Temporal progression and extent of the return of sensation in the foot provided by the saphenous nerve after sciatic nerve transection and repair in the rat - implications for nociceptive assessments.

Abstract:
Sensory testing, by providing stimuli for nociceptors of the foot, is a popular method of evaluating sensory regeneration after damage to the sciatic nerve in the rat. In the following study, 20 rats were submitted to double transection of the sciatic nerve. The subsequent 14 mm gap was repaired through guidance interposition. In order to evaluate nerve regeneration, sensory testing was performed additionally to other methods, which included motor testing, morphometry, and electron microscopic assessments of nerves. Somatosensory testing revealed that all animals exhibited next to the same amount of sensory reinnervation on their foot regardless of their experimental group. In motor tests, however, two out of the three experimental groups did not improve at all. These groups also failed to show neural regrowth in morphometric and electron microscopic assessments of the associated nerve. Retrograde tracing was able to prove the saphenous nerve as an alternative source of sensory reinnervation in animals with failed sciatic regeneration. This means that results of sensory testing in the rat should be treated with caution, taking into account the areas tested and the likelihood that in these areas saphenous sprouting could have taken place. Furthermore, it is strongly
advised that somatosensory testing should be conducted only on toe 5.