

ABSTRACT

REGENERATION OF MYELINATED FIBRES AFTER A BONE-NERVOUS TRAUMA AND MICROSURGICAL RECONSTRUCTION OF A NERVE IN COMBINATION WITH TRANSOSSEUS OSTEOSYNTHESIS (EXPERIMENTAL RESEARCH)

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In experiments on 9 dogs the morphometric characteristics of myelinated nervous fibres population are investigated after a bone-nervous trauma and microsurgical reconstruction of a nerve in a combination with transosseus osteosynthesis. In the first series ($n = 3$) microsurgical repair of transected sciatic nerve was carried out. In the second and third series (till 3 dogs in everyone) nerve repaired after femur osteotomy and osteosynthesis using wire-rod device. In the third series in 9—11 days after operation femur fragments distraction began with a step of 0,25 mm and daily rate 0,5 and 0,75 mm, which continued for 10—12% femur lengthening. After consolidation of bone regenerate the device was removed. Morphometric analysis of half-thin nerve sections in 12 months after operation has shown, that the parameters of restoration of large myelinated fibres in cases with combined bone-nerve injuries and neutral osteosynthesis are reduced in comparison with the first series, in which the nerve was damaged only. In series with distractional osteosynthesis restoration of large fibres fraction is comparable to the first series, an average G-ratio is insignificantly higher.

The conclusions are made, that if the nerve injury is complicated by bone fracture, large myelinated nervous fibres regeneration is slowed down. The application of distraction by Ilizarov after such type trauma stimulates the «pioneer» axial cylinders growth and at the same time promotes long maintenance of remodelling processes in a population of regenerating nervous fibres.

Key words: nerve, microsurgery, osteotomy, regeneration, computer morphometry.

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