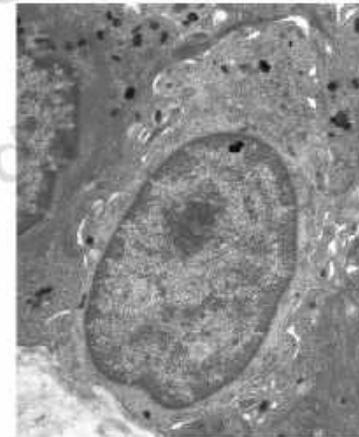
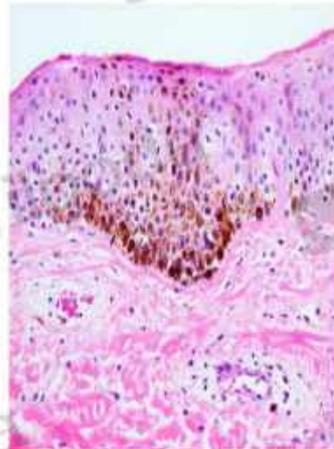




A face-split study to evaluate the effects of

microneedle **radiofrequency**

with/without Q-Nd:YAG laser for the treatment of **melasma**



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Back ground I

Combined Use of **Monopolar Radiofrequency** and Transdermal Drug Delivery in the Treatment of **Melasma**

Norma Cameli, MD, PhD, Elva Abril, MD, Maria Mariano, MD, and Enzo Berardesca, MD, PhD*

2014 by the American Society for Dermatologic Surgery, Inc

The RF energy emitting device enables to exert 3 levels of biostimulation (low, medium, and high) with different biological response

- (1) **cellular biostimulation**, with an increase in the proliferative processes and membrane permeability with low-energy transfer mode;
- (2) intracellular **oxygenation**, with an increase in the cellular metabolism and in the speed **of blood flow** with medium energy transfer mode;
- (3) marked endothermic increase, with **vasodilatation and hyperemia** with high-energy transfer mode.





Back ground II

Low energy **Q-switched Nd Yag** laser for melasma treatment

Subcellular Selective Photothermolysis of Melanosomes in Adult Zebrafish Skin Following 1064-nm Q-Switched Nd:YAG Laser Irradiation.

J Invest Derm, 130: 2333–2335. Epub 13 May (2010)

A **low fluence Q-switched Nd:YAG laser** modifies the 3D structure of melanocyte and ultrastructure of melanosome by **subcellular-selective photothermolysis**.

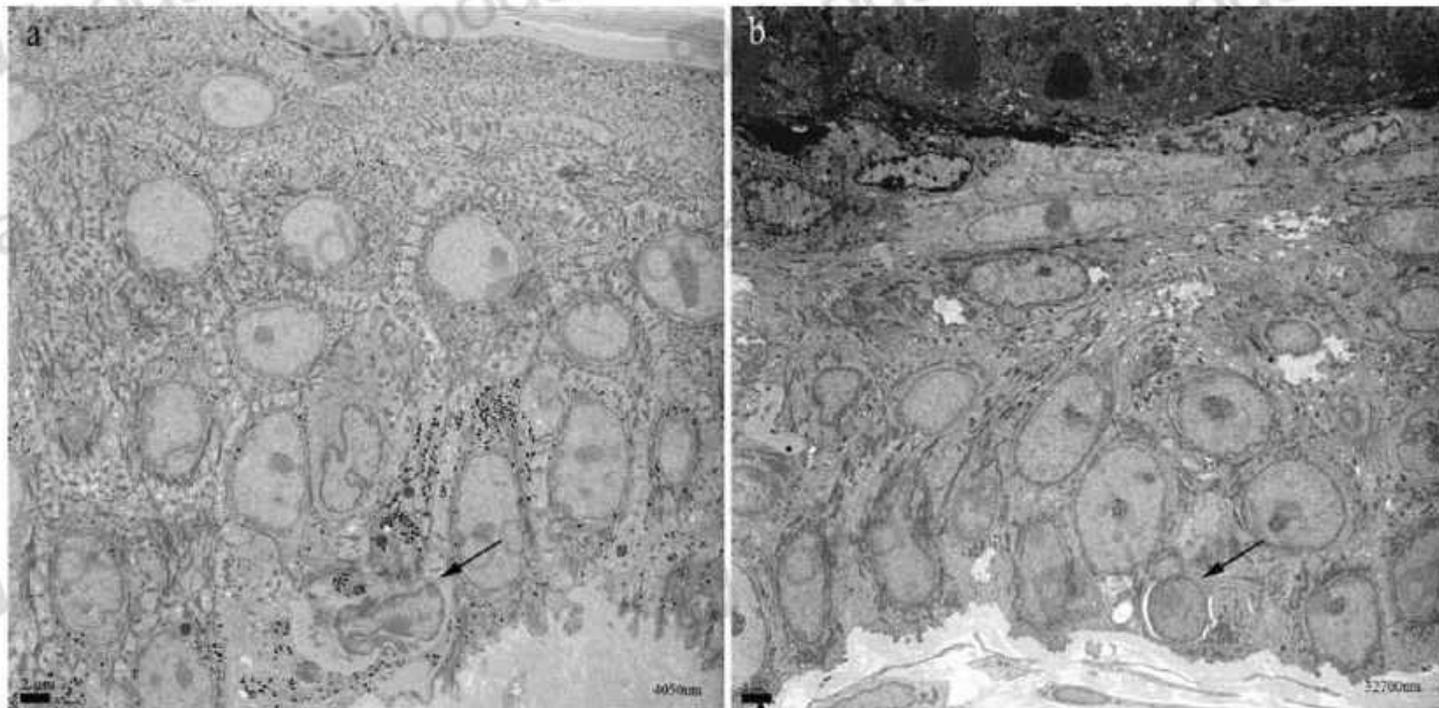
J Electron Microsc, 60: 11-18. Epub 11 Oct (2010)



