I. The Use of IPL for Vascular lesion

Dr.Bom Skin & Laser Clinic

MD. Lee JeHyuk

IPL vs PDL (1)

Table 1.2 | A summary of lasers used for common disorders

Vascular lesions	*Pigmented lesions*	*Tattoo removal*	*Photoepilation*	*Resurfacing Ablation*
PDL* (585–600 nm)	QS Ruby (694 nm)	QS Ruby (694 nm)	Long-Pulse Ruby (694 nm)	Carbon dioxide * (10,600 nm)
Long-pulse Nd:YAG (1,064 nm)	QS Nd:YAG * (532, 1,064 nm)	QS Nd:YAG* (532, 1,064 nm)	LongPulse Nd:YAG * (1,064 nm)	Er:YAG * (2,490 nm)
Long-pulse KTP (532 nm)	QS Alexandrite (755 nm)	QS Alexandrite * (755 nm)	LongPulse Alexandrite (755 nm)	Fractional* (1540 nm)
IPL†	IPL †		Long Pulse Diode * (800 nm)	
			IPL*	

* Used preferentially in pigmented skin
†Not very effective

Lasers in Dermatological Practice 2014

IPL vs PDL (2)

Lasers in Surgery and Medicine 44:97–102 (2012)

Split-Face Randomized Treatment of Facial Telangiectasia Comparing Pulsed Dye Laser and an Intense Pulsed Light Handpiece

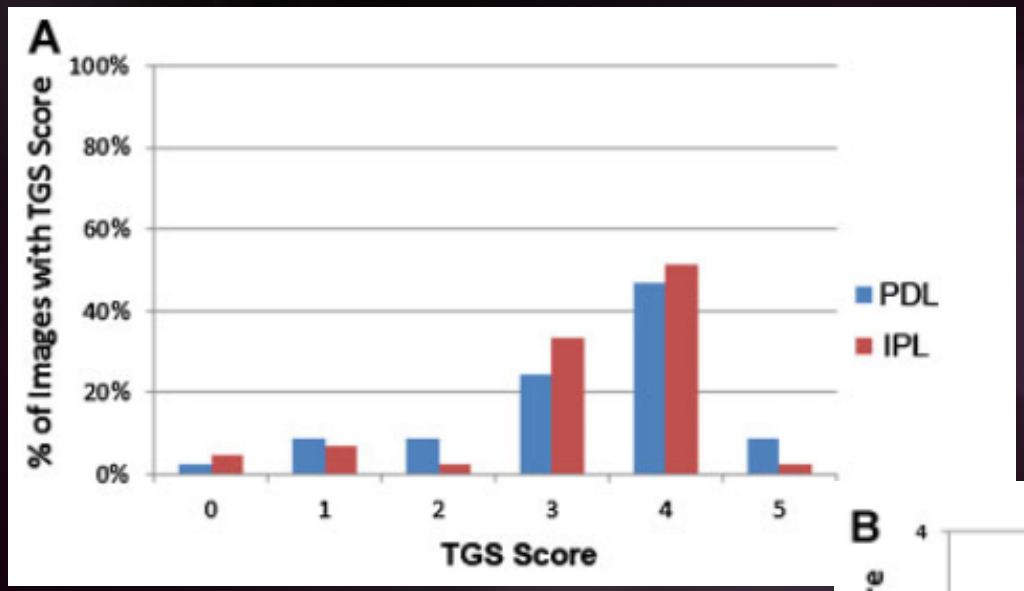
Emil A. Tanghetti, MD*
Center for Dermatology and Laser Surgery, Sacramento, California

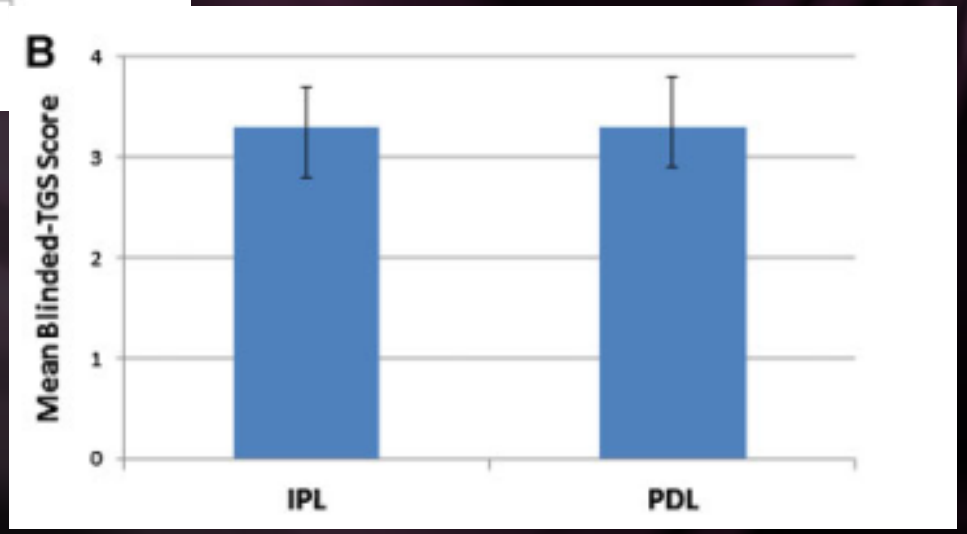
MaxG vs V-star 595nm

1month **500–670 + 870–1,200 nm**
Spot: 10 X 15 mm
Fluence: 34–70 J/cm2,
Pulse width: 10 or 100 ms
+ 5C contact cooling

1 month apart with **595nm**
Spot: 10 or 7 mm
Fluence : 8.1–14.5 J/cm2,
Pulse width: 10 or 40 ms
+ air cooling

IPL vs PDL (3)


A
% of Images with TGS Score
100%
80%
60%
40%
20%
0%
0
1
2
3
4
5
TGS Score
PDL
IPL


B
Mean Blinded-TGS Score
4
3
2
1
0
IPL
PDL

Complication (1)

- safe device ?

Complication (2)

- safe device ?

Complication(3)

Complication (4)

- **Cause of complication**

=

only unskilled technique ?

Microscopic Response (1)

Mechanisms of Microvascular Response to Laser Pulses

Kittisak Suthamjariya, William A. Farinelli, Wooseok Koh, and R. Rox Anderson

J Invest Dermatol 122:518 –525, 2004

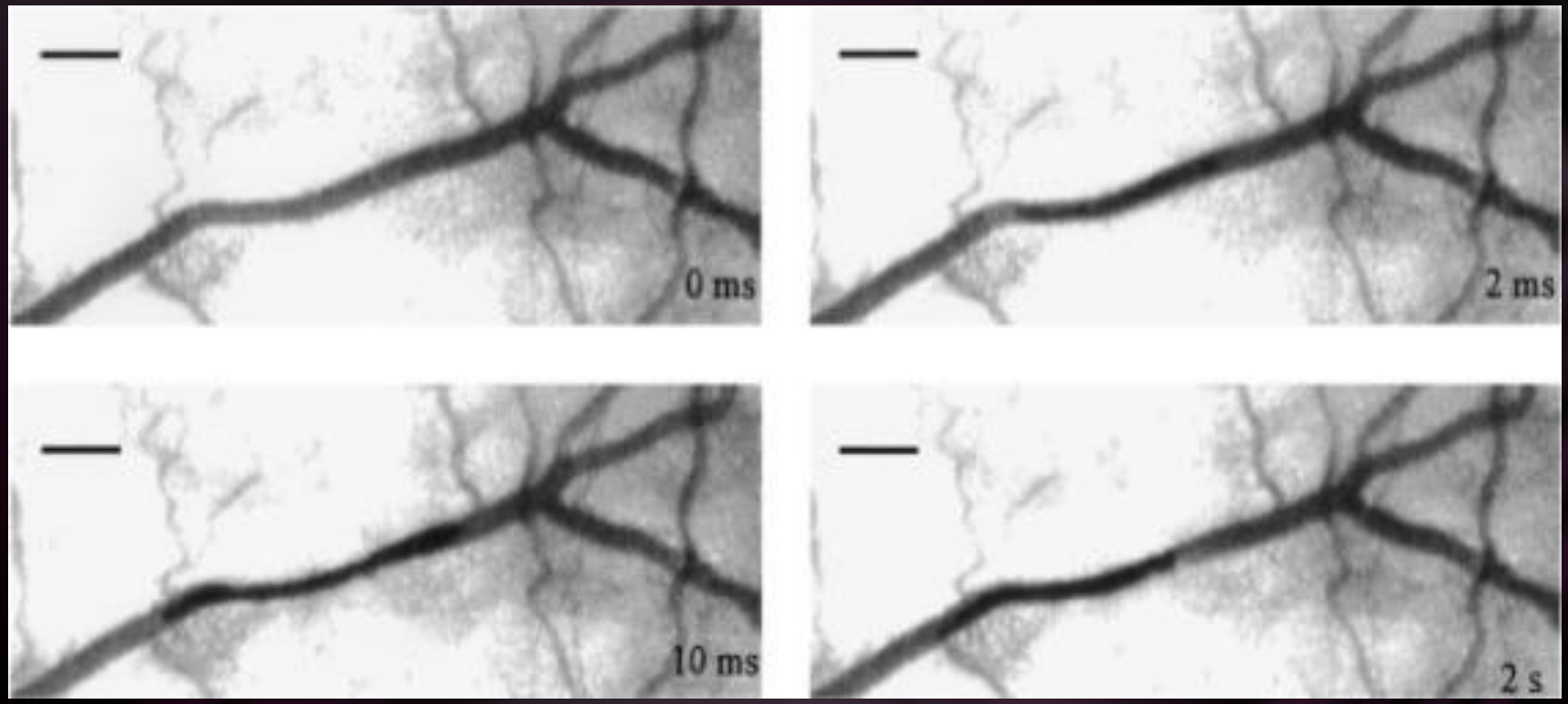
A high-speed (2000 fps) CCD camera and microscope

