

Stimulation of Denervated Muscles by Minimal Current Amplitude Using Implanted Biopolar Wire Electrodes

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Abstract

Background: Electrical stimulation had attracted attention since many years for facilitating muscle activity, reeducation and maintaining muscle tone in denervated muscles. Following denervation, muscles exposed to atrophy and wasting that lead to abnormal load distribution on bones, pressure sores and contractures. Using the implanted electrodes allow high selective stimulation for denervated muscles and will help in firing the deep fibers that is normally away from the stimulation by surface electrodes. Minimal current stimulation will help in preventing expected atrophy and further problems (pressure sores and osteoporosis). Specially characterized current will also improve muscle excitability and restore its contractility. **Purpose:** Based on the above, the purpose of this study is to investigate the effect of minimal current amplitude using implanted bipolar wire electrodes on denervated muscle tone. **Methods:** Twenty healthy animals (rabbits or sheep), will be randomly assigned into two groups; group I and group II. Group I will receive specially characterized current using implanted bipolar wire electrodes. Group II will receive ordinary stimulation using surface electrodes. Implanted bipolar wire electrodes will be inserted percutaneously via cannula in the muscle.