

## OPEN PEER REVIEW REPORT 1

**Name of journal:** Neural Regeneration Research

**Manuscript NO:** NRR-D-20-00635

**Title:** Advances in Mesenchymal Stem Cell Treatment for Peripheral Nerve Injury

**Reviewer's Name:** Michele R Colonna

**Reviewer's country:** Italy

### COMMENTS TO AUTHORS

This is an original review regarding MSCs in peripheral nerve injuries. It has been well-conceived and the problem of stimulating nerve repair through cell therapies looks a new, interesting perspective.

However, the study points out the biological insights, with some efforts of bringing the results of the studies to the translational research, but sometimes it looks incomplete.

In particular, I have some concerns:

Line 23 and 24 please correct. What do you mean with "autologous nerve scarifying"?

Line 33 please correct "began" into "begin"

Line 46 a brief description of different nerve healing following Sunderland's different classes of injuries is needed

Line 52-56 This is true when a nerve gap is created. The Authors are recommended

- a) To tell what is the gold standard when a gap is not present;
- b) 2 to describe the different modalities and alternatives of nerve repairs when a gap under 20 mm and over mm is present, including alternative methods such as end-to-side repair. Please also provide a brief comment on the role of cortical plasticity.

Please find the main literature in references here as follows

- 1) Peripheral nerve repair and regeneration research: a historical note.  
Battiston B, Papalia I, Tos P, Geuna S. *Int Rev Neurobiol.* 2009;87:1-7
- 2) Future perspectives in nerve repair and regeneration.  
Tos P, Ronchi G, Geuna S, Battiston B. *Int Rev Neurobiol.* 2013;109:165-92
- 3) Nerve repair by means of tubulization: literature review and personal clinical experience comparing biological and synthetic conduits for sensory nerve repair.  
Battiston B, Geuna S, Ferrero M, Tos P. *Microsurgery.* 2005;25(4):258-67
- 4) Epineurial Window Is More Efficient in Attracting Axons than Simple Coaptation in a Sutureless (Cyanoacrylate-Bound) Model of End-to-Side Nerve Repair in the Rat Upper Limb: Functional and Morphometric Evidences and Review of the Literature.  
Papalia I, Magaouda L, Righi M, Ronchi G, Viano N, Geuna S, Colonna MR. *PLoS One.* 2016 Feb 12;11(2):e0148443.
- 5) The reasons for end-to-side coaptation: how does lateral axon sprouting work?  
Geuna S, Papalia I, Ronchi G, d'Alcontres FS, Natsis K, Papadopoulos NA, Colonna MR. *Neural Regen*



Res. 2017 Apr;12(4):529-533

6) Principles of Cortical Plasticity in Peripheral Nerve Surgery.

Baldassarre BM, Lavorato A, Titolo P, Colonna MR, Vincitorio F, Colzani G, Garbossa D, Battiston B. *Surg Technol Int.* 2020 May 28;36:444-452

The authors are recommended to point out how the studies in this field could be translated into the clinical field with practical proposals to be introduced into clinical practice; should it not yet be possible, this should be also pointed out.

Finally, please provide a comment regarding ethical concerns about cell transplantation in humans and the attitudes in different countries, as well.