Hamster cheek pouch microvessels

During and after 532 nm and 1064nm laser pulse

Pulse duration and fluence were varied systematically (1–50 ms, 0–600 J per cm_2)

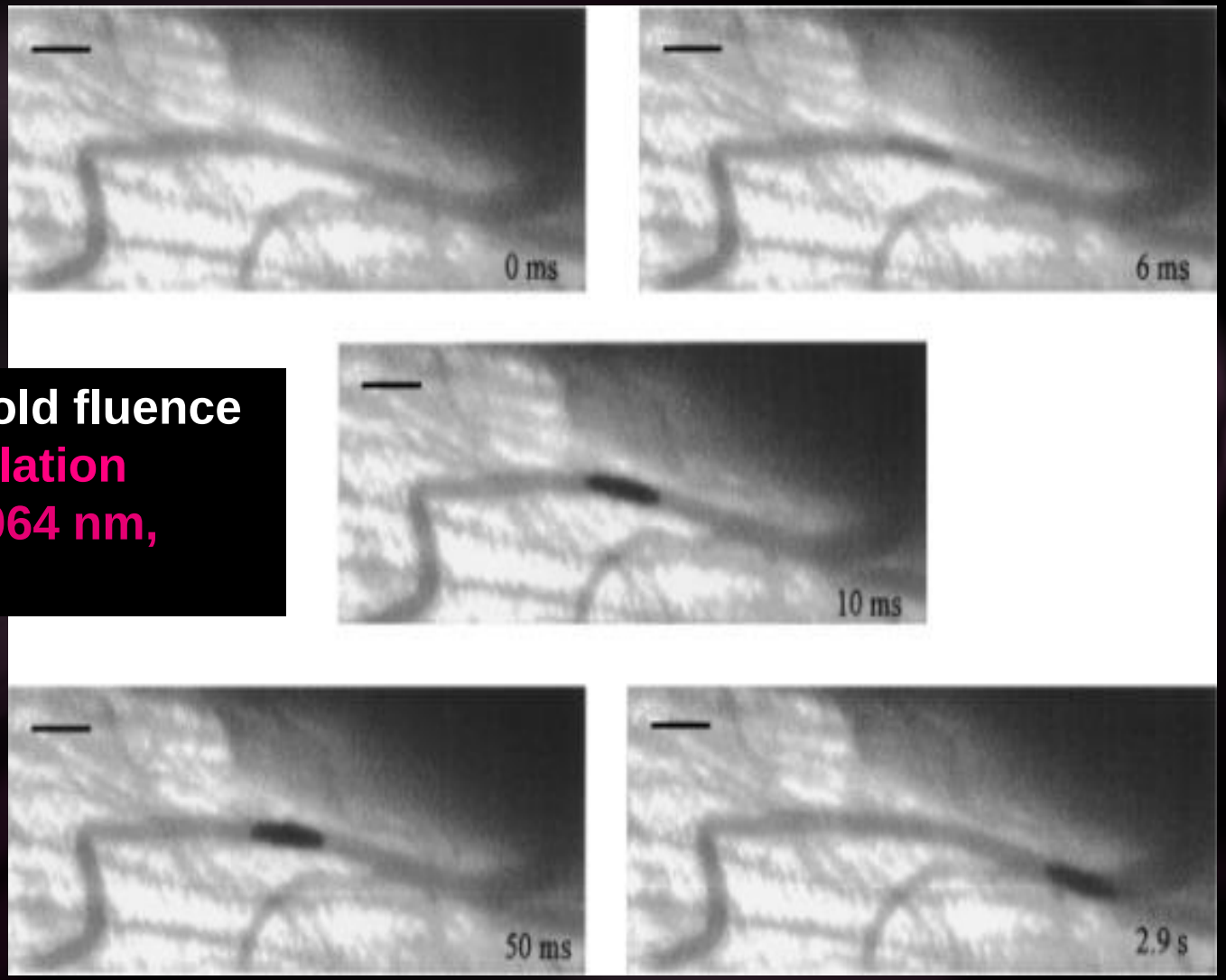
Microscopic Response (2)



Above the threshold for blood coagulation (10 J per cm2, 532 nm, 10 ms laser pulse)

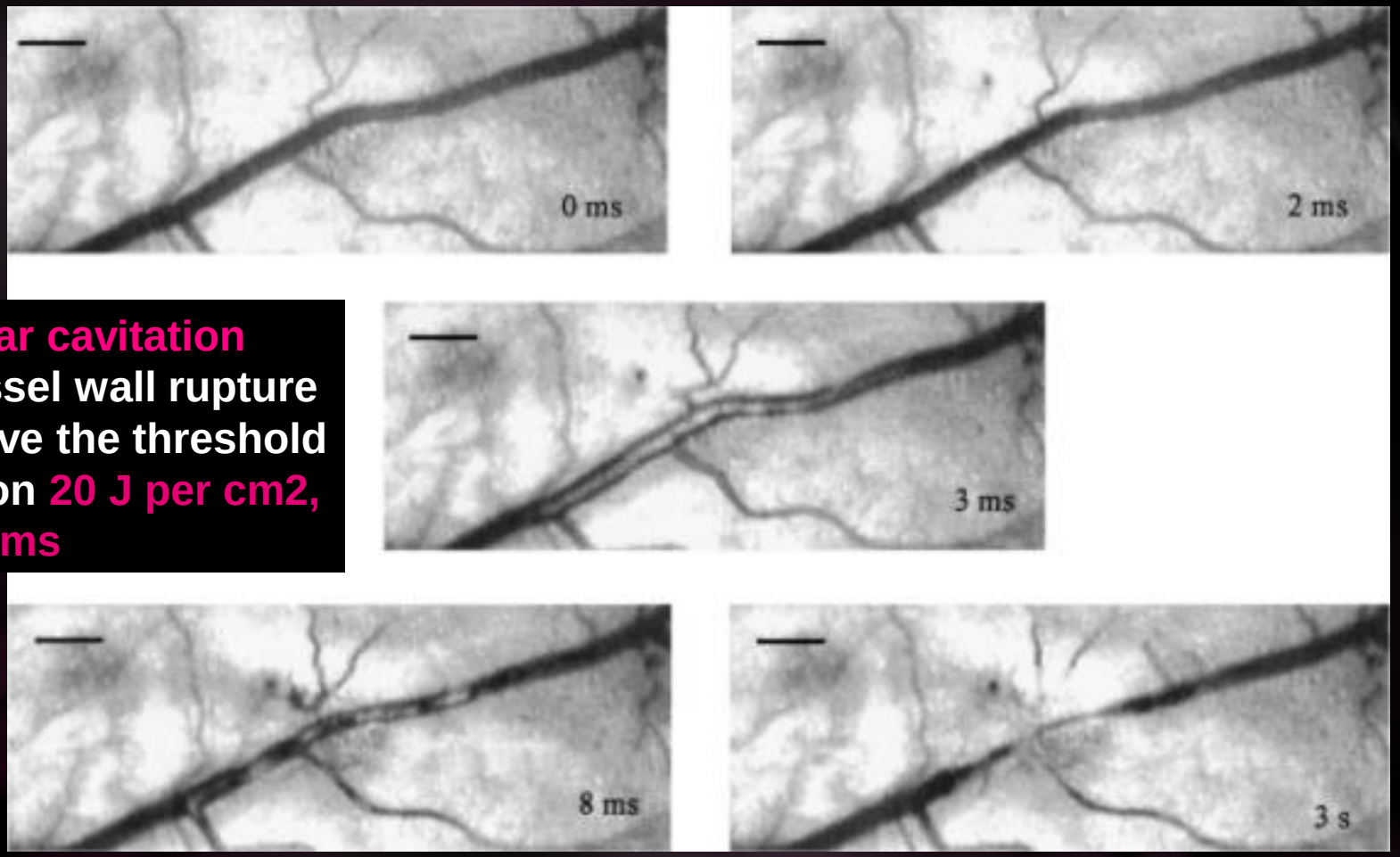
Microscopic Response (3)

