

GentleMax Pro Plus®

Beyond Laser Hair Removal: Performing Additional Treatment Indications with the GentleMax Pro Plus® GLX™ Delivery System

Konika Patel Schallen, MD; Nicolle Dest MSN, RN; Christina Greenwood, LE; Raylene Piretti, LE

Introduction

The GentleMax Pro Plus® (GMPP) laser system incorporates 755 nm and 1064 nm wavelengths to target specific tissue chromophores for treating various clinical indications, such as unwanted hair in all Fitzpatrick Skin Types (I-VI), pigmented and vascular lesions, wrinkles, and clear nail in patients with onychomycosis.*

GMPP now has the GLX Delivery System, featuring a single applicator with spot sizes 12-26 mm, an advanced fiber with higher fluence capabilities, additional faster treatment capabilities and reduced changeover time between patients. A new verification feature saves time on calibrations and ensures accurate and consistent energy delivery to the skin.

The GMPP laser system offers two different cooling methods. A Dynamic Cooling Device™ (DCD) is used to cool and protect the epidermis, and to reduce pain, with the ability to spray the skin with cryogen before or after the laser pulse is delivered. An Air Compatible Cooling (ACC) delivery system option delivers continuous, reduced temperature air that cools the skin prior to, during, and following the laser pulse. The GLX Delivery System includes even more refined cryogen settings that allow for 5 ms spray increments.

Laser wavelengths deliver a therapeutic effect by targeting a specific tissue chromophore (melanin, hemoglobin, water) in the skin, based on the theory of "selective photothermolysis," first introduced by Anderson and Parrish in 1983.¹ Ideally, the wavelength selected for a specific application is maximally absorbed by the targeted chromophore and only minimally absorbed by other competing chromophores in the skin.

Laser Hair Removal

In the case of laser hair removal (LHR), the targeted chromophore is melanin, which is found both in the skin and in portions of the hair follicle and hair shaft. Melanin has a broad absorption spectrum that decreases as wavelength increases.² The 755 nm and the 1064 nm wavelengths are in a range where the absorption of hemoglobin and water is reduced compared to melanin, which improves the selective targeting of melanin. The 755 nm alexandrite wavelength can treat a range of hair colors but is not ideal for darker skin due to melanin absorption in the epidermis.³ With longer wavelengths, there is a greater depth of penetration and less superficial chromophore absorption, making the 1064 nm Nd:YAG laser a safer option when treating darker Fitzpatrick Skin Types V and VI.²

Benign Pigmented Lesions

Melanin in the skin is also the target chromophore for the treatment of benign pigmented lesions. Efficacy of the long-pulse alexandrite laser in treating superficial pigmented lesions in Fitzpatrick Skin Types I-III and in treating seborrheic keratoses in Asian Skin Types III-IV has been reported.^{4,5} A long-pulsed 755 nm laser improved pigmentary lesions in Korean patients with Fitzpatrick Skin Types III-IV, while those with facial flushing or some pigmentation, were treated with a long-pulsed 1064 nm laser.⁶ The long-pulsed 755 nm and 1064 nm lasers have been used for reduction of the uneven pigmentation, telangiectasia and wrinkles in photoaged skin, while avoiding the long downtime and side-effects of ablative resurfacing.⁶

Wrinkles

In addition to the commonly performed LHR and pigmentation treatments, the GMPP platform with the GLX Delivery System can be used with both wavelengths and various treatment settings to bulk heat the dermis to treat wrinkles. Non-ablative lasers, using various wavelengths such as the 1064 nm, selectively target the dermis and may also play a role in dermal remodeling for the treatment of wrinkles.^{6,7} In one study, the long-pulsed Nd:YAG laser was found to be as effective as Er:YAG and CO₂ lasers, traditionally used to improve facial rhytides, but

with shorter recovery and treatment times than with ablative lasers.⁸

In this clinical bulletin, Figures 1 and 2 demonstrate the treatment techniques and parameters with the GMPP and GLX Delivery System for improvement in wrinkles, texture, and pigmented lesions, as well as LHR on the upper lip and chin in Fitzpatrick Skin Type IV patients, which resulted in a successful clinical outcome.