Back ground III

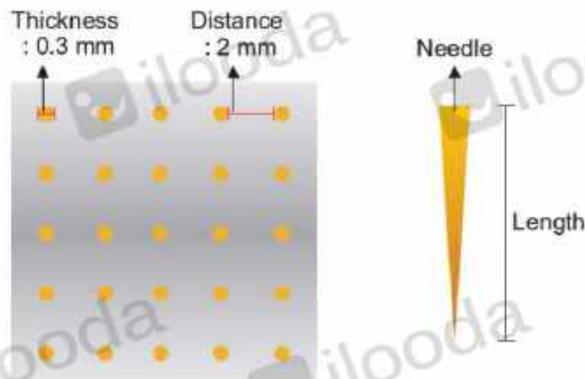
A low fluence QSNL laser modifies the 3D structure of melanocyte and ultrastructure of melanosome by subcellular selective photothermolysis(laser toning)

JOURNAL OF ELECTRON MICROSCOPY, Vol. 60, No. 1, 2011





RF(Radio Frequency) micro-needle system (Secret®)





1064nm Q-switched Nd:YAG laser (CuRAS®)

- Low-fluence mode : Fragment cytoplasmic melanin granules
without causing cellular destruction
- Requires minimal downtime & causes lower incidence of complications





1. Period of study

- 2017.1.1~2017.5.31 (6 month)

2. Subjects

(1) Inclusion criteria

- 1) Clinical diagnosis of melasma
- 2) Without infective dermatitis

(2) Number of patients

: Total 15 patients (1 males, 14 females)/ Age : 35~57 (mean 43.1)

Pattern : Malar 11 (73%), Centrofacial 3 (20%), Mixed 1 (7%)/Fitzpatrick's skin type : IV (14), III (1)

(3) Treatment

microneedle radiofrequency (Secret®) : 50-60%, depth 0.7 mm to 1mm, single pass

low-fluence 1064nm QSND laser (CURAS®) : PTP mode, 1.0 J, median shot 2350.11±524.80



3. Measurement

(1) Mexameter®

- Measurement of absorption/reflection of the light from skin
- 16 light emitting diodes (LED) arranged circularly
 - 568nm (Green)
 - 660nm (Red)
 - 870nm (Infrared)
- **Measured on every visit**
on 3 marked points of both sides





3. Measurement

(2) **PSI score** (Pigmentation and severity index)

- PSI score (0-48) = (darkness + density) x area
- Photographs were reviewed by 3 independent physicians

Darkness	Density	Area
0 = absent	0 = minimal	0 = no involvement
1 = slight	1 = slight	1 = less than 10%
2 = mild	2 = mild	2 = 10-29%
3 = marked	3 = marked	3 = 30-49%
4 = severe	4 = maximum	4 = 50-69%
		5 = 70-89%
		6 = 90-100%