Near the threshold fluence for blood coagulation 60 J per cm2, 1064 nm, 10 ms

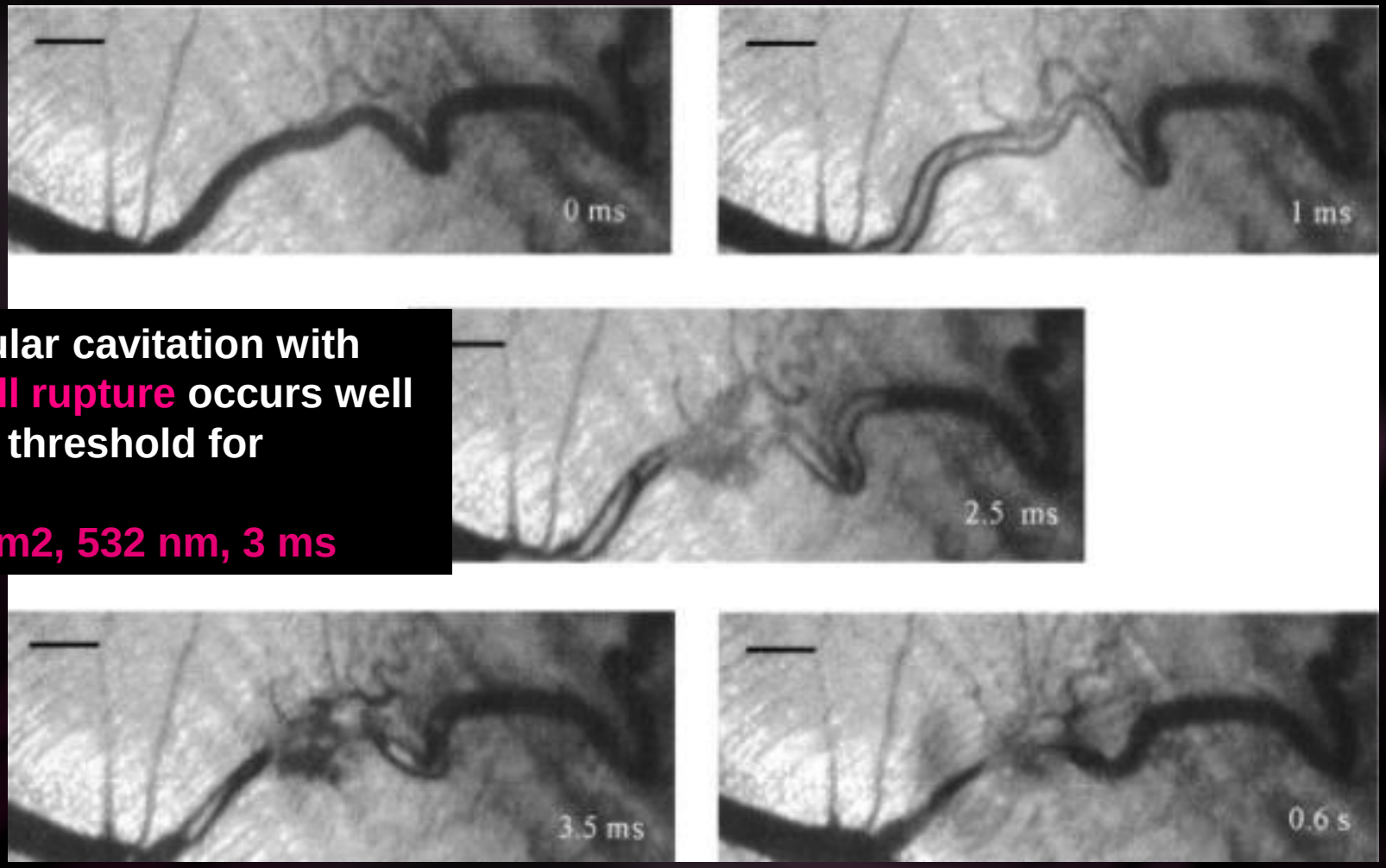


Microscopic Response (4)

Intravascular cavitation without vessel wall rupture occurs above the threshold for cavitation 20 J per cm2, 532 nm, 10 ms



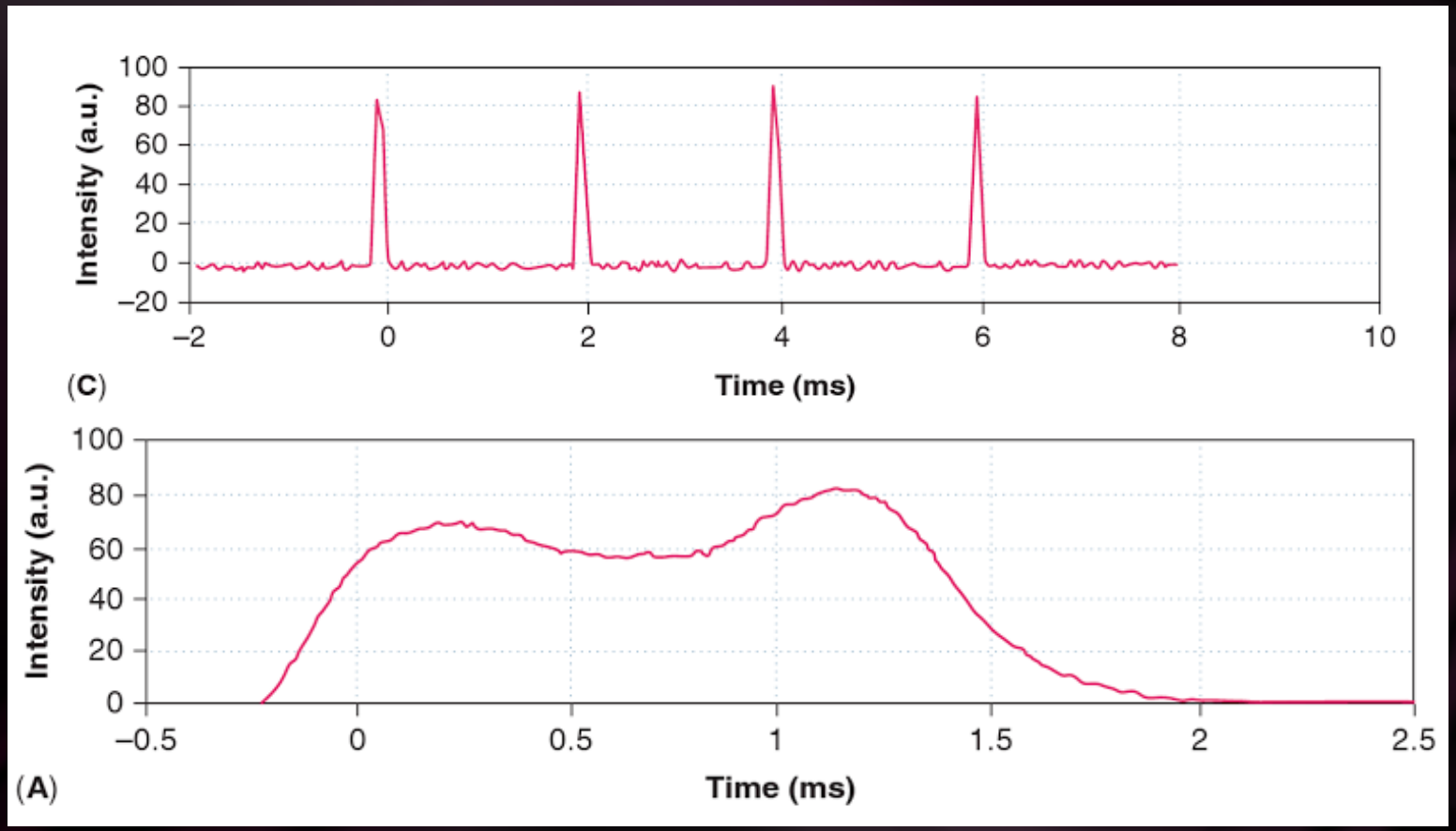
Microscopic Response (5)



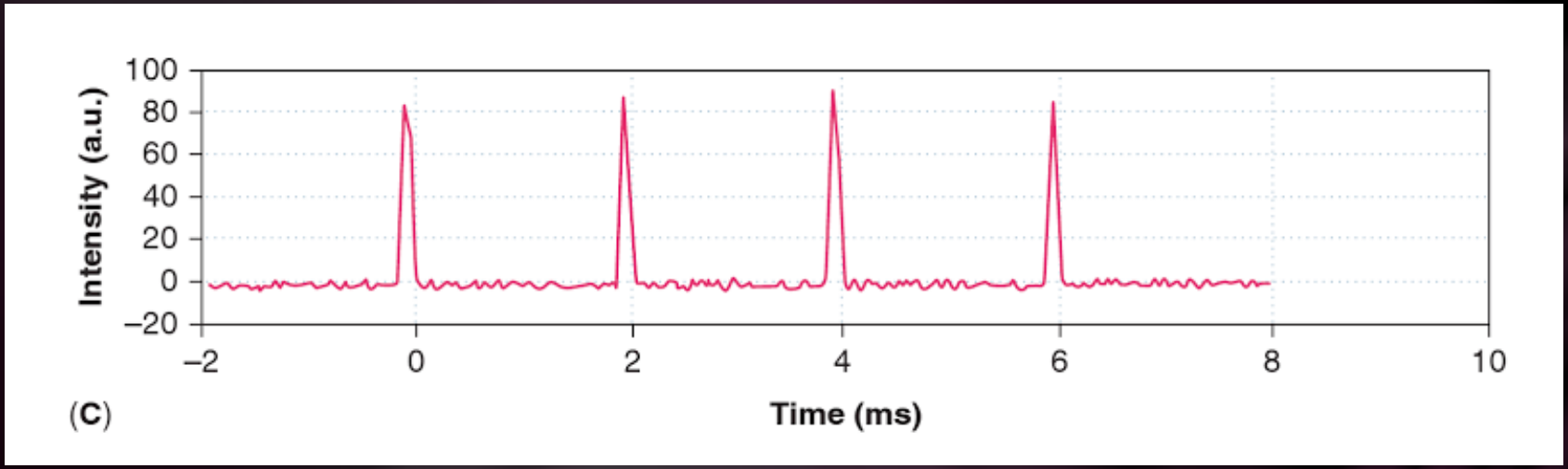
Intravascular cavitation with vessel wall rupture occurs well above the threshold for cavitation

20 J per cm2, 532 nm, 3 ms

Wave form of Spiky vs Slope (1)

