Peripheral nerve reconstruction is a difficult problem to solve. Acellular nerve allografts (ANAs) have been widely tested and are a promising alternative to the autologous gold standard. However, current reconstructive methods still yield unpredictable and unsuccessful results. Consequently, numerous studies have been carried out studying alternatives to plain ANAs, but it is not clear if nerve regeneration potential exists between current biological, chemical, and physical enrichment modes.

To systematically review the effects of cell-enhanced ANAs on regeneration of peripheral nerve injuries.

PubMed, ScienceDirect, Medline, and Scopus databases were searched for related articles published from 2007 to 2017. Inclusion criteria of selected articles consisted of (1) articles written in English; (2) the topic being cell-enhanced ANAs in peripheral nerve regeneration; (3) an in vivo study design; and (4) postgrafting neuroregenerative assessment of results. Exclusion criteria included all articles that (1) discussed central nervous system ANAs; (2) consisted of xenografts as the main topic; and (3) consisted of case series, case reports or reviews.

Forty papers were selected, and categorization included the animal model; the enhancing cell types; the decellularization method; and the neuroregenerative test performed. The effects of using diverse cellular enhancements combined with ANAs are discussed and also compared with the other treatments such as autologous nerve graft, and plain ANAs.

ANAs cellular enhancement demonstrated positive effects on the recovery of nerve function. Future research should include clinical translation, in order to increase the level of evidence available on peripheral nerve reconstruction ¹⁾.

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Pedrini FA, Boriani F, Bolognesi F, Fazio N, Marchetti C, Baldini N. Cell-Enhanced Acellular Nerve Allografts for Peripheral Nerve Reconstruction: A Systematic Review and a Meta-Analysis of the Literature. Neurosurgery. 2019 Nov 1;85(5):575-604. doi: 10.1093/neuros/nyy374. PubMed PMID: 30247648.

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