Summary

In summary, tissue-engineered artificial nerve constructed with NSCs, chitosan conduit, collagen protein sponge, and NGF can facilitate nerve regeneration. The use of NSCs as seed cells in tissue-engineered artificial nerve is more promising than the use of (SCs). Further nerve regeneration evaluation in more advanced mammals is needed to determine whether NSCs can be used in clinical practice instead of SCs ***(Guo and Dong, 2009).***

Recently, stem cells have been considered as a substitute for Schwann cells because stem cells can be maintained in vitro and can differentiate into neurons and non-neuronal nervous system cells ***(Cho et al., 2008).***

recently demonstrated that mesenchymal stem cells (MSCs) from human mastoid process bone marrow could be differentiated into neural cells and had neuronal properties. Human mastoid process bone marrow is occasionally wasted for disease removal in otitis media surgery. Therefore, we isolated MSCs from wasted bone marrow and maintained MSCs for subsequent use. We differentiated MSCs into neural cells in vitro before transplantation because we expected that neural-induced mesenchymal stem cells (nMSCs) were more effective in nerve regeneration ***(Cho et al., 2010).***