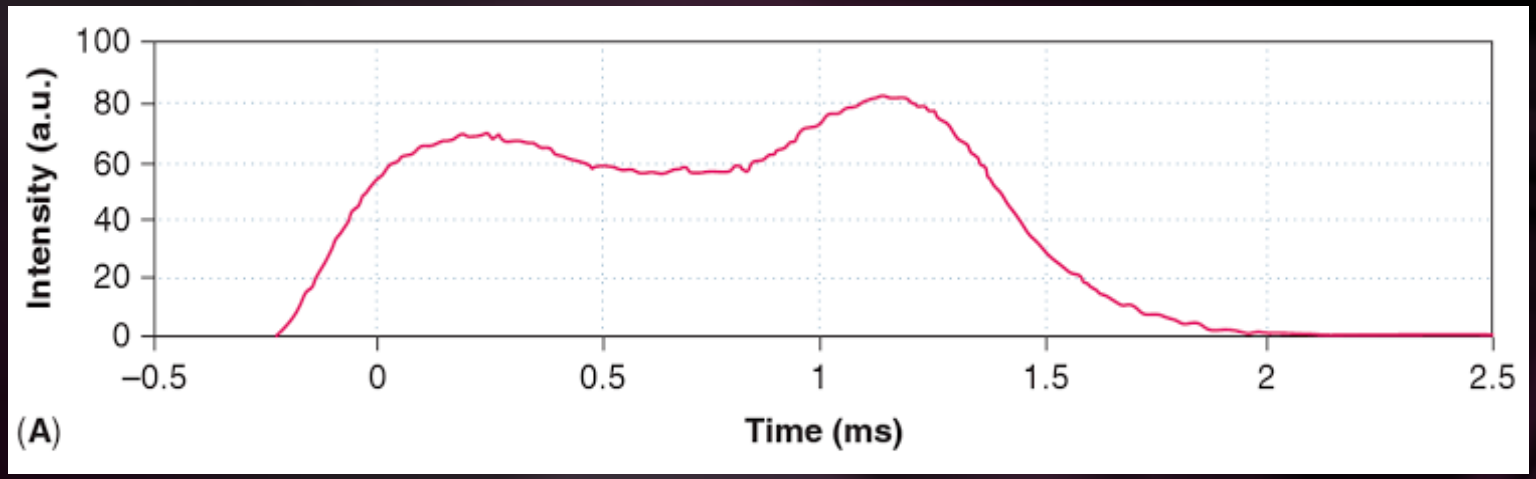


Spiky pulse wave of PDL, Nd-YAG Macropulse (Pulse trains) (2)



- more likely to cause immediate thrombosis and purpura
- even by 0.125ms micropulses, 20ms, sub-threshold fluence

Slope wave of IPL, KTP Macropulse(3)



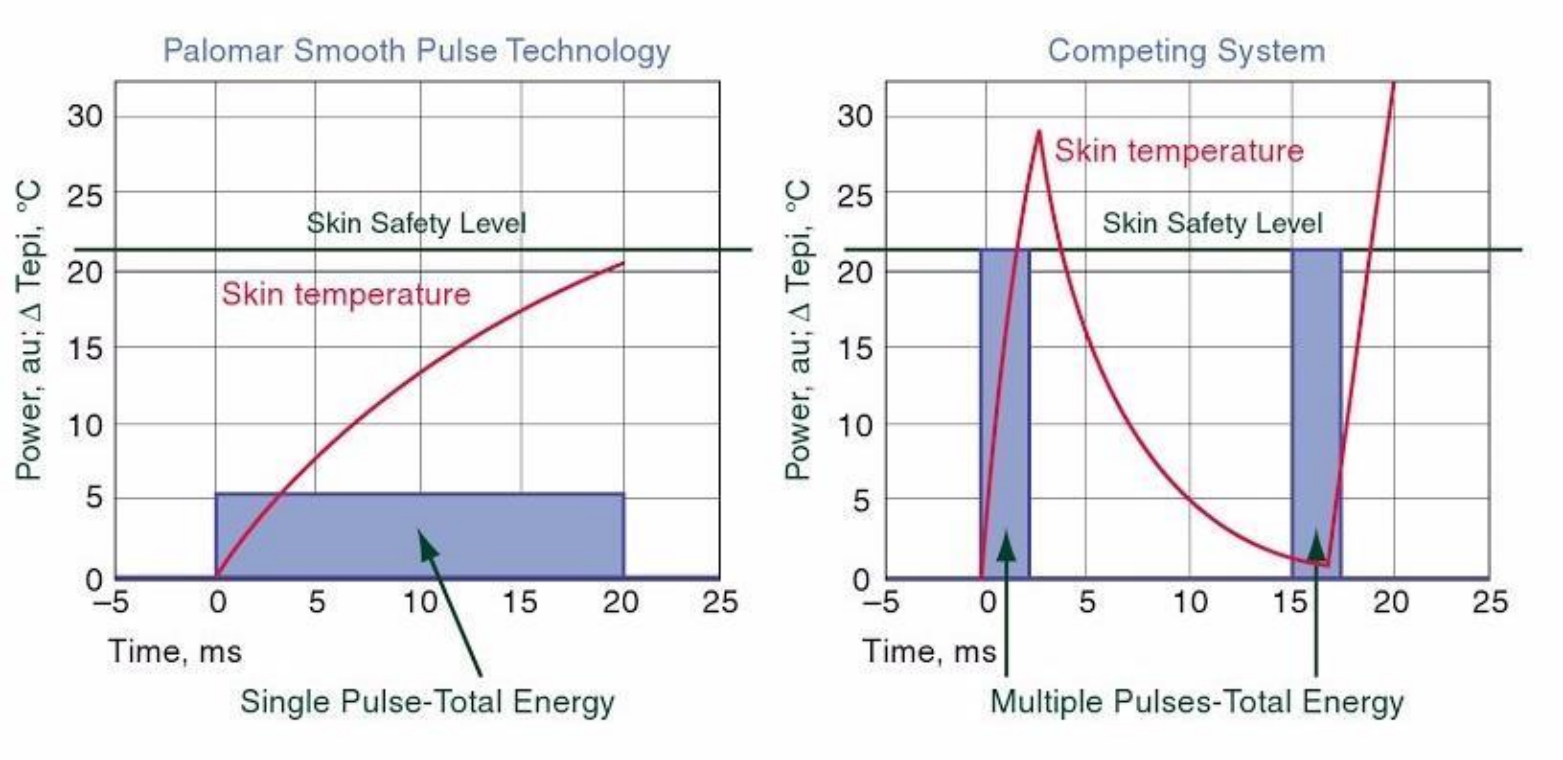
- more likely to cause contract vessel wall
- esp. IPL : 2ms micro-pulse trains = 20-30 ms

  --> No purpura
- In 500-600nm IPL 125us ~ 2000us(2ms) micropulse --> No purpura, regardless total PD

Waveform of Long pulse : Spiky vs Slope

Ideal pulse wave form ? (4)

