
We read with great interest the article by Wendt-Nordahl et al. [1] describing the ablation and coagulation properties of the diode laser device with an emission wavelength of 980 nm. However, the title of this article, “980-nm Diode Laser: A Novel Laser Technology for Vaporization of the Prostate,” is misleading. Although it suggests a novel treatment option for benign prostatic hyperplasia (BPH), the article merely describes studies with an ex vivo blood-perfused porcine kidney model. In this ex vivo model, a coagulation zone between 208.8 ± 30.8 μm and 255 ± 28.2 μm at a generator output power level of 100 W in the pulsed- and continuous-wave mode was observed. These results are similar to coagulation zones described for transurethral resection of the prostate (TURP) in the same manuscript. In a comparable experimental setting, our study group observed a mean coagulation zone of 10.2 ± 1.07 mm for the 980 nm diode laser, indicating an approximately 50% deeper tissue penetration [2].

Only a limited number of original articles in current literature deal with in vivo diode laser treatment at 980 nm. In an in vivo porcine model, Ogan et al observed at 23 W (pulsed mode on-time 0.05 s; off-time 0.03 s) coagulation zones of 3 to 5 mm when performing laparoscopic partial nephrectomy [3]. Another in vivo study on mongrel dogs and diode laser treatment (λ = 980 nm) of the gastric wall with 10 W (cw-mode) for 50 to 400 s showed thermal tissue damage between 8 mm (range: 5–11) and 11 mm (range: 8–15), respectively [4].

In conclusion, when one considers (1) laser physical principles, (2) our results in a comparable experimental setting, and (3) the current literature on this issue, the degree of coagulation zones of 208.8 ± 30.8 μm to 255 ± 28.2 μm at 100 W in the pulsed- and continuous-wave mode described by Wendt-Nordahl et al, at a wavelength of 980 nm, seems rather questionable. The hypothesis that increased ablation properties and decreased coagulation depth of diode laser devices in comparison to potassium-titanyl-phosphate (KTP) laser systems may be explained by higher energy absorption of the epithelial surface has to be questioned, because both the optical penetration depth and the ex vivo and in vivo studies contradict this hypothesis. Conclusive verification of tissue ablation and coagulation zone is warranted for in vivo studies on prostate tissue before clinical evaluation of this laser system may be considered.

Conflicts of interest: The authors have nothing to disclose.

References


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