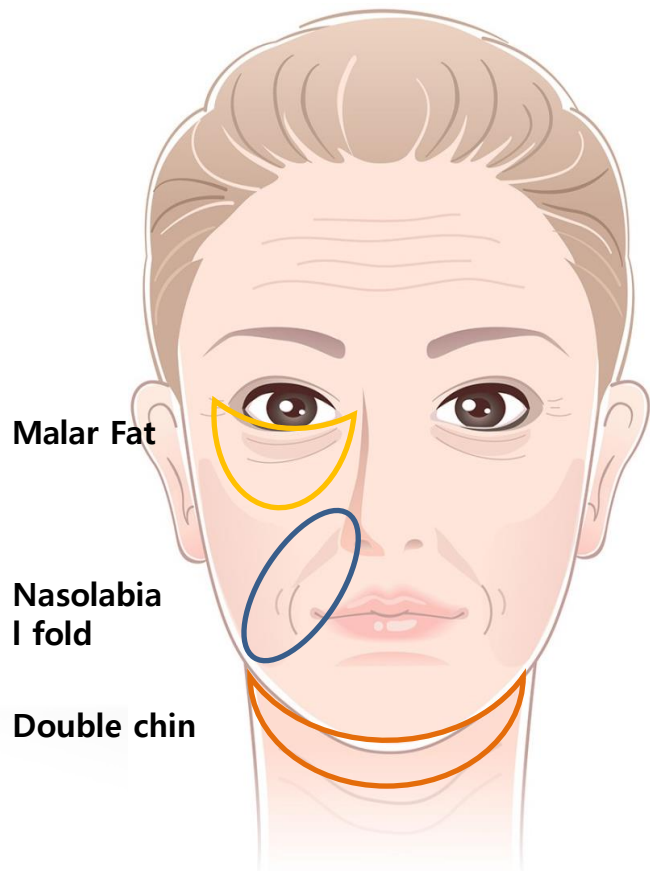
Mostly RF



**Wrinkle improvement
(Periorbital, forehead,
nasolabial fold)
Tightening & Lifting**



Older Skin & partially Thick Fat

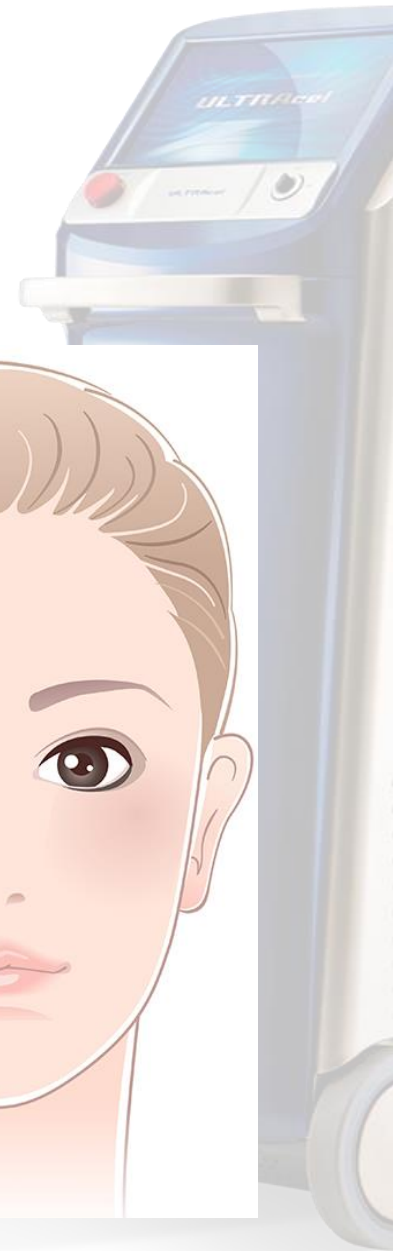
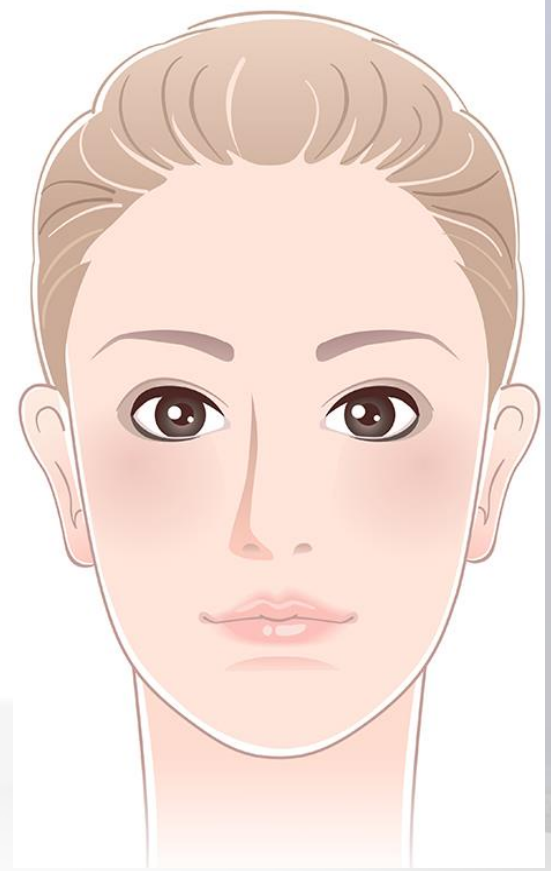


