Biodegradable p(DLLA-ε-CL) nerve guides for human nerve repair, should or shouldn't we use them?

Meek MF
Department of Plastic Surgery, University Hospital Groningen, Groningen

Injury of peripheral nerves is a common problem, and is always associated with loss of nerve function. Current repair techniques include direct end-to-end suturing or interposition of autologous nerve grafts. The preferred technique to repair peripheral nerve gaps without tension is autologous nerve grafting. This technique is without problems, but the results are less satisfactory and lead to donor site morbidity.
An alternative method for peripheral nerve repair is the use of nerve conduits. The aim of nerve conduits is to guide regenerating nerve fibers towards the distal nerve stump, whilst neuroma formation and ingrowth of fibrous tissue into the nerve gap is prevented.
Multiple experimental studies have been described, from biological origin (vein, artery, muscle) to conduits from synthetical origin (non-bioabsorbable conduits and bioabsorbable conduits). Only view conduits, however, have been used clinically.
In Groningen, The Netherlands, we obtained experience with the application of degradable nerve guides since 1989.
Recently, we set-up a randomized prospective multicenter study is to compare a poly (DL lactide-ε-caprolactone) Neurolac® nerve guide (Polyganics BV, Groningen, The Netherlands) with standard nerve repair (i.e. either autologous nerve grafting or end-to-end repair) for sensory nerve defects in the hand. From August 2002 to May 2003 52 patients have been randomized in this prospective multicenter study. Patients with a sensory nerve defect in the hand, meeting the selection criteria, were either treated with a Neurolac nerve guide or according to current practice (nerve grafting or end-to-end repair). Quantitative sensory testing using the Pressure-Specified Sensory Device™ (PSSD, Sensory Management Services Inc, Baltimore, USA) is being performed in all patients at three-month intervals for a one-year follow-up period to evaluate sensory nerve recovery.
Meanwhile, recent experimental research on a poly (DL lactide-ε-caprolactone) nerve guides didn't show optimistic results, whereas FDA and CE approval was obtained by the seller of the nerve guide.

Marcel F. Meek, Department of Plastic Surgery, University Hospital Groningen, Hanzeplein 1, 9700 RB Groningen, The Netherlands, t 050 361 6161, e-mail meekmf@yahoo.com