3. Measurement

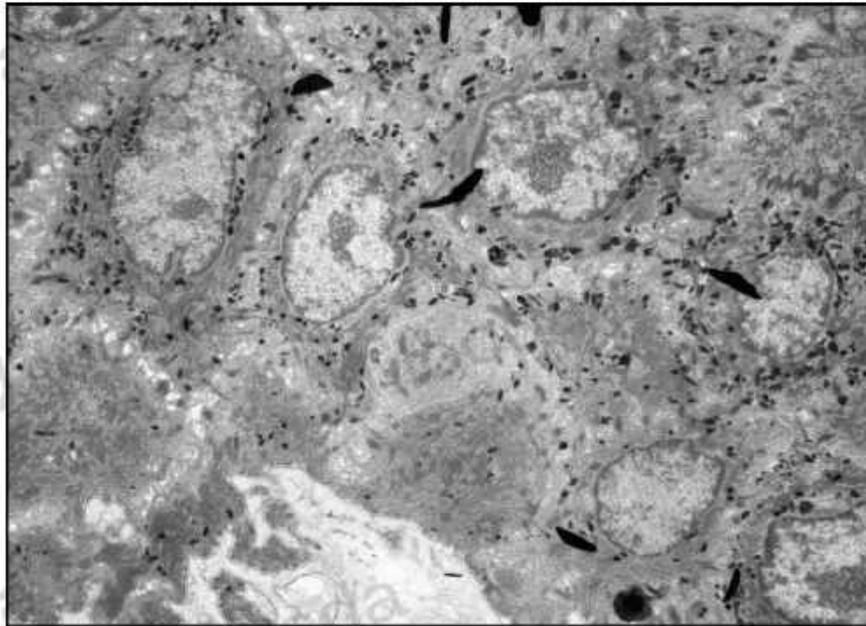
(3) Skin biopsy & Electron microscopy

- 9 patients who agreed with skin biopsy



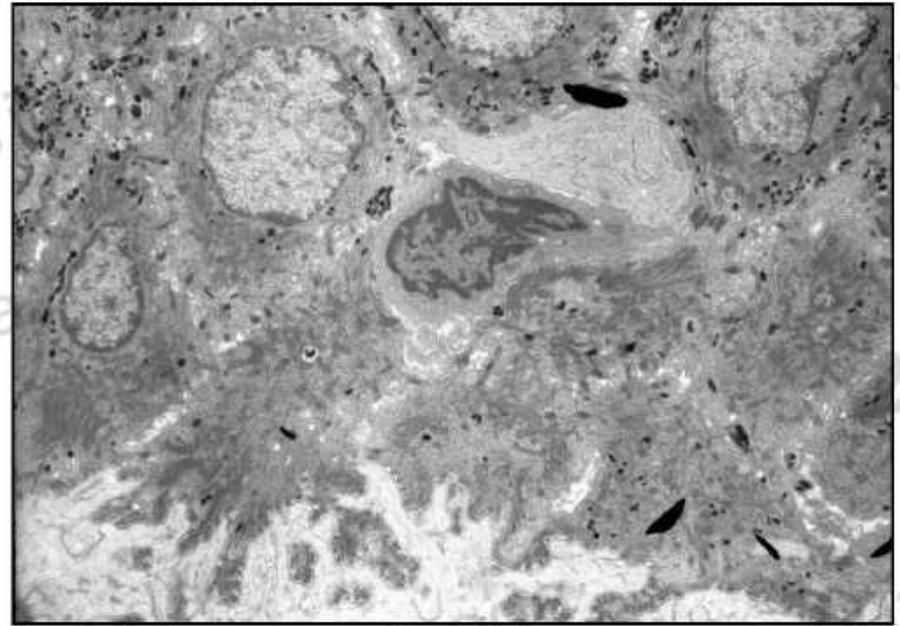
Result : preliminary study

치료전



(x3000)

RF + 레이저 토닝 치료후



(x3000)



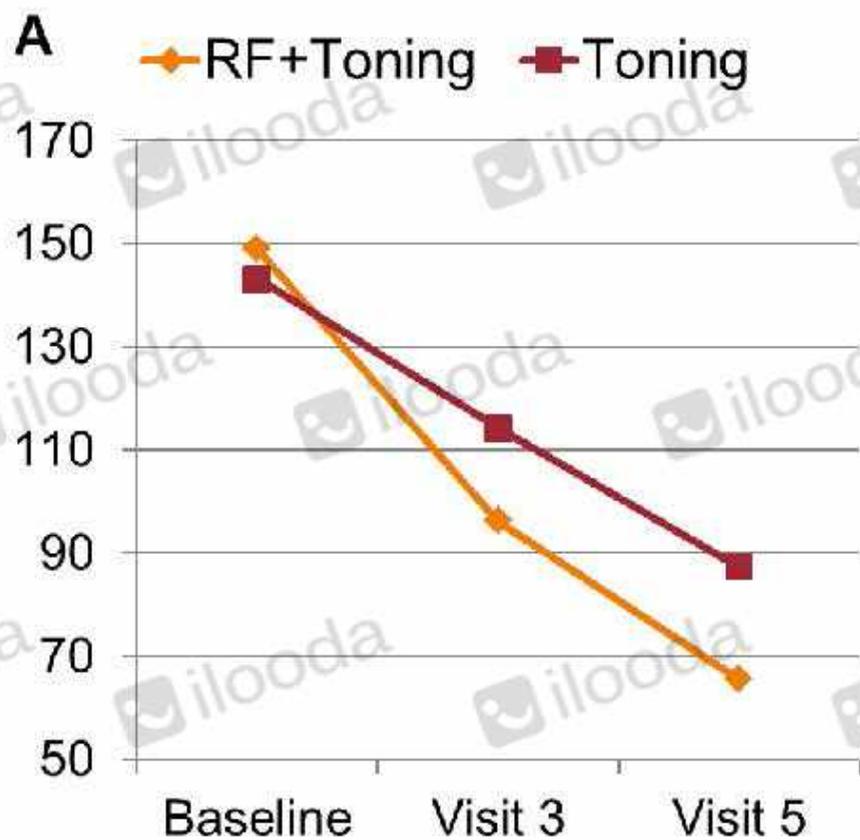
Result

	Baseline	Visit 3	Visit 5	P value
Mexameter				
RF+Toning	148.98±57.45	96.30±26.85	65.55±26.24	0.000
Toning	143.24±54.85	114.23±43.49	87.31±42.13	0.006
P value*	0.460	0.041	0.005	
PSI score				
RF+Toning	10.20±3.06	7.90±2.70	5.50±2.05	0.000
Toning	11.13±4.88	9.00±4.19	7.63±3.16	0.037
P value*	0.241	0.066	0.002	

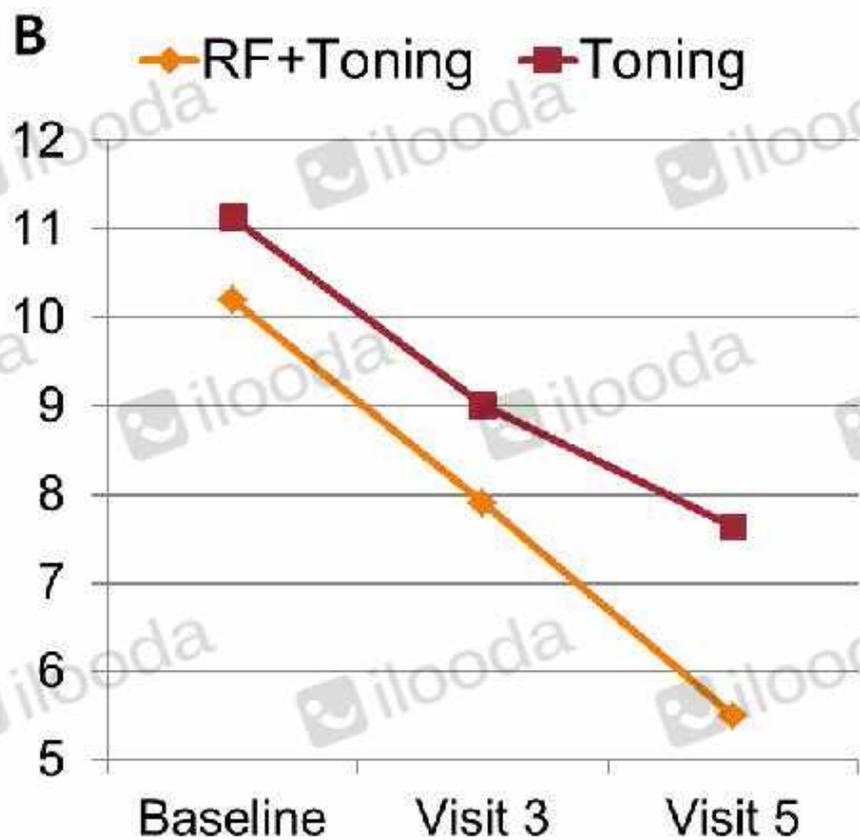


Result

Mexameter



PSI score





Result : Case 7 (F/53)

