

JOINT BIOENGINEERING SEMINAR SERIES



REVASCULARIZATION OF THE HEART BY LASER

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Abstract

Coronary artery disease is a major cause of the death in the United States. The heart itself contains blood in its cavities, but the blood supply to the muscle itself is by way to the two coronary arteries. Any blockage of these arteries causes death to the heart muscle or pain called angina by lack of adequate blood supply. Coronary artery bypass surgery, angioplasty, stents or medical management have been methods of treatment. When arteries are severely and diffusely diseased these methods are not applicable and fail to treat symptoms of disease.

The reptile heart has small coronary arteries, and much of the blood supply to the ventricle is coming from within the ventricular cavity itself through small channels in the muscle. Our team developed a method of creating these channels in the diseased human heart by making these channels by laser.

From the concept developed in 1968, followed by 20 years of research work full FDA approval was granted. However our team believes the prototype laser we used, under the auspices of Thomas Polyani, PhD and Herbert Breidermier PhD of American Optical was superior to what is commercially available.

Much work and development with the collaboration of engineers and physicists is needed to make the ideal laser to keep the laser created channels open.