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### **Effects of hyperbaric oxygen on peripheral nerves.**

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**BACKGROUND:** Injuries of peripheral nerves are common and usually are part of acute traumatic injuries to the limbs. Damage to peripheral nerves may be extensive. Microsurgery has improved the rate of recovery of these injuries, but some problems remain to be solved. The purpose of this investigation was to study the long-lasting effects of hyperbaric oxygenation on peripheral nerves after transection and repair with microsurgery in the rat sciatic nerve model. **METHODS:** Forty male Wistar rats were divided randomly into four groups: (1) no hyperbaric oxygen, sectioned and repaired (n = 10), euthanized at 7 weeks; (2) hyperbaric oxygen, sectioned and repaired (n = 10), euthanized at 7 weeks; (3) no hyperbaric oxygen, sectioned and repaired (n = 10), euthanized at 14 weeks; and (4) hyperbaric oxygen, sectioned and repaired (n = 10), euthanized at 14 weeks. Nerve recovery was assessed by neurophysiologic studies at 7 or 14 weeks. Foot-ankle angle response (dorsiflexion) and histopathology with automated morphometry were performed after 7 or 14 weeks. Statistical analysis was performed with the Friedman test and the Mann-Whitney U test. **RESULTS:** At 7 weeks, motor latency showed statistical significance in both groups, treated and not treated, whereas amplitude, axons, and blood vessel number was higher in the hyperbaric oxygen-treated group. After 14 weeks, electromyography showed no denervation and a better foot-ankle angle response in the hyperbaric oxygen groups. **CONCLUSION:** These results suggest that functional recovery in transected peripheral nerves may be improved and accelerated by hyperbaric oxygenation following microsurgical repair.

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