What is MicroPulse Laser Therapy?

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Relevant Financial Disclosures

IRIDEX
Genentech, Inc.
Allergan
MicroPulse technology finely controls thermal elevation by “chopping” a continuous-wave (CW) beam into an envelope of repetitive short pulses. “Duty cycle” = the percentage of time that the laser is “ON” during the envelope period.
Histological Effects of MicroPulse

Importance of Low-Intensity, High-Density Applications

Low-Intensity CW Argon Laser

High-Intensity CW Argon Laser

Low-Intensity High-Density MicroPulse

Area of retina damaged by laser

Area of retina affected by laser but not destroyed; able to contribute to the therapeutic effects of laser treatment
Biological Effects of MicroPulse

MicroPulse laser treatment produces a stress response and induces beneficial intracellular biological factors that are primarily anti-angiogenic and restorative without tissue damage as seen in CW.

PEDF - plays a role in inhibiting neovascularization by its anti-angiogenic activity
TSP1 - one of the most potent anti-angiogenic factors
SDF1 - plays a key role in recruitment of bone marrow-derived reparative cells
β-actin - protein that is involved in cell motility, structure and integrity