

Hand Replantation: Functional results (3 cases)

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PURPOSE: The aim of this study was to report the functional results after Hand replantation at our institution.

METHODS: Between 2002 and 2007, hand replantation was performed at Rhode Island Hospital in three males ranging from 8 to 22 years. The amputations were the result of a log splitter in the child and industrial accidents in the other two cases. The nondominant hand was amputated in all cases. The level of amputation in all cases was in the distal part of the forearm. For the third case, in addition to conventional hand therapy, another type of therapy was added – Cortical integrative therapy. The goal was to see if neurocortical stimulation can affect peripheral nerve regeneration and function through reeducation of the patients' sensory and motor perception.

RESULTS: The mean convalescence time was over 12 months in all cases. The return of discriminative sensitivity of the digits was noted in the three cases. The active motion of the fingers was satisfactory in all cases, but intrinsic muscle function was weak or absent in the first two and present in the last case. Pinch and grip strength was reduced from 40 to 60% when compared to contralateral limb. For the third patient, subsequent to his 8-week cortical integrative therapy regime, fine motor control, haptic perception, precision grip control, and sensorimotor-influenced sensation in the fingertips were all dramatically improved in the patient's reimplanted hand.

CONCLUSION: All the patients achieved a useful but diminished function of their replanted hand. The patient that received cortical integrative therapy demonstrated better overall function suggesting that cortical configurations in the brain-central nervous system and hand can be externally influenced and even partially restored in the case of hand replantations.