RF + HIFU

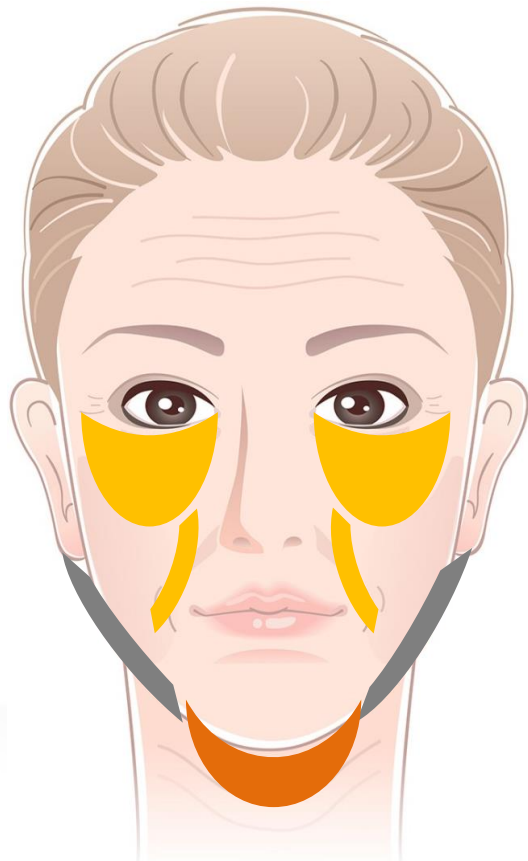


RF lift Dermis

HIFU lift fat & SMAS

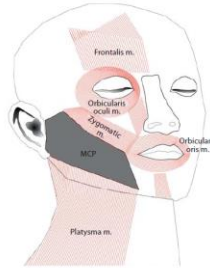


Older Skin & partially Thick Fat



Following overall RF operation, HIFU is used partially.

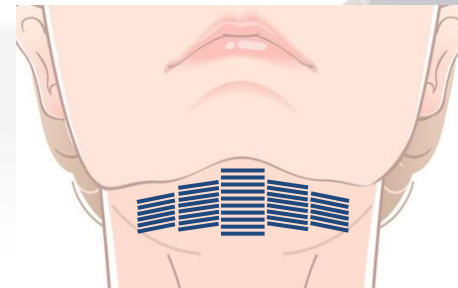
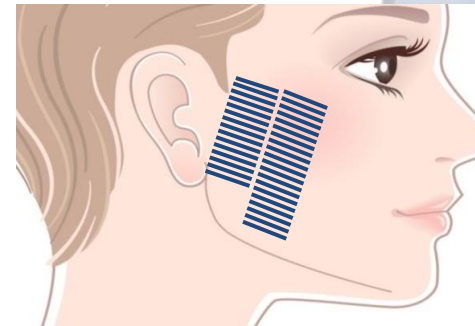
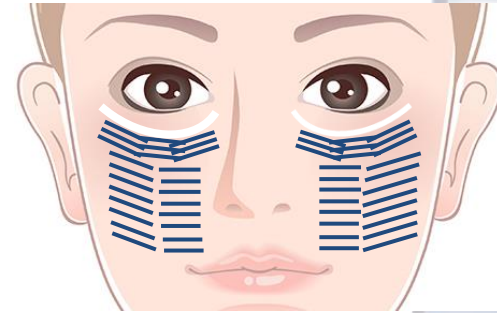
Malar Fat Volume reduction



