

Palomar Introduces Fractional Skin Resurfacing

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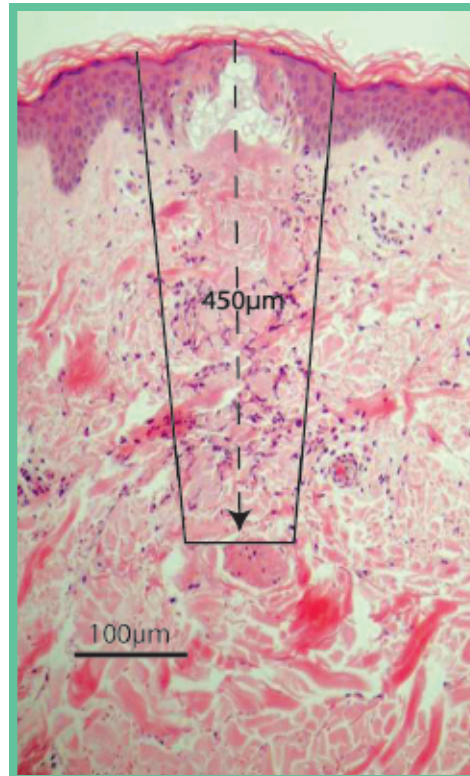
The new Lux1540 Fractional Laser Handpiece from Palomar Medical Technologies, Inc. (Burlington, Mass.) uses patented fractional technology to deliver safe and effective soft tissue coagulation and skin resurfacing. The handpiece attaches to the StarLux Pulsed Light and Laser System for hair removal, photofacials for pigmented and vascular lesions, acne treatment, leg vein clearance, skin tightening (pending FDA approval) and numerous other aesthetic applications.

“For over eight years, Palomar has been developing fractional technology to provide an effective, safe and versatile technique for phototreatment of various skin conditions,” said Gregory Altshuler, Ph.D., vice president of research at Palomar. “Our fractional technology creates precisely defined, micro- or macroscopic zones of elevated temperature within the tissue. By varying treatment parameters, diverse effects can be induced in these zones, ranging from mild hyperthermia to the creation of islets of coagulated tissue.”

Tissue between the islets remains intact. “Location, shape and dimensions of the islets can be accurately tuned to achieve the desired clinical effect, thanks to the versatility and power of the Palomar StarLux platform,” Dr. Altshuler said. “Specifically, depth of the islets may vary in a controllable manner – from superficial epidermis to the reticular dermis and subcutis – whereas dimensions of the islets range from tens of microns to millimeters. Therefore, fractional technology can be used for many applications, including skin resurfacing and deeper skin tightening.”

The Lux1540 is one embodiment of Palomar’s fractional technology concept. It delivers erbium glass laser pulses as an array of focused microbeams, which create a pattern of isolated columns of coagulation in the epidermis and dermis, without damage to the stratum corneum or the tissue surrounding the coagulated columns. The Lux1540 is capable of delivering between 5 and 70 mJ of energy per microbeam per pulse.

“Palomar fractional technology has been verified through a series of phantom and *ex vivo* experiments, and has been perfected and optimized through a rigorous computer-assisted design process, employing the most advanced optothermal simulation techniques available,” noted Ilya Yaroslavsky, Ph.D., director of advanced research at Palomar. “The Lux1540 has been



Histological slide (H&E stain x 100) of a human skin specimen treated *in vivo* with 7/500 HP, at 30 mJ energy per spot and an 8 ms pulsewidth. A column of thermal coagulation protruding through epidermis, dermal-epidermal junction (DEJ), and papillary dermis down to a depth of 450 microns, with diameter of 100 - 190 microns, is visible. The stratum corneum is not affected by the treatment.

clinically tested and is currently undergoing additional clinical testing targeting several clinical applications.”

One advantage of fractional technology over conventional bulk treatment is that it provides an increased safety margin because a large volume of tissue remains intact. At the same time, the surface-to-volume ratio of the treated area is maximized, which may result in more effective tissue healing and collagen remodeling. “That, in turn, may lead to enhanced smoothing of periorbital wrinkles and overall skin resurfacing,” Dr. Yaroslavsky said. “Equally important, it means less discomfort and zero to minimal downtime for the client.”

Adding to the safety and comfort is Palomar’s Active Contact Cooling which continually cools the skin throughout treatment via the handpiece tip. Furthermore, the company’s Smooth Pulse Technology delivers light in gentle, even pulses, thus preventing sharp spikes in tissue temperature. The Lux1540 also performs photocoagulation of pigmented lesions, such as lentigenes and melasma. ■