김 00

Toning
+RF



Toning



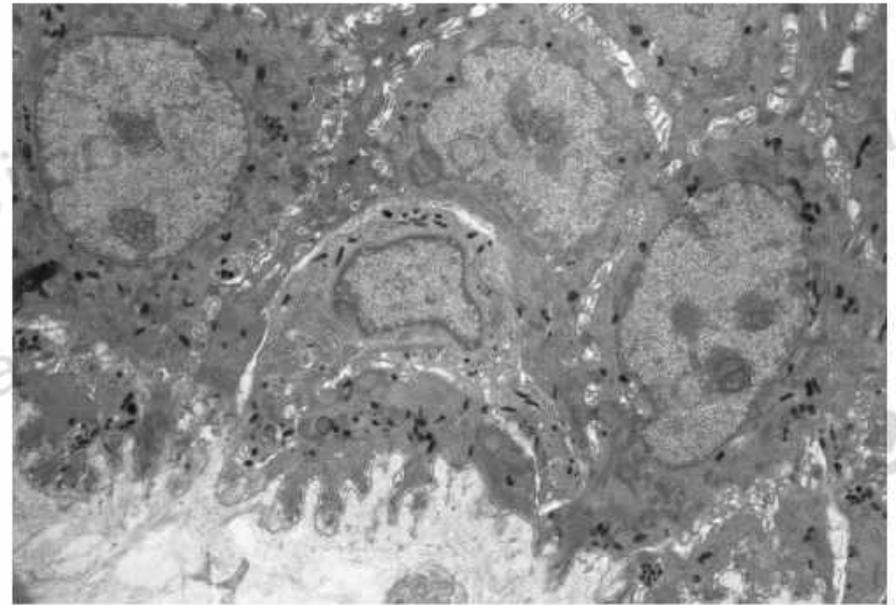
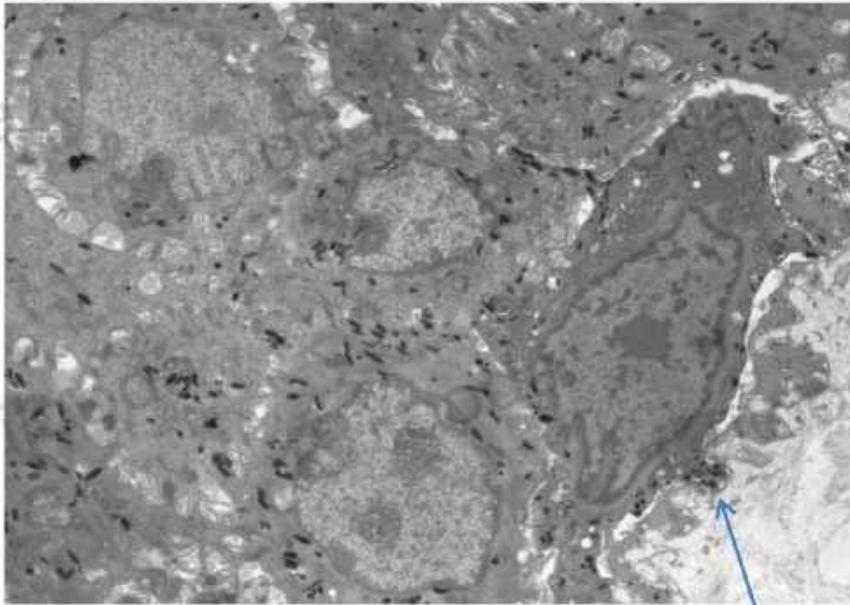


Result : Case 7 (F/53)

김 00

Toning + RF

Toning



(x3000)



Result : Case 7 (F/44)

조 00

Toning + RF

Toning

치료 전



치료 후

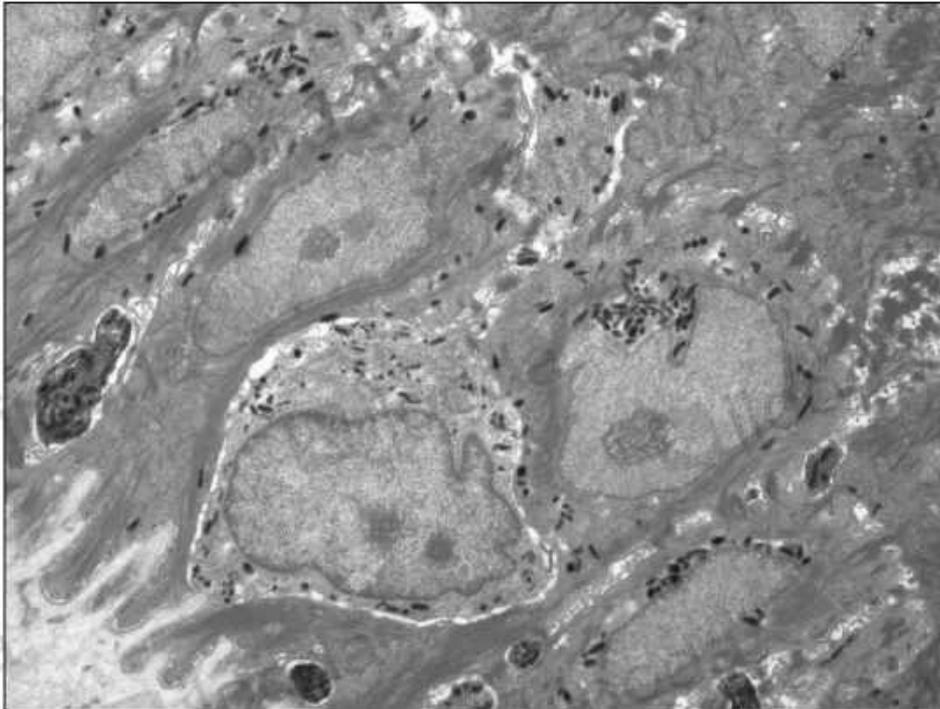




Result Case 7 (F/44)