Figure 1. A 30-year-old female with Fitzpatrick Skin Type IV with pigmented lesions, wrinkles, and unwanted hair on the upper lip and chin underwent three treatments.

Steps 1-4 were performed at each treatment session.

Step #	Indication / Area	Wavelength (nm)	Spot Size (mm)	Pulse Duration (ms)	Fluence (J/cm ²)	DCD	Repetition Rate (Hz)	Technique	# Passes / # Pulses
1	Thermal Skin Priming Lower face & submentum	1064	20	50	16	Off	2	Stamping	2 passes / 82-88 pulses
2	Wrinkles / Texture Lower face & submentum	1064	18	0.5	8	Off	5-7	Painting	511-786 pulses across 4-6 vectors
3	LHR Upper lip & chin	1064	15	3	28-34	30/20/00	1.5	Stamping	1 pass / 11 pulses
4	Pigmentation Full face	755	12	3	12-16	Off	2	Painting	1 pass / 108-187 pulses



Figure 2. A 45-year-old female with Fitzpatrick Skin Type IV with pigmented lesions, wrinkles, and unwanted hair on the upper lip and chin underwent one treatment.

Steps 1-4 were performed at the treatment session.

Step #	Indication / Area	Wavelength (nm)	Spot Size (mm)	Pulse Duration (ms)	Fluence (J/cm ²)	DCD	Repetition Rate (Hz)	Technique	# Passes / # Pulses
1	Thermal Skin Priming Lower face & submentum	1064	18	50	18	Off	2	Stamping	2 passes / 98-105 pulses
2	Wrinkles / Texture Lower face & submentum	1064	10-12	0.5	8-16	Off	7	Painting	919-1023 pulses over 6 vectors
3	Pigmentation Full face	755	12	3	24	Off	1	Painting	1 pass / 39-46 pulses
4	LHR Upper lip & chin	755	12 & 18	3	16-20	30/20, 40/20	1.0	Stamping	1 pass / 27-31 pulses

References

1. Anderson R, Parrish J. Selective photothermolysis: Precise microsurgery by selective absorption of pulsed radiation. *Science* 1983;220(4596):524–527.
2. Battle EF Jr, Hobbs LM. Laser-assisted hair removal for darker skin types *Dermatol Ther*. 2004;17:177-83.
3. Ross EV, Domankevitz Y. Hair Removal with Blended 755/1064 nm Laser Energy. *Lasers Surg Med*. 2021 Jan 28.
4. Trafeli JP, Kwan JM, Meehan KJ, Domankevitz Y, Gilbert S, Malomo K, Ross EV. Use of a long-pulse alexandrite laser in the treatment of superficial pigmented lesions. *Dermatol Surg*. 2007;33:1477-82.
5. Kim YK, Kim DY, Lee SJ, Chung WS, Cho SB. Therapeutic efficacy of long-pulsed 755-nm alexandrite laser for seborrheic keratoses. *J Eur Acad Dermatol Venereol*. 2014;28:1007-11.
6. Lee YB, Shin JY, Cheon MS, et al. Photorejuvenation using long-pulsed alexandrite and long-pulsed neodymium:yttrium-aluminum-garnet lasers: a pilot study of clinical outcome and patients' satisfaction in Koreans. *J Dermatol*. 2012;39:425-9.
7. Goldberg DJ, Silapunt S. Histologic evaluation of a Q-switched Nd:YAG laser in the nonablative treatment of wrinkles. *Dermatol Surg*. 2001 Aug;27(8):744-6.
8. Alshami MA. New application of the long-pulsed Nd-YAG laser as an ablative resurfacing tool for skin rejuvenation: a 7-year study. *J Cosmet Dermatol*. 2013 Sep;12(3):170-8.



*GentleMax Pro Plus 510(k) clearance [K201111], May 2020, GentleMax Pro Plus Health Canada License 75833, GentleMax Pro Plus, CE Mark.