

Current clinical problems in peripheral nerve and spinal root repair

Malessy MJA

Department of Neurosurgery, Leiden University Medical Center, Leiden

Mechanical lesions of the nerve can be divided systematically into two types: one in which the basal lamina tubes are still intact, and one in which they are severed. Apart from sharp lesions, shortly after trauma it can be difficult to accurately assess the extent of the nerve lesion. The functional loss of a lesion that can recover spontaneously is similar to that which cannot. By monitoring signs of spontaneous recovery in time, it becomes clear whether axonal outgrowth through the lesion site actually occurs. Functional recovery is more limited when surgery is performed after a long time interval than when it is carried out soon after trauma. Therefore, early selection of patients for surgery is important. It is expected that, in the future, MR-neurography will play an important role in this selection process.

The central objective of nerve repair is to reduce the inevitable loss of axons at the suture site by dedicated coaptation of fascicles in order to re-establish the original pattern of innervation as closely as possible. There appear to be no more factors which can be subject to improvement in the techniques of micro-surgical nerve repair. However, the refinement of intraoperative diagnostic equipment may improve the surgical decision making process.

In delayed surgery there are two main nerve reconstructive techniques, i.e. grafting and transfer. Factors affecting functional recovery after nerve repair are site of the lesion (proximal versus distal), length of graft required to bridge a gap between proximal and distal nerve stump after neuroma resection, the viability of the proximal stump, the complexity of functions to be restored and plastic changes that occur in the central nervous system. Optimizing nerve regeneration, minimizing the effects of denervation and modulation of central plasticity are the future targets to improve functional recovery after nerve repair.

Martijn J.A. Malessy, Department of Neurosurgery, Room J-11-84, Leiden University Medical Center, Albinusdreef 2, 2300 RC Leiden, The Netherlands, t 071-5263957, e-mail m.j.a.malessy@lumc.nl

Speaker Session 19

New avenues for peripheral nerve repair