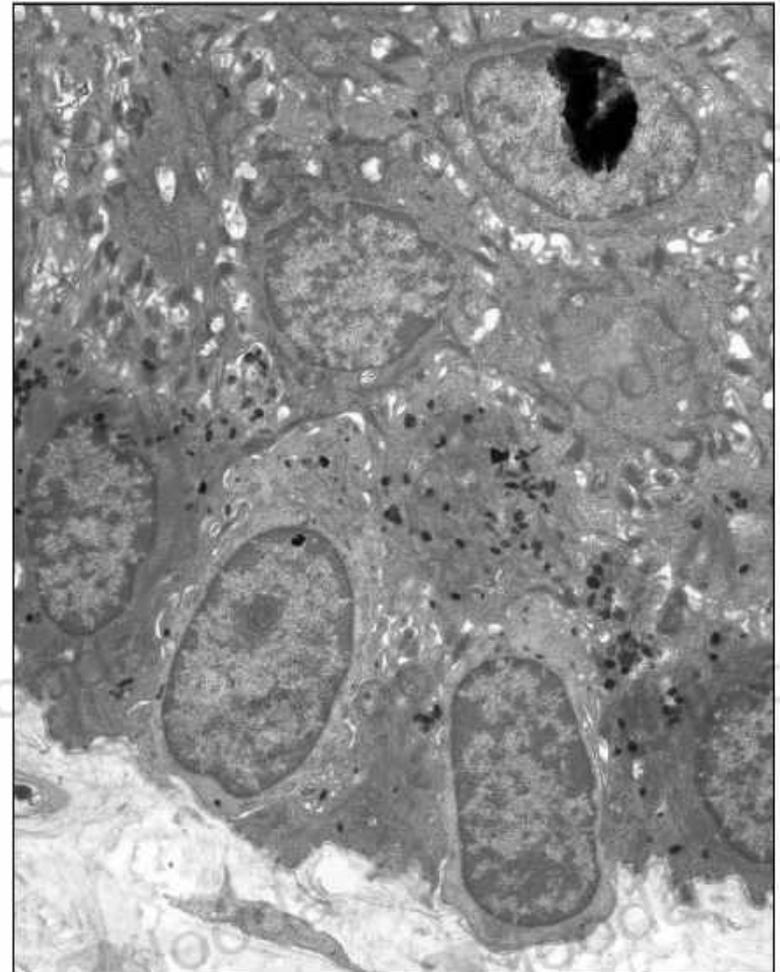
조 00

Toning + RF



(x3000)

Toning





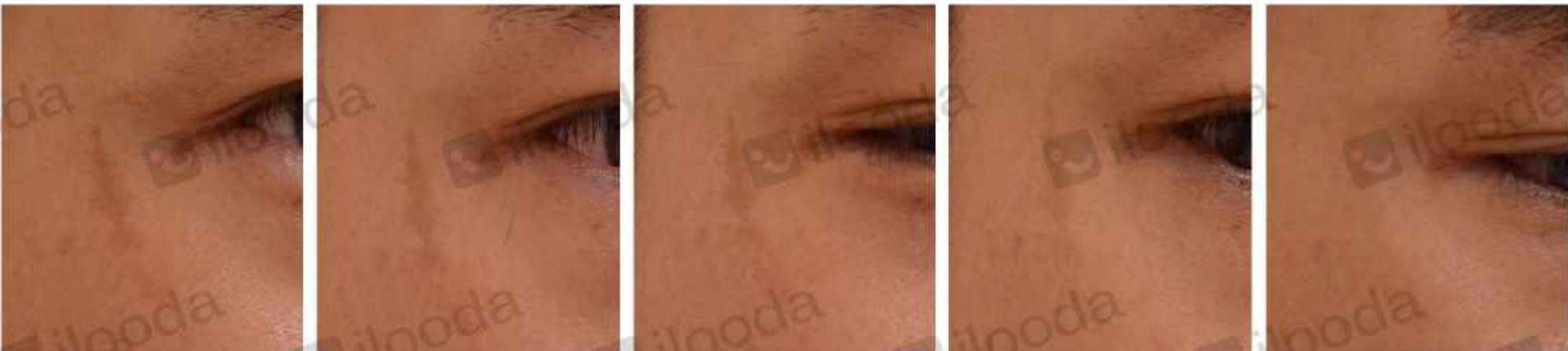
Result : Case 14 (M/35)

