

论文

铒激光脉冲消融泌尿结石和胆结石比较研究

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摘要:

利用光学弱相干显微成像系统对脉冲激光消融硬生物组织后形成的凹坑二维和三维形貌进行了扫描,分析了Er:YAG激光脉冲消融硬生物组织特性.结果表明:相同激光参量条件下,消融胆结石比消融泌尿结石具有更高的消融效率|消融胆结石或消融泌尿结石时,脉冲能量越大,消融效率越高|消融效率提高主要体现在凹坑表面直径更宽、高度更深、体积更大|光学弱相干显微成像技术比光学弱相干光层析成像技术测量准确度提高约一个量级,更适合于测量脉冲激光消融硬生物组织后形成的凹坑形貌.

关键词: 脉冲激光 组织消融 光学弱相干显微成像 消融效率

Comparison Research of Er:YAG Laser Pulses Ablation of Urinary Calculus and Gall-Stone

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Abstract:

Two-dimension and three-dimension topography of pulsed lasers ablation of tissues were scanned by means of optical coherent microscopy,in order to analyze the ablation characteristics of pulsed Erbium:YAG lasers for hard biological tissues.Experimental results indicate that under the same laser parameters,ablation efficiency for gall-stone is higher than that for urinary stone.The higher the intensities of pulsed lasers are,the higher the ablation efficiency will be for both gall-stone and urinary stone.The higher ablation efficiency mainly embodies that wider surface diameter,deeper height,and bigger volume for craters will be obtained.Measurements for stone craters using the optical coherent microscopy are higher by about one order than those using the optical coherent tomography.Optical coherent microscopy system can contribute to quantitatively measure hard tissues irradiated by pulsed lasers much better than optical coherent tomography system.

Keywords: Pulsed lasers Tissues ablation Optical coherent microscopy(OCM) Ablation efficiency

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