= Non spiky wave

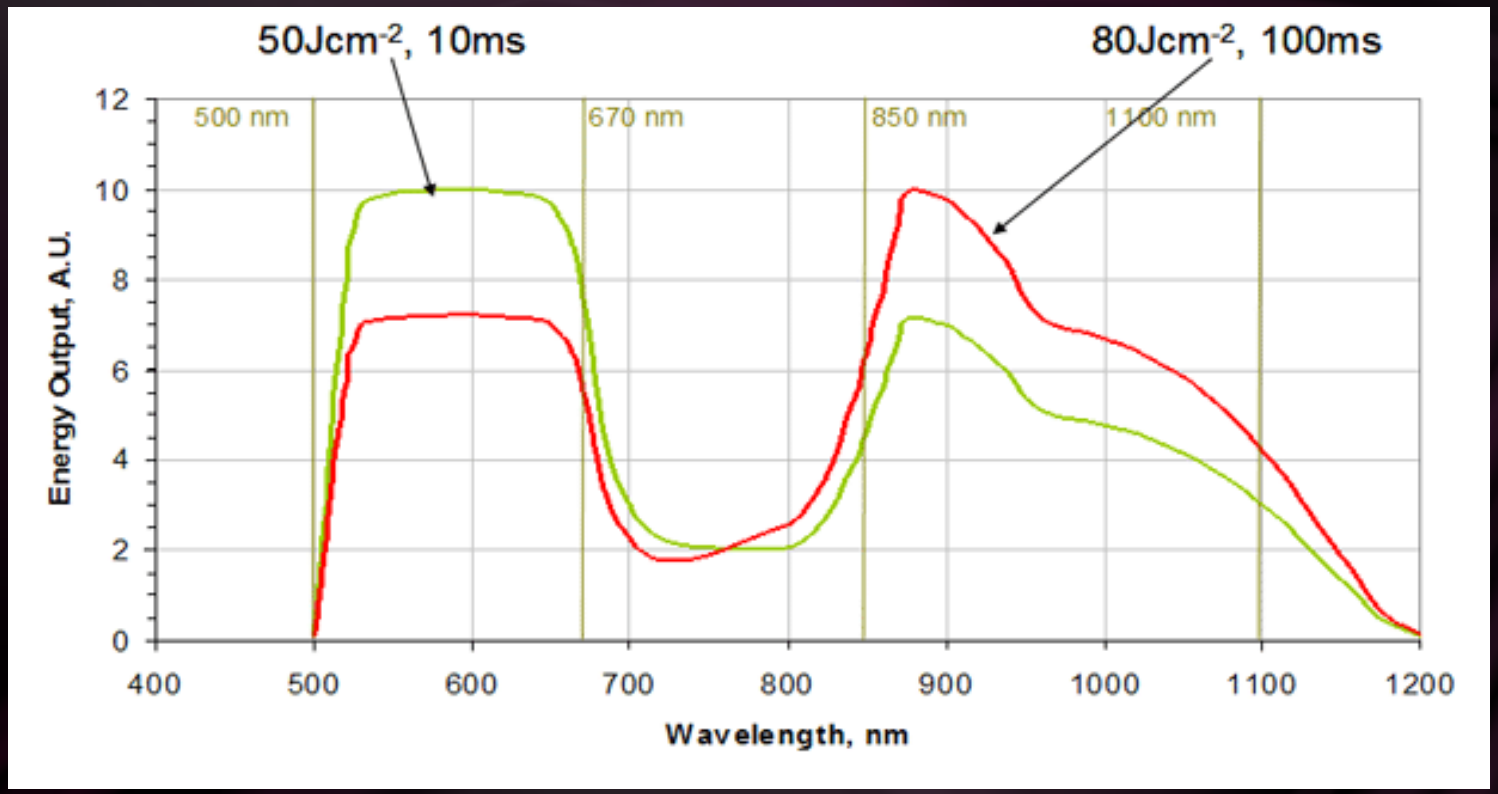


Lasers in Dermatology and Medicine
Springer Science & Business Media, 2011

Waveform of Long pulse : Spiky vs Slope

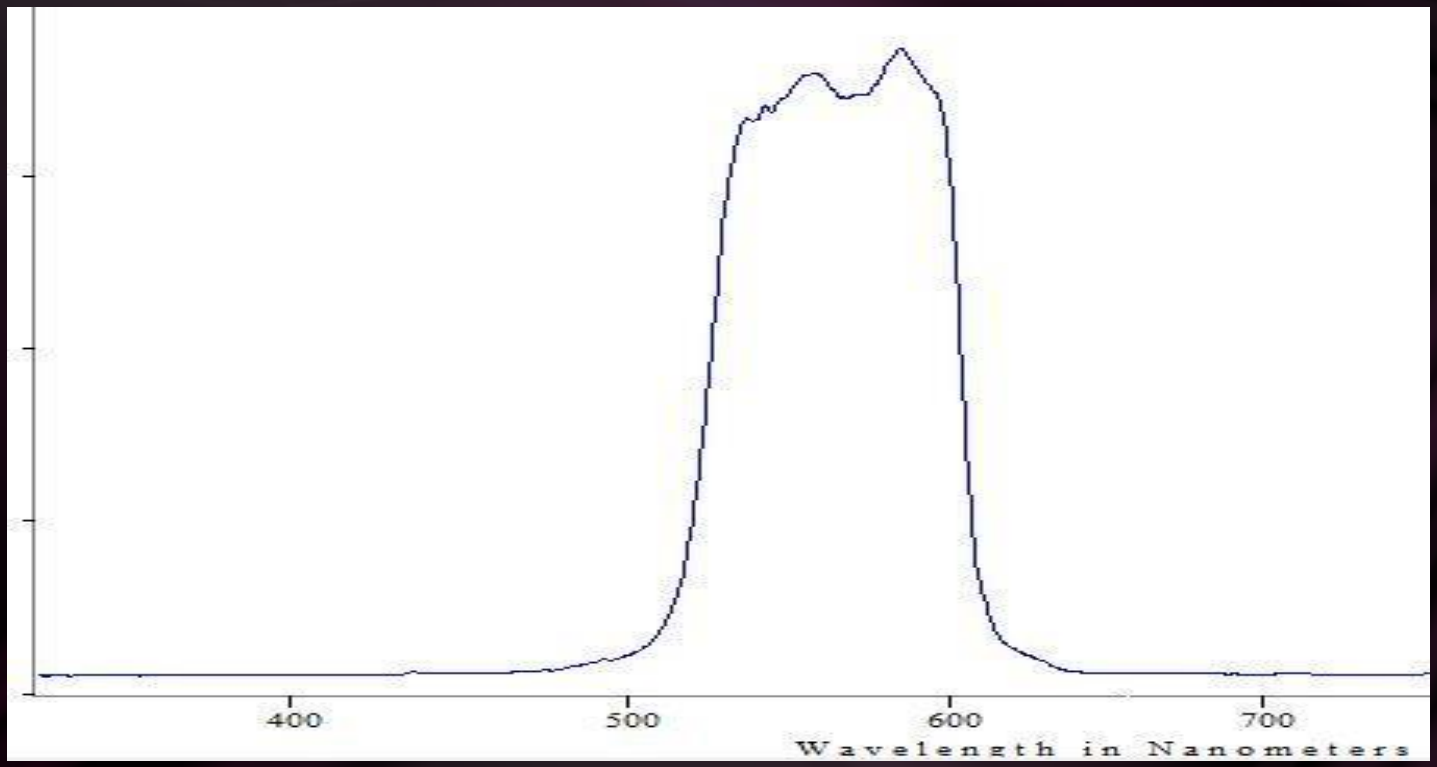
Ideal pulse wave form? (5)

= Square or slope wave without spiky noise



Ideal wave form ?? (6)

= Square wave form



Avoidance of Complication

- Choose an appropriate wave length.

  : Depth, Hb oxidation, V.Caliber,

  Hb absorption coefficient

- " Shoot and Forget "

: Avoidance of stacking on same lesion if possible

- Keeping in mind

: Ref. value in Room temp.

≠ Ref. value in Human temp.

Dual band IPL

New Optimized Light™ Source for Treatment of Vascular Lesions of the Skin

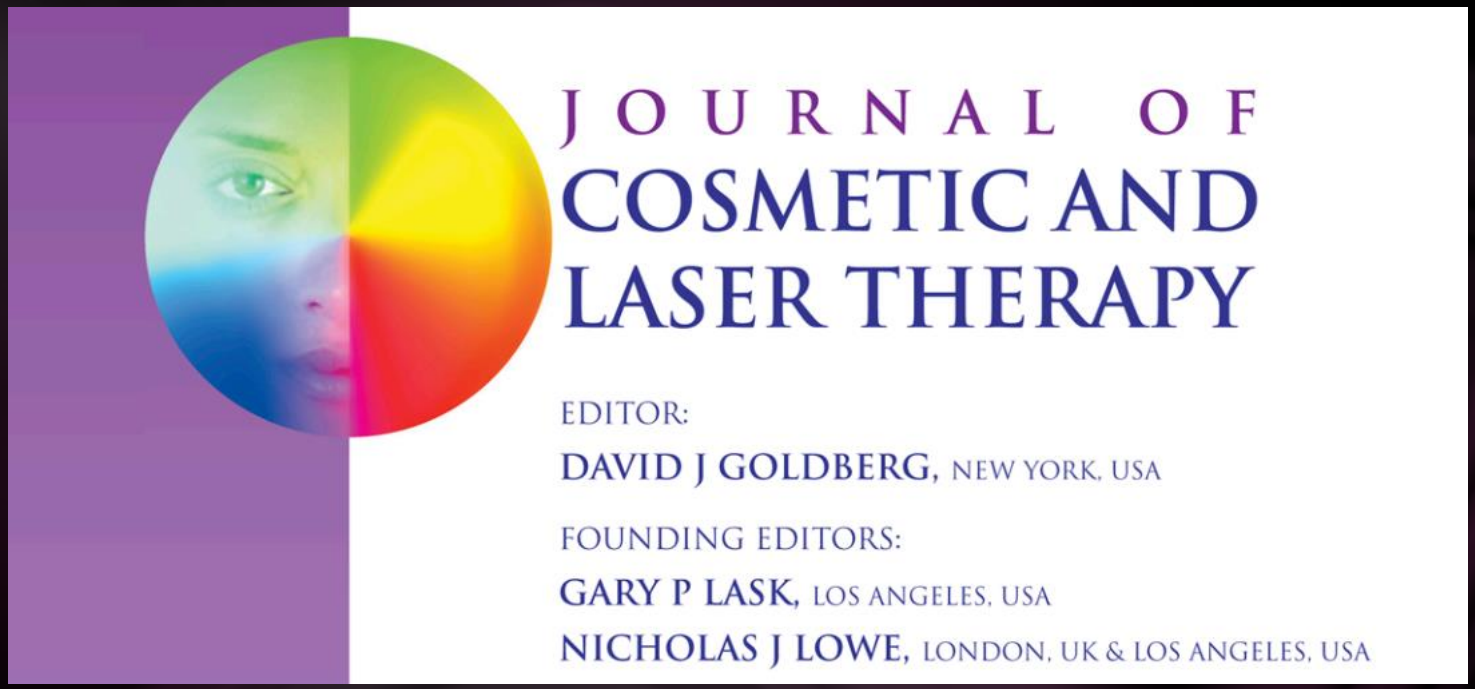
E. Victor Ross, MD[1]; Emil A. Tanghetti, MD[2]; David B. Vasily, MD[3]; Robert A. Weiss, MD[4]; James J. Childs, PhD[5]; Andrei Erofeev, PhD[5]; Mikhail Z. Smirnov, PhD[5]; and Gregory B. Altshuler, PhD, ScD[5]

[1]Scripps Clinic Carmel Valley, San Diego, CA 92130, [2]Center for Dermatology and Laser Surgery Sacramento, CA 95819,
[3]Aesthetica Cosmetic and Laser

Conclusions:

This new light source provides a range of pulse durations and fluences with output power free from high intensity spikes. The dynamic dual-band spectrum facilitates treatment of vessels ranging in size and depth including small, superficial vessels and larger deeper-lying vessels while minimizing heating of the skin surface. Our clinical experiences with this device have demonstrated excellent clearance of facial telangiectasia and poikiloderma.