RF00

Toning + RF



Toning

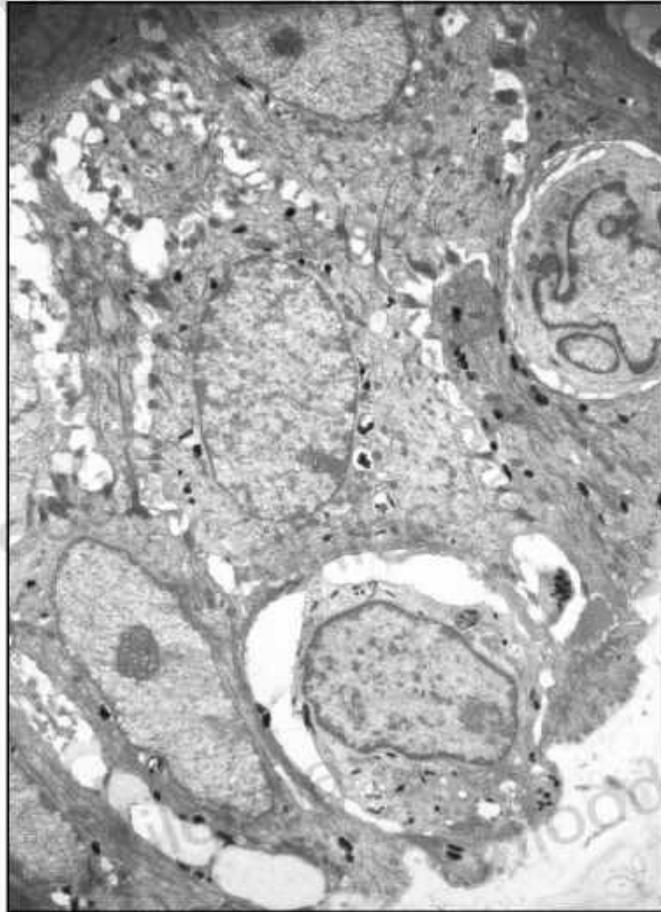




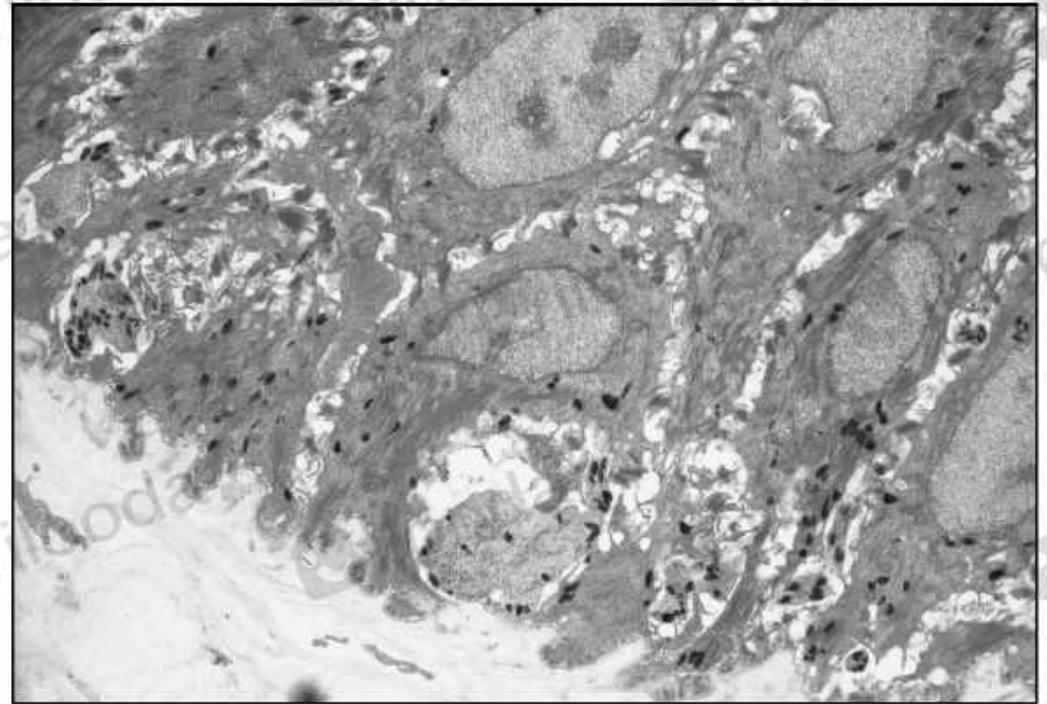
Result Case 14 (M/35)

