

K. M. Rownak Jahan · Mozammal Hossain ·  
Yukio Nakamura · Yamada Yoshishige ·  
Jun-Ichiro Kinoshita · Koukichi Matsumoto

## An assessment following root canal preparation by Er,Cr:YSGG laser irradiation in straight and curved roots, in vitro

Received: 17 July 2006 / Accepted: 30 July 2006 / Published online: 28 October 2006  
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**Abstract** In the present study, the effectiveness of Er,Cr:YSGG laser in straight and curved root canal preparation was compared with that of the conventional canal preparation technique, in vitro. The degree of root curvature of 40 root canals was determined, and then 20 canals were prepared by an Er,Cr:YSGG laser of 2 W by using the crown-down technique, while the other 20 canals were shaped by K-file (control). The achievement degree of root canal preparation and debris score was investigated morphologically. The results indicated that straight root canals could be successfully prepared by Er,Cr:YSGG laser irradiation; a significant decrease of smear layer or debris was also recognized ( $P < 0.01$ ). However, canal preparation by laser device in curve root often leads to a ledge or zipped formation, perforation or over-instrumentation. The results demonstrated that further development in laser device and technique are required to ensure its success in root canal preparation, especially in curve root.

**Keywords** Er · Cr:YSGG laser ·  
Straight and curved root canal preparation ·  
Crown-down technique · Debris removal

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K. M. R. Jahan · M. Hossain · Y. Nakamura · Y. Yoshishige ·  
J.-I. Kinoshita (✉) · K. Matsumoto  
Department of Clinical Cariology and Endodontology,  
School of Dentistry, Showa University,  
2-1-1, Kitasenzoku,  
Ohta-Ku, Tokyo, 145-8515, Japan  
e-mail: juun163@aol.com  
Tel.: +81-3-57021484  
Fax: +81-3-57021484