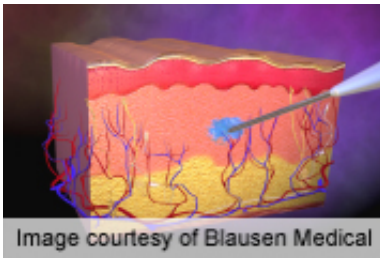


# Conical fiber tips best for cutting efficacy in oral surgery

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For oral surgery, conical shaped fiber tips improve the quality and efficacy of diode laser cutting, according to a study published online Nov. 5 in *Lasers in Surgery and Medicine*.

(HealthDay)—For oral surgery, conical shaped fiber tips improve the quality and efficacy of diode laser cutting, according to a study published online Nov. 5 in *Lasers in Surgery and Medicine*.

Karl Stock, Ph.D., from the Institut für Lasertechnologien in der Medizin und Messtechnik an der Universität Ulm in Germany, and colleagues compared different focusing fiber tips for enhanced cutting efficacy in [oral surgery](#). Various designs of tip geometry were investigated and optimized and two applicators (one with a sphere, one with a taper) were realized and tested on porcine gingiva. [Light microscopy](#) was used to determine the cutting depth and quality.

The researchers found that use of a sphere fiber tip allowed an intensity

increase of up to a factor of 16.2 in air and 13.2 in water, compared to a bare 200- $\mu\text{m}$  fiber. However, the cutting quality of the sphere was poor. Conically shaped fiber tips achieved much better results, with improved handling properties with no hooking and more regular and deeper cuts compared with bare fibers. For the various tips and [fibers](#), the thermal damage zones of the cuts were similar.

"In conclusion the investigations show that the cutting efficacy and quality of the diode [laser](#) on soft tissue depends on the used fiber tip geometry," the authors write. "Best results were achieved by using conically shaped fiber tips, for which improved handling, better cutting quality, and a significant increase of cut depth can be observed."

The study was supported by Dornier MedTech Laser GmbH.

**More information:** [Abstract](#)  
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