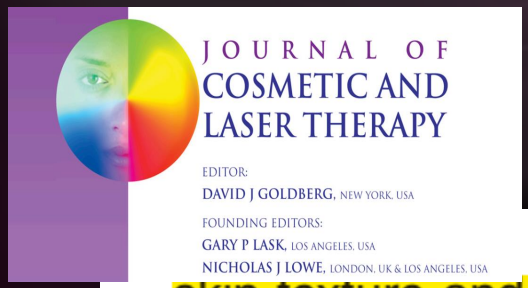
IPL vs IPL (1)



Split face comparison between single band and dual band pulsed light technology for treatment of photodamage

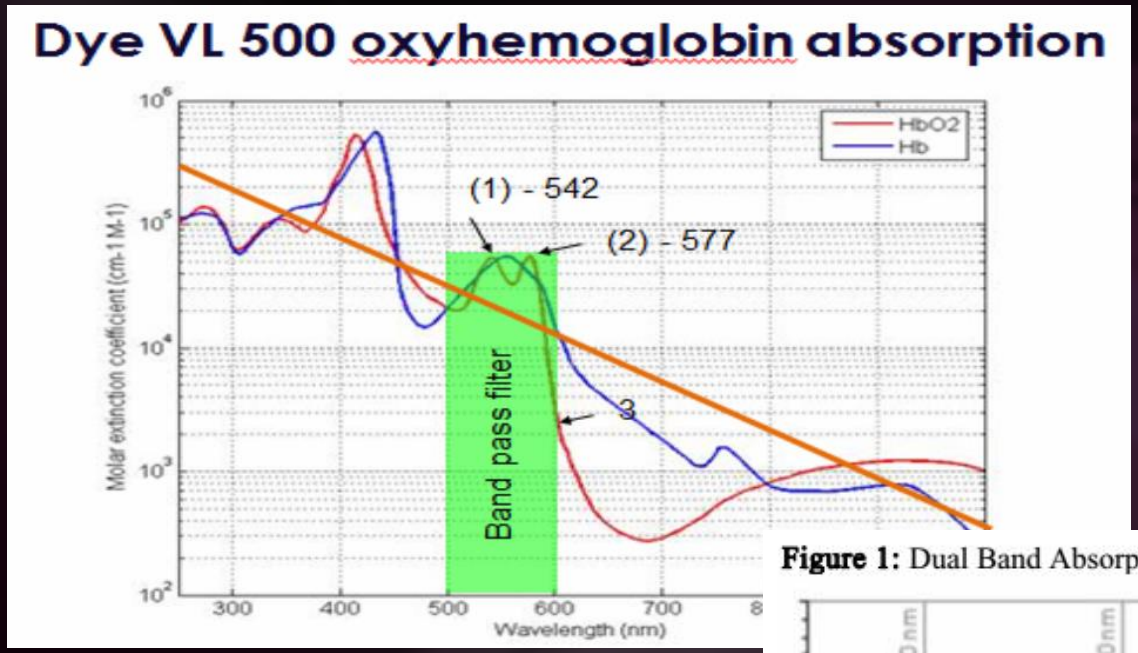
Neal Varughese, Lauren Keller, and David J. Goldberg

IPL vs IPL (2)



Results: Pigmented components of photodamage, skin texture and presence of telangiectasias on the left and right side of the face were improved at the conclusion of treatment. At 20 week follow up, the side treated with single band hand piece showed a level of improvement in telangiectasia and pigmentation that was statistically superior to the contralateral side treated with the dual band hand piece. Both devices equally improved textural changes. No adverse effects were noted with either device. **Conclusion:** Both single band and dual band IPL technology are safe and effective in the treatment of photodamaged facial skin. Intense pulsed light treatment with a single band hand piece yielded results comparable or superior to dual band technology.

IPL vs IPL (3)



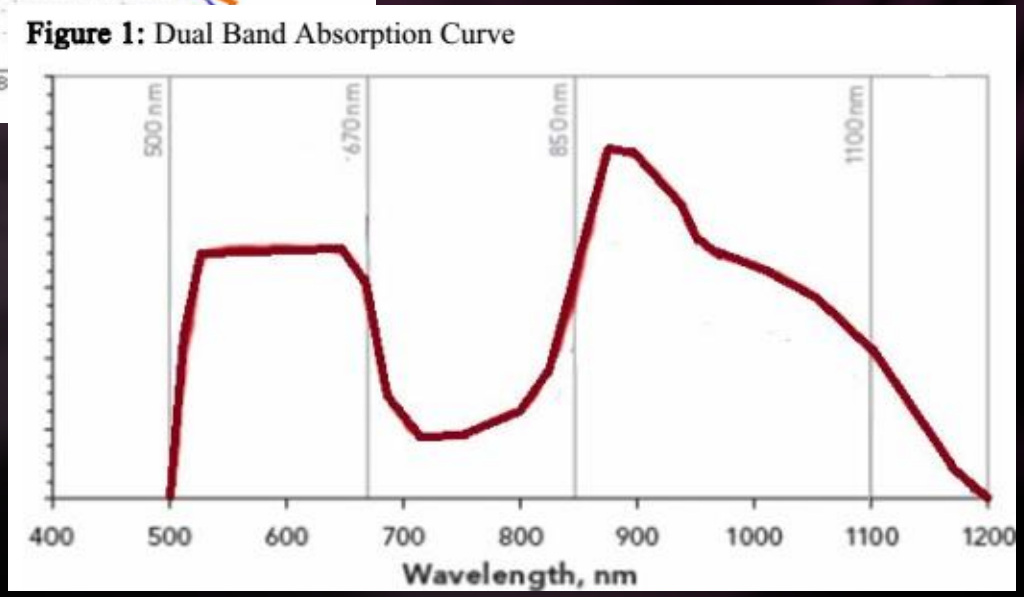


Figure 1: Dual Band Absorption Curve

IPL vs IPL (3)

Table 1: Single Band and Dual Band IPL Handpiece Specifications

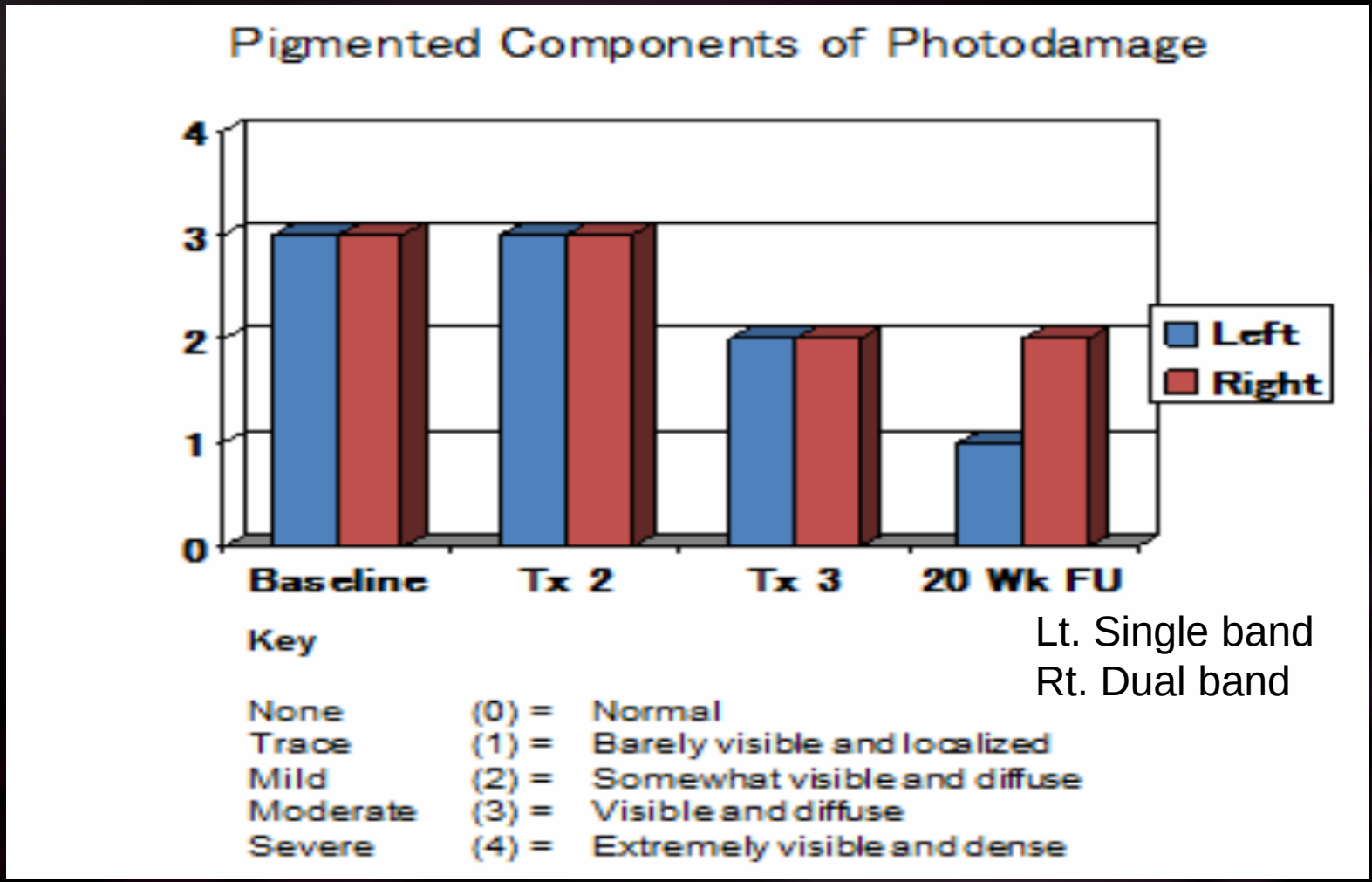
	Narrow Band IPL Specifications	Dual Band IPL Specifications
Spot size	3 cm^2	10 mm x 15 mm
Spectral Range	500-600 nm	570-600 nm & 870-1200 nm
Pulse Duration	10, 12, 15 ms	5 to 100 ms
Fluence	1 to 13 J/cm2	5 to 85 J/Cm2
Sapphire Tip Temp	Room temperature to 5 degrees Celsius	Room temperature to 5 degrees Celsius

