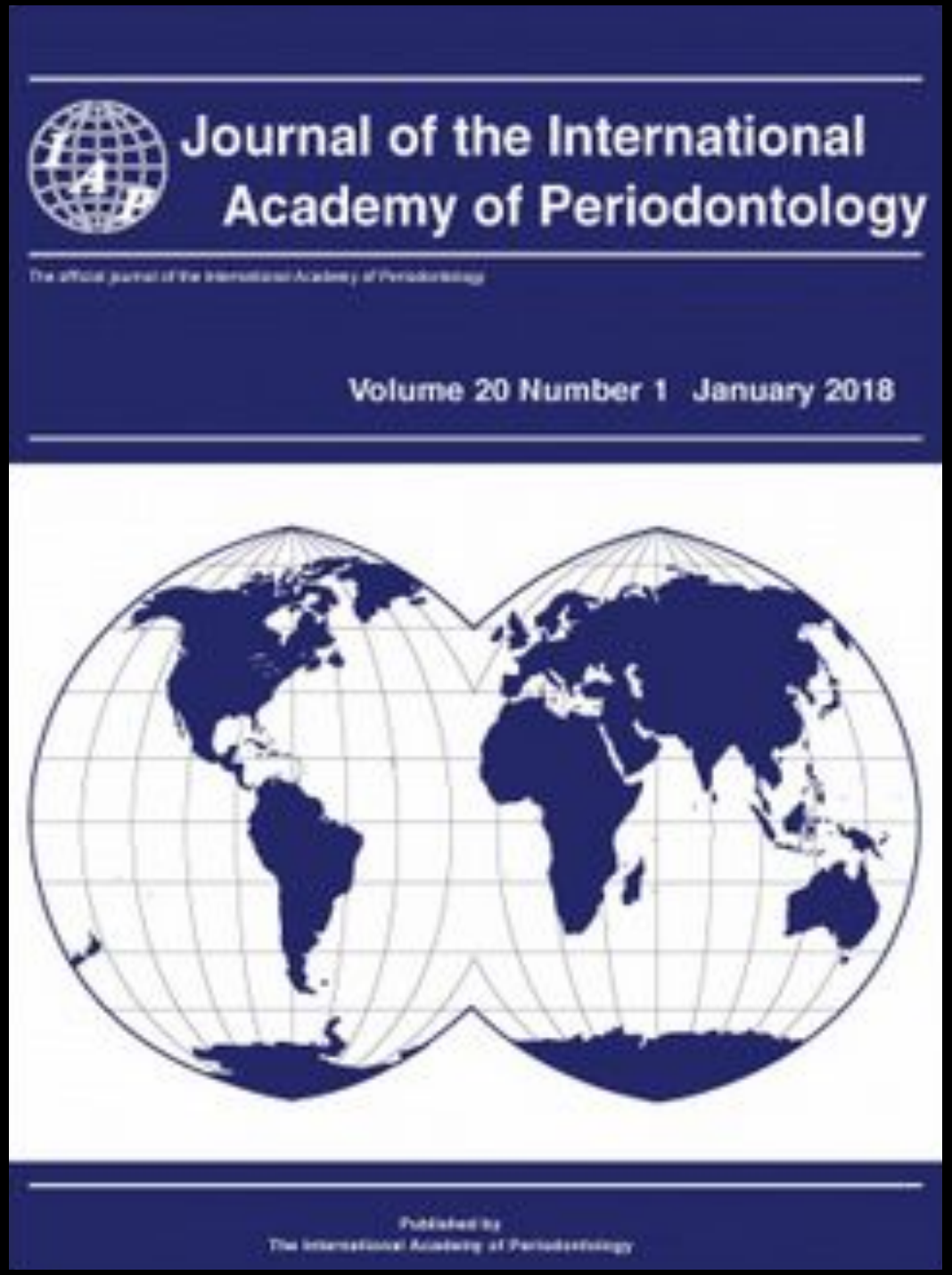

Immediate Effects of Laser-Assisted New Attachment Procedure (LANAP) on Chronic Periodontitis Microbiota

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Abstract

Objective: The Laser-Assisted New Attachment Procedure (LANAP) surgical protocol was compared to ultrasonic root debridement alone for immediate post-treatment effects on putative bacterial pathogens in deep human periodontal pockets.

Methods: In a case series of 26 systemically-healthy adults with severe chronic periodontitis, 20 patients were treated with the LANAP surgical protocol and 6 patients received ultrasonic root debridement alone. LANAP surgery was performed using a free-running, pulsed Nd:YAG laser, with laser energy (4.0 W, 150-µs pulse duration, 20-Hz) first directed circumferentially around teeth parallel to root surfaces in a coronal-apical pass to probing depth for selective pocket epithelium ablation and to initiate reflection of a gingival flap. After ultrasonic root debridement and gingival flap advancement to the alveolar bone crest, a second laser pass (4.0 W, 650-µs pulse duration, 20-Hz) was similarly performed in an apical-coronal direction to thermally induce a fibrin clot at the tooth-gingival flap interface. Subgingival biofilm specimens were collected before and immediately after completion of the treatments from 2 inflamed periodontal sites with ≥ 6 mm probing depths on a single tooth per patient, and selected periodontal pathogens identified using established anaerobic culture techniques.

Results: Red and orange complex bacterial species were culture-negative immediately post-treatment in 17 (85%) of 20 LANAP-treated patients, but only 1 (16.7%) of 6 patients subjected to ultrasonic root debridement alone.

Conclusions: The LANAP surgical treatment protocol, but not conventional ultrasonic root debridement alone, immediately suppressed red and orange complex periodontal pathogens below culture detection limits in most deep human periodontal pockets.