문00

Toning + RF



Toning



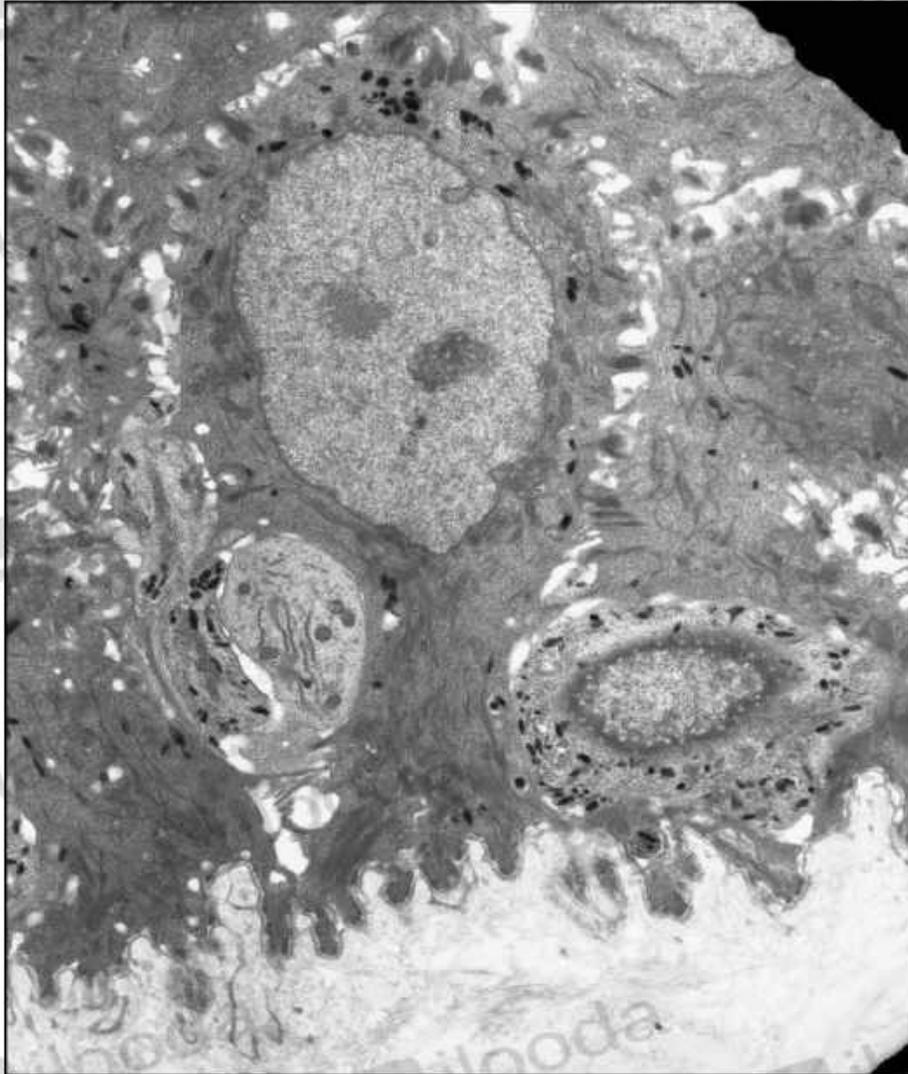
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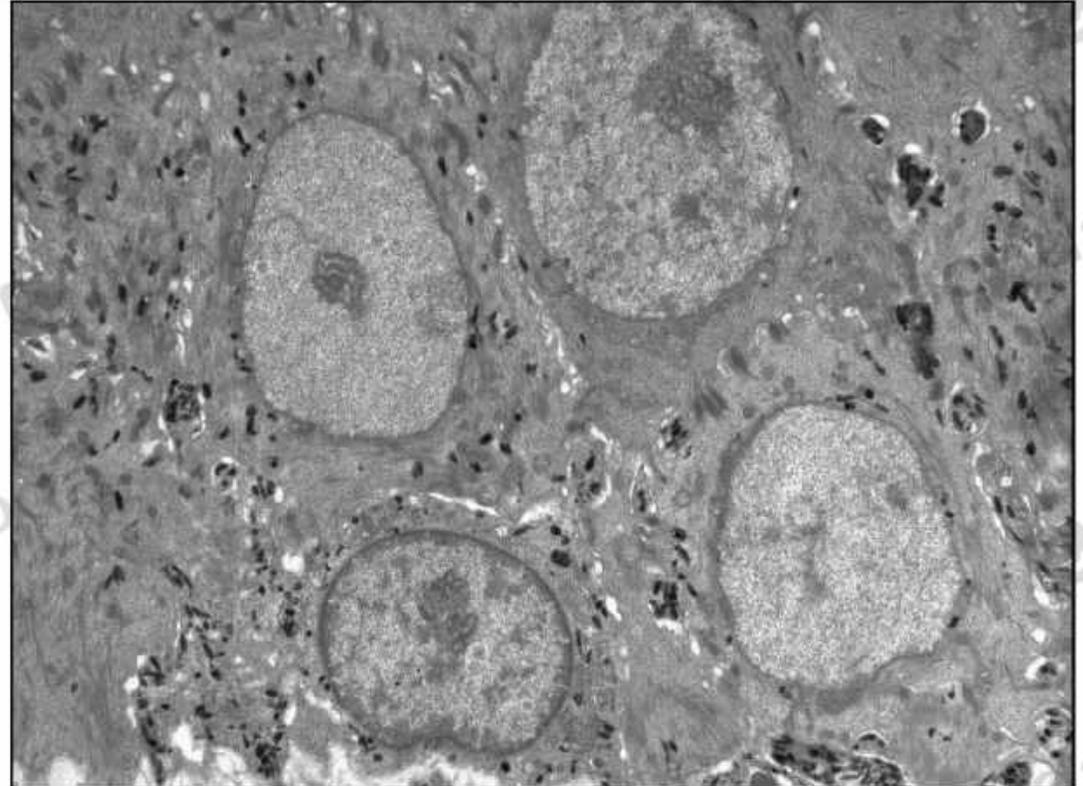
Result Case 14 (M/35)

문00

Toning + RF



Toning



(x3000)



Result

(x3000)