Table 2: Treatment parameters

Fitzpatrick Skin Type	Module	Pulse Width (msec)	Fluence (J/cm2)
I-III	Single Band IPL	10, 12	10-12

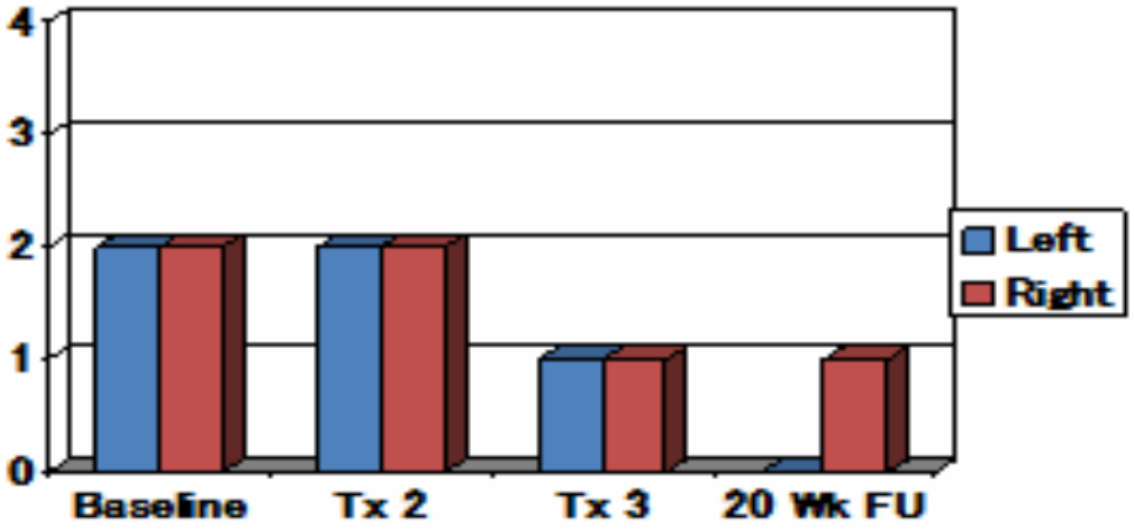
Fitzpatrick Skin Type	Module	Pulse Width (msec)	Fluence (J/cm2)
I-III	Dual Band IPL	30	32-44

IPL vs IPL (4)



Lt. Single band
Rt. Dual band

IPL vs IPL (5)

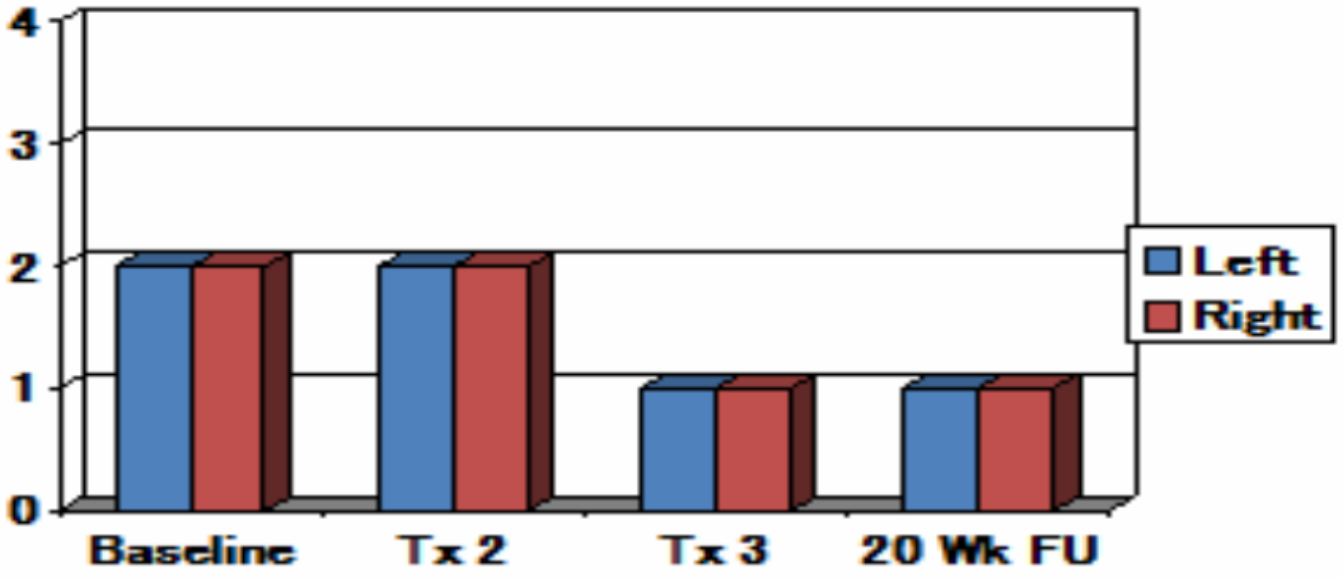


Key

None	(0) =	Normal
Trace	(1) =	Barely visible and localized
Mild	(2) =	Somewhat visible and diffuse
Moderate	(3) =	Visible and diffuse
Severe	(4) =	Extremely visible and dense

Lt. Single band
Rt. Dual band

IPL vs IPL (6)



Lt. Single band
Rt. Dual band

Key

None	(0) =	Normal
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Moderate	(3) =	Visible and diffuse
Severe	(4) =	Extremely visible and dense


Rt.
Dual
band
Lt.
Single
band

II.The Use of IPL for Rosacea

Rosacea vs IPL (1)

ANNALS of DERMATOLOGY

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Information for Authors
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Ann Dermatol. 2014 Aug; 26(4): 491–495.
Published online 2014 Jul 31. doi: 10.5021/ad.2014.26.4.491

PMCID: PMC4135105

The Efficacy of Intense Pulsed Light for Treating Erythematotelangiectatic Rosacea Is Related to Severity and Age

Hee Sun Lim, Seung-Chul Lee, Young Ho Won, and Jee-Bum Lee

Ann Dermatol. 2014 Aug; 26(4): 491–495.

Conclusion

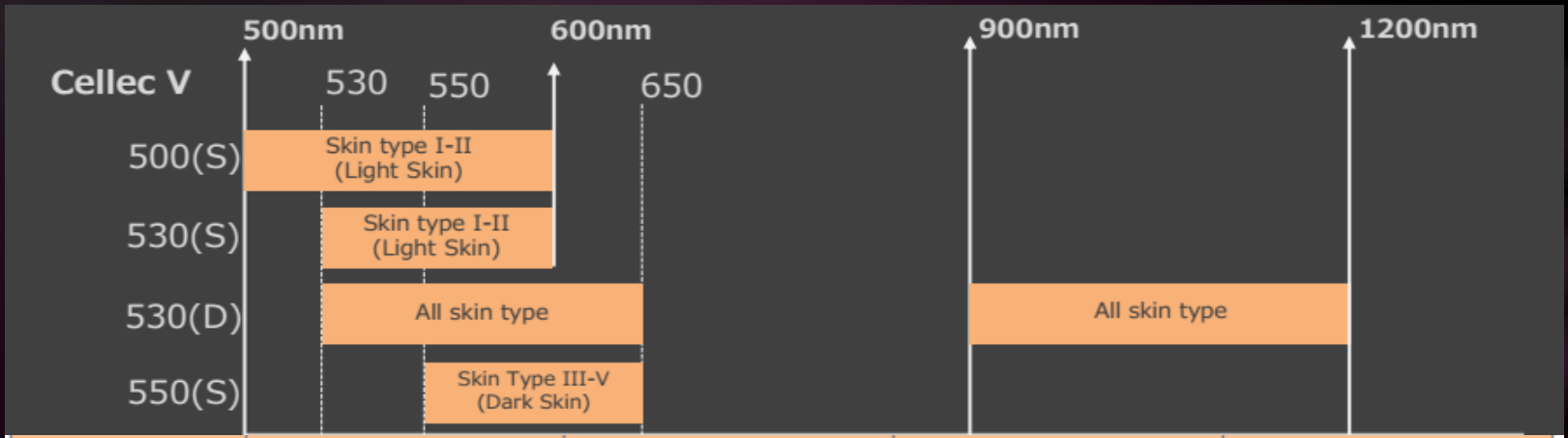
This study supports the efficacy of IPL treatment for patients with ETR. IPL may be more effective in patients with more severe ETR and in younger patients with ETR.

