



## Comparative study of laser and scalpel nerve transections.

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### Authors

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### Source

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Lasers Surg Med 1992; 12(1) :43-50.

### Abstract

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This investigation was designed to compare standard scalpel transections of the tibial branch of the rat sciatic nerve with those performed using either a milliwatt carbon dioxide (CO<sub>2</sub>) or a potassium titanyl phosphate (KTP/532) laser. Four transection groups consisted of nerves sectioned with (1) scalpel (control), (2) milliwatt CO<sub>2</sub> laser, (3) KTP/532 with microscope attachment, and (4) KTP/532 laser with 400-microns bare fiber. Each laser was used with the same parameters: 10 watts, 0.4-mm spot size, and continuous-wave mode. Horseradish peroxidase (HRP) was applied to the proximal stump for 30 min, and the animals were sacrificed 24 h later. Horseradish peroxidase (HRP)-labeled motoneuron cell bodies in the lumbar spinal cord were then counted. The average numbers of labeled neurons in each group were as follows: group I (n = 14) 518, group II (n = 8) 424, group III (n = 8) 351, and group IV (n = 8) 283. The standard deviations were quite large, however. When all laser transections were pooled and compared with paired scalpel transections, we found a significant difference, both by the paired t-test (P = 0.016) and by the Wilcoxon matched-paired test (P = 0.02). We conclude that laser transection significantly diminishes the number of neurons labeled by the retrograde transport of HRP.

### Mesh

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Animals  
Axonal Transport  
Carbon Dioxide  
Female  
Horseradish Peroxidase  
Laser Therapy  
Motor Neurons  
Neural Pathways  
Neurons  
Phosphates  
Rats  
Rats, Inbred Strains  
Sciatic Nerve  
Spinal Cord  
Surgical Instruments  
Tibia  
Titanium

### Language

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eng

### Pub Type(s)

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Comparative Study Journal Article Research Support, Non-U.S. Gov't

**PubMed ID**

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