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EDITORIAL COMMENT

Thulium fiber laser (TFL) lithotripsy uses a diode-pumped technology that provides lower peak power compared to the flash lamp–pumped Ho:YAG laser. TFL achieves higher pulse energies at these lower peak powers by extending the pulse duration. Short, medium, and long pulse duration modes have inversely lower peak powers, respectively, to provide the same pulse energy. The authors report that TFL ablation efficiency in their experiments was greatest in the short-pulse mode vs medium- or long-pulse modes,[1] ie, at any given pulse energy increased peak power was associated with increased ablation efficiency.[2]

The authors also report that TFL ablation efficiency varies with stone composition. Calcium phosphate had the least laser-induced ablation mass loss of compositions tested. Optical absorption and scattering properties determine light fluence in the stone and are unique to each composition.[3] The authors note variable ablation rank orders with TFL settings when irradiating human vs artificial stones, given Bego phantoms' distinct photothermal behavior compared to native stone compositions under Ho:YAG irradiation.[4]

Although the authors demonstrate variable best-dosimetry parameters by composition, the emerging theme reported here and elsewhere is that relatively low pulse energy at high frequency works well for most human stones. In contrast, the Duke group has reported a best TFL dosimetry at 1 J at 10 Hz (we note that their TFL platform had a higher peak power than the platform tested here).[2] More research is needed to clarify and motivate the laser dosimetry that will be ideal for clinical lithotripsy.

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