Case 1

Case 3

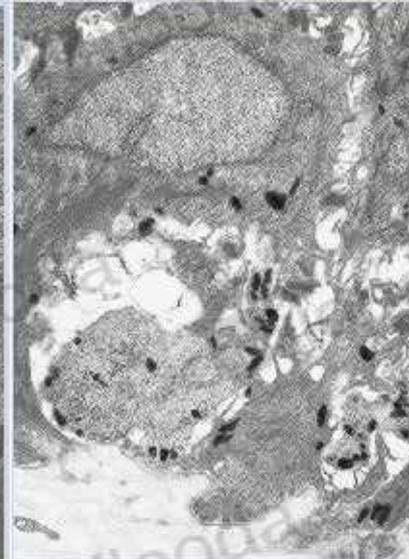
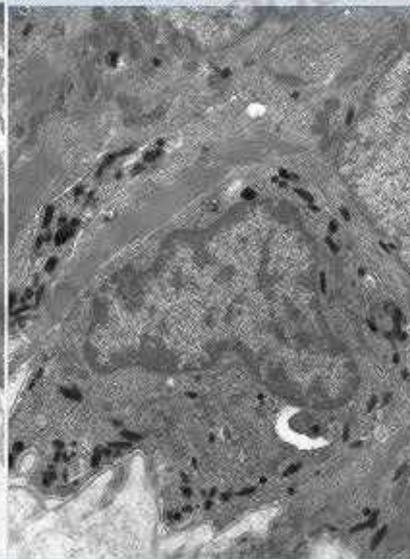
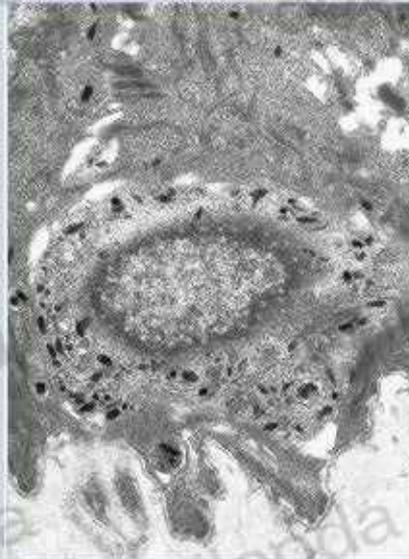
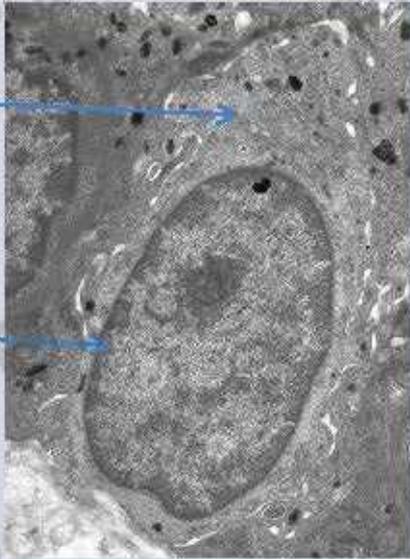
Case 8

Case 9

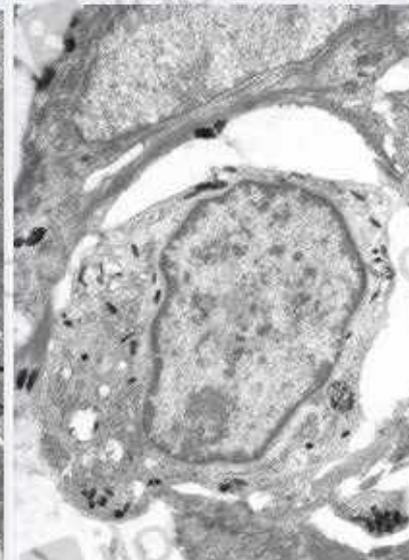
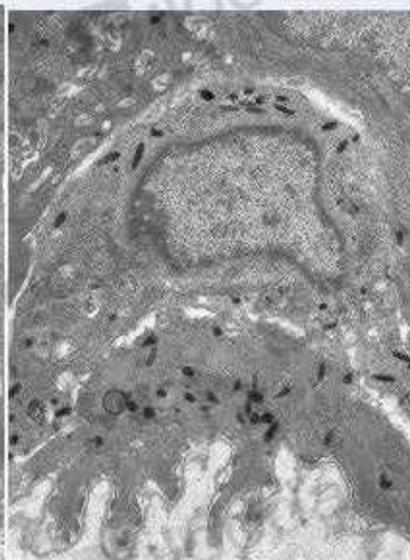
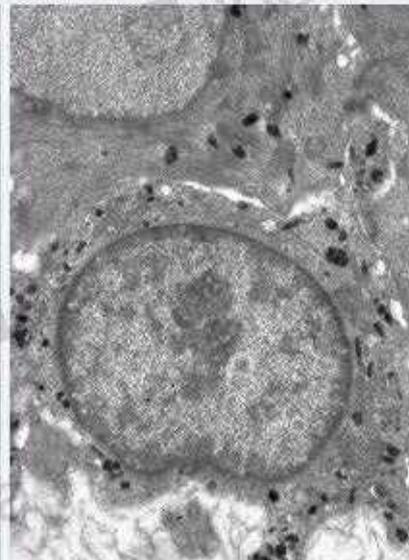
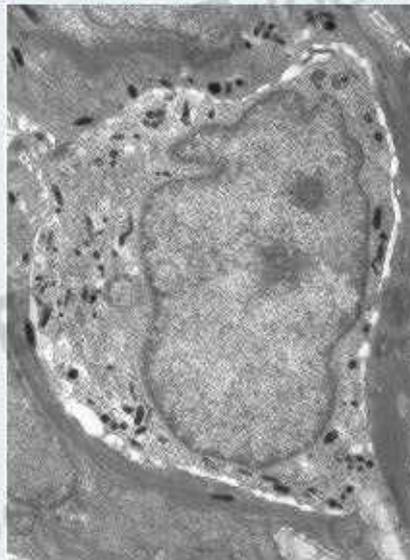
T

cytoplasm of
melanocyte

Nu of
melano.



T+RF





Discussion

Entry pathway

- Melanin production
- Melanosome transfer

Deliver heat energy to the targeted lesion with minimal epidermal damage

- Induces cellular activation induces neocollagenosis & neoelastogenesis and immune rx
- High safety profile, and minimal posttreatment recover time

Microneedle RF

Melasma

Exit pathway

Make pores through the stratum corneum and basement membrane

- Increasing transepidermal/ dermal elimination of melanin
- Alteration of micro-environment (Basement membrane)



Limitation of our study

- (1) Our study was performed with a small study sample.
- (2) We didn't evaluate the long-term results of treatment.
- (3) Adequate intensity and depth of RF for the treatment of melasma is not yet established.

⇒ Further studies will be needed to evaluate

the long term result of microneedle RF on melasma

Dermabrasion

Selective photothermolysis - ruby laser, QSWND

Ablation fractional laser

IPL

Subcellular selective photothermolysis -laser toning QS & Nano wave length Nd/Alex

Vascular clearing – long pulsed Nd –Yag, long pulsed alex, dye

Chemical peel (TCA, GA, SA)

Radiofrequency

