

THE INFLUENCE OF TARGETED MUSCLE REINNERVATION ON PHANTOM LIMB PAIN

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INTRODUCTION

With an incidence of 50-80% Phantom Limb Pain (PLP) is a big challenge in amputation rehabilitation. Pain medication, psychosocial interventions and novel therapies such as mirror therapy, graded motor imagery, exergames and others were shown to be beneficial in small studies. Another current treatment strategy might be Targeted Muscle Reinnervation (TMR). It has already been shown that TMR can prevent neuroma pain. Additionally, increased intensity levels of PLP in amputees have been associated with cortical remapping in certain brain areas. Here, fMRI studies could show that TMR alters cortical reorganization processes subsequent to amputation. Therefore, it might also decrease the PLP associated with it.

METHODS

To investigate the influence of TMR on PLP a cohort study with two intervention groups and one control group was conducted. While the first intervention group only had a TMR surgery, the second intervention group also received post-surgical rehabilitation and a prosthetic fitting controlled by the re-innervated muscles. Pain levels were assessed before surgical intervention and every 6 months after. Patients were included if they reported mean pain levels of VAS 3 and above, had no nerve injuries and no psychiatric conditions. The study was approved by our Ethics Review Board.

RESULTS

At the current time 7 patients were assigned to the different study groups and have at least completed the one-year-follow-up: 2 patients are in control group, 3 in the first intervention group and 4 in the second intervention group. While the control group reported higher pain levels over time (mean VAS 4.3 in the beginning vs. 5.8 at one-year follow-up), the pain levels of the first intervention group improved from 6.8 to 5 and the pain levels in the second intervention

group changed from 5.1 at baseline to 4.0 when using the prosthesis for six months.

DISCUSSION

The results of this study support the previous findings and anecdotal reports that TMR has the potential to relieve PLP. As the number of subjects who already completed the study is small, it is not possible to come to any conclusions whether rehabilitation and prosthetic fitting after TMR are reasonable measures to improve this effect. A larger sample size will also allow statistical calculations.