Keywords: Age factors, Intense pulsed light therapy, Rosacea

Rosacea vs IPL (2)

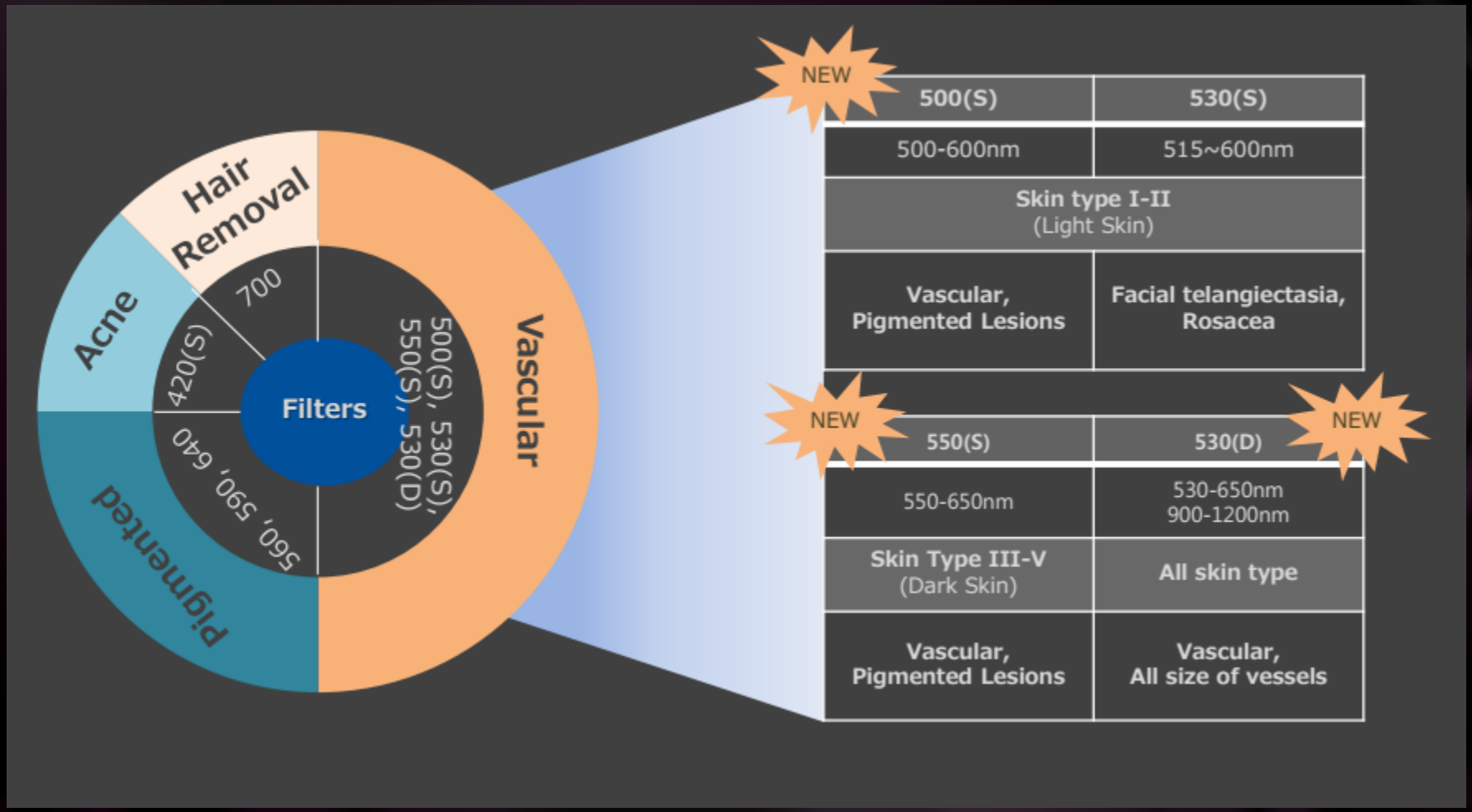
Cellec V (1)

Dual band ? Single band ?



Devices	Cellec V	M22	omnimax	ICON
manufacture	Jeisys Medical	Lumenis	SharpLight, Israel	palomar
HP or Filter	530D	Vascular Filter	MaxVP²535S	Max G handpiece
Wavelength	530-650 & 900-1200	530-650 & 900-1200	530-680 & 860-1200	500-670 & 870-1200
Fluence	1-35J/cm²	10-48J/cm²	5-30J/cm²	Up to 80
Pulse Duration	1-60ms	4-20ms	10-25ms	5-100ms
Cooling	Contact cooling	Contact cooling	-	Contact Cooling

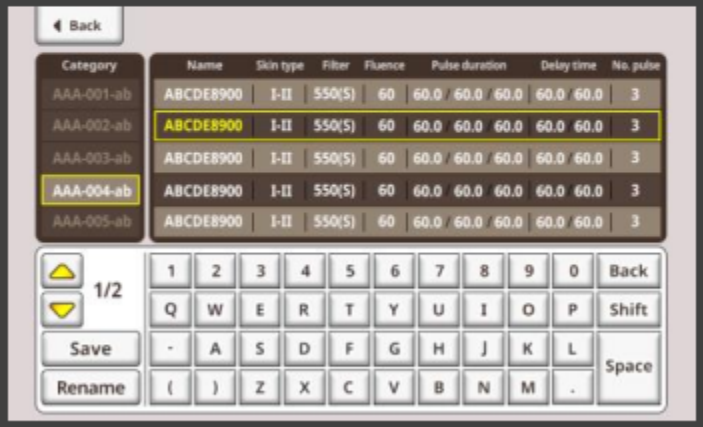
Cellec V (2)


Hair Removal
Acne
Pigmented
Vascular
700
420(S)
560, 590, 640
500(S), 530(S), 550(S), 530(D)
Filters
NEW
500(S)
530(S)
500-600nm
515~600nm
Skin type I-II
(Light Skin)
Vascular, Pigmented Lesions
Facial telangiectasia, Rosacea
NEW
NEW
550(S)
530(D)
550-650nm
530-650nm
900-1200nm
Skin Type III-V
(Dark Skin)
All skin type
Vascular, Pigmented Lesions
Vascular, All size of vessels

Cellec V (3)

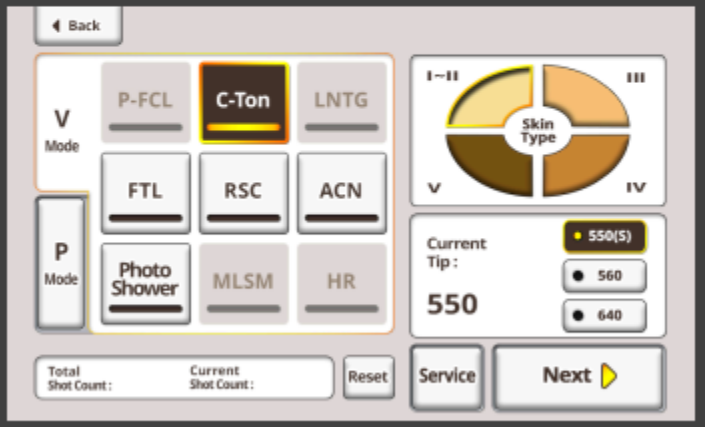
- **Parameter memory system**

  Select your presets *of* ***frequently used parameter***

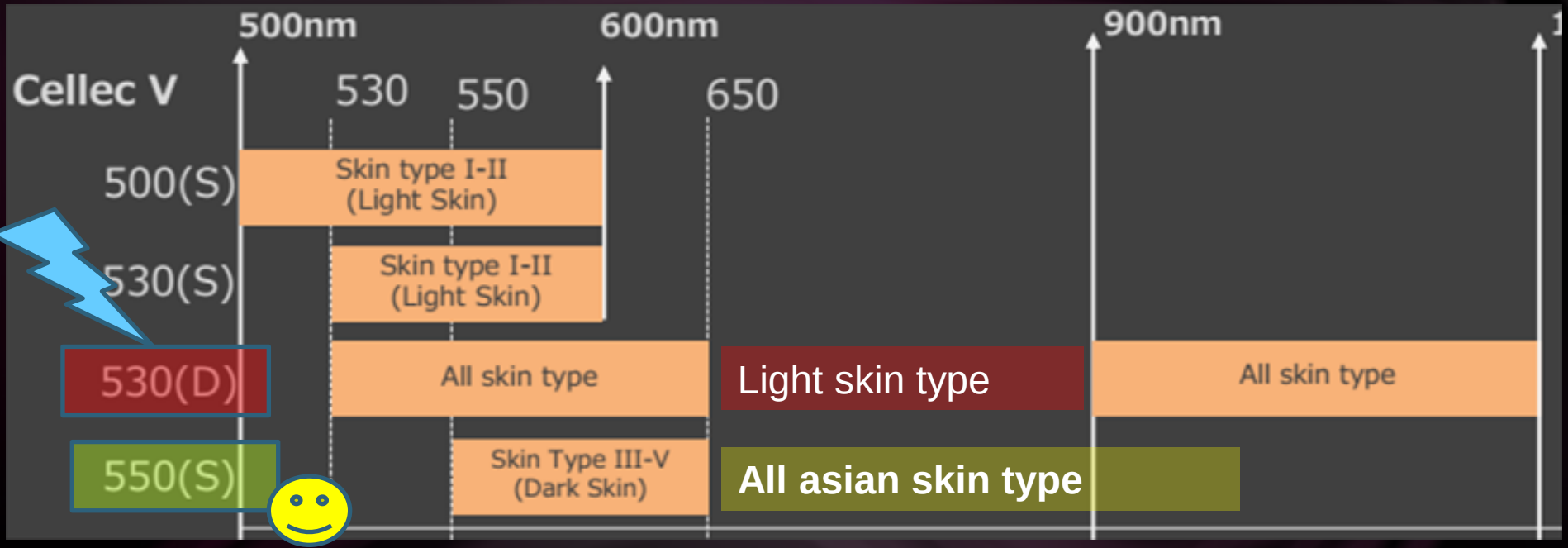


- **User friendly UI**

  All functions are in a single screen



For Asian Skin



Thank you