SMAS tightening

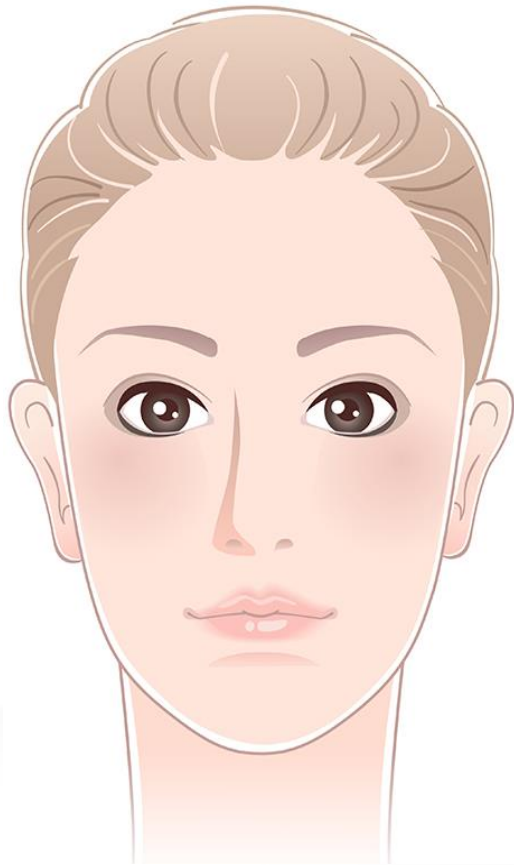


Submentum fat reduction



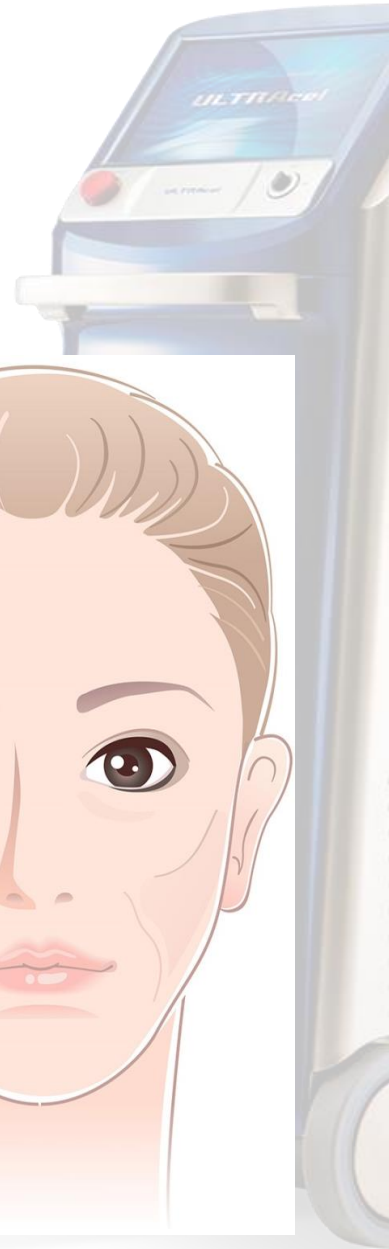
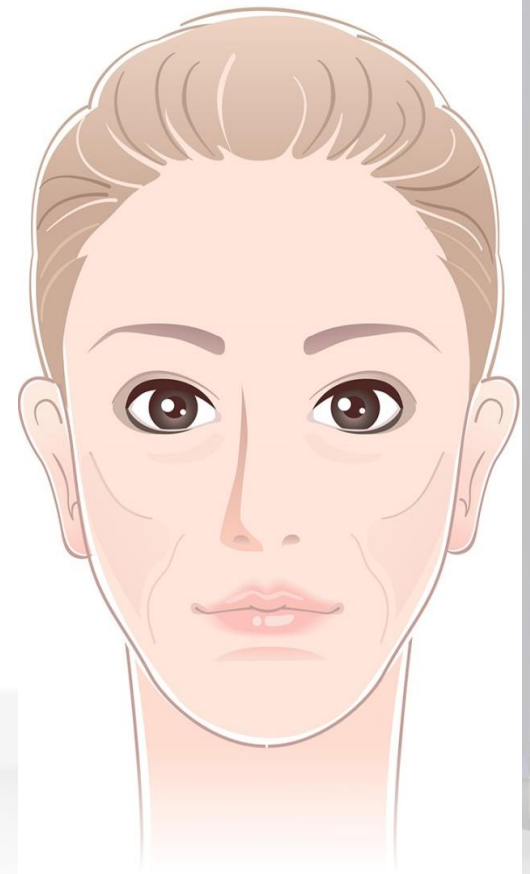
CAUTION!!

