**Experimental spinal cord repair, regeneration and brain plasticity: from the bench to the bedsite**

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In the long lasting research for curing spinal cord lesions, we happened to use (among the others) an experimental surgical protocol consisting in the connection of the Cortico Spinal Tract (C.S.T.) of the cord to peripheral nerves by means of autologous nerve grafts. This operation gave movements to the limbs which, instead of beeing uncoordinated and useless (as it could be expected and anticipated because the numberless fibres of the C.S.T. have different functions) were effective and usefull i.e., selective and voluntary. The explanation can only be an hiterto unknown phoenomenon of feedback able to guide the command from the frontal lobes to those motor neurons which had been connected with the muscles that are able to execute the wanted movement. This is a new discovery that arises from a serendipitous finding which occurred to us during our long-lasting research on spinal cord lesions and experimental recovery that the senior author started in 1978. At that time the senior author had been doing microsurgical repair of peripheral nerve lesions for 20 years, having introduced to Italy “microsurgery” in 1960 together with the related tools and the knowledge of nerve repair. The results of peripheral nerve microsurgical repair were exceptionally good as related to those of previous surgical techniques. Therefore, among the many patients coming for limb nerve surgery, there were also some paraplegics who asked to be operated.