HIFU can destroy fat tissue in wrong Tx area



Lipoatrophy

: Sunken skin around cheeks



CLINICAL CASES



Case 1 : HIFU Only



Case 2 : HIFU Only



Case 3 : HIFU



Case 4 : HIFU + GFR

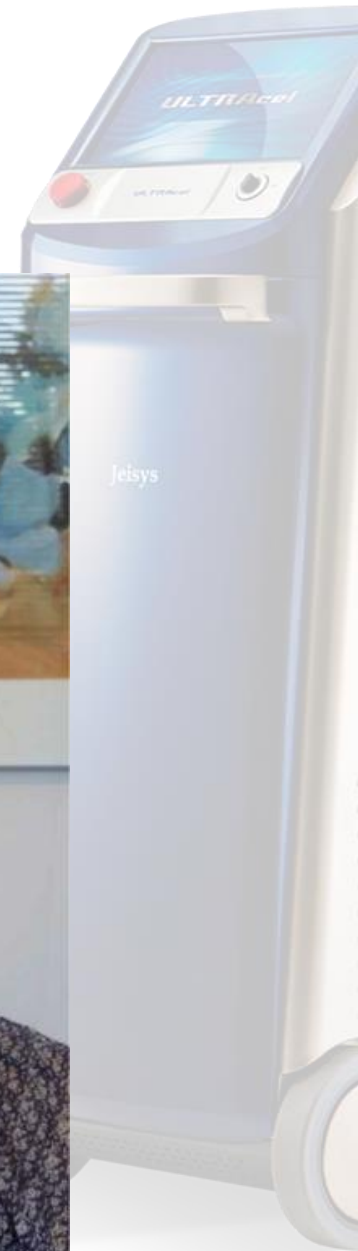


F/59

Case 5 : HIFU + GFR



Case 6 : HIFU + GFR

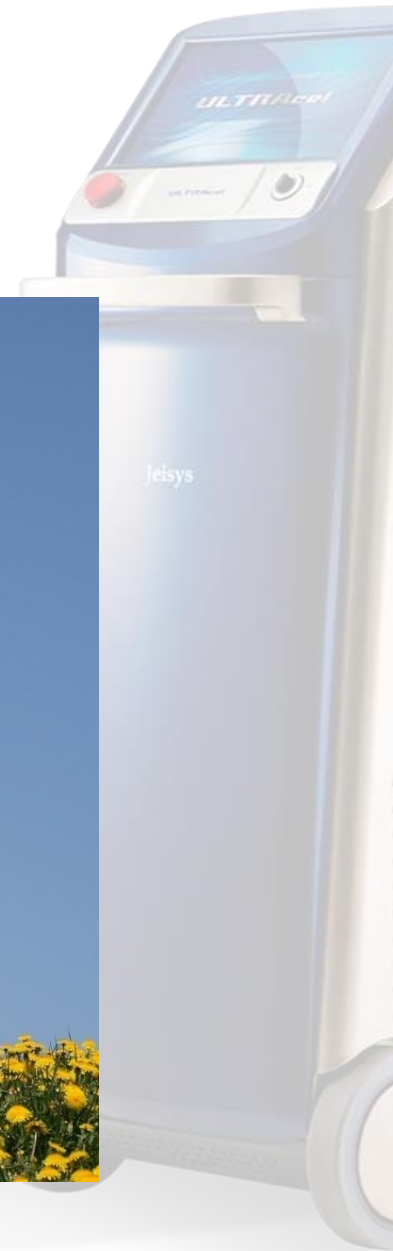


Clinical Approach (Summary)

- Careful pre-evaluation of each case (Typing)
- Pre-procedure photo
- Proper treatment plan
 - treatment method (single, combination)
 - number of treatment sessions needed
 - treatment mapping
- Manage client expectations
- Treatment procedure
- Follow up evaluation (Post-procedure photo)



Happy Patient!!



Thank you!!

