



Short Note on Stem Cell Surgery

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DESCRIPTION

The main use of stem cell surgery is for cure or prevent a disease or condition is known as stem-cell therapy. Hematopoietic stem cell transplantation seems to be the only established stem cell therapies as of 2016. The cells are typically derived from bone marrow transplantation, but they're also derived from umbilical cord blood. There is currently research being conducted to develop various cell therapy sources as well as to apply stem-cell treatments for neurodegenerative diseases and conditions including such diabetes and heart disease. Stem-cell therapy is becoming controversial as a result of developments such as scientists' ability to isolate and culture embryonic stem cells, to generate stem cells through somatic cell nuclear transfer, and also to generate induced pluripotent stem cells. This debate is strongly associated to abortion politics and human cloning. Furthermore, efforts to commercialize treatments based on the transplantation of stored umbilical cord blood have been contentious. Hematopoietic stem cell transplantation (HSCT) has been used to treat people with conditions such as leukemia and lymphoma for over 30 years; it is the only widely used form of stem-cell therapy. Cytotoxic agents kill the majority of growing cells during chemotherapy. These agents, however, are unable to distinguish between leukemia or neoplastic cells and hematopoietic stem cells in the bone marrow. This is a side effect of traditional chemotherapy strategies that stem-cell transplant tries to reverse; a donor's healthy bone marrow reintroduces functional stem cells to substitute the cells lost in the host's body all through treatment. The cell lines also stimulate an immune response, which aids in the death of cancerous cells; however, this process can go too far, resulting in graft vs host disease, the most severe side effect of this diagnosis. In the year of 2012, Prochyme, a stem-cell therapy, was

conditionally approved in Canada for the treatment of acute graft-vs-host disease in children who were unresponsive to steroids. This is an allogeneic stem cell therapy that uses mesenchyme stem cells (MSCs) derived from adult donors' bone marrow. MSCs are extracted from bone marrow, cultured, and packaged, yielding up to 10,000 doses from a single donor. The dosage is kept frozen until they are needed. Five hematopoietic stem-cell products derived from umbilical cord blood have been approved by the FDA for the treatment of blood and immune diseases. The European Medicines Agency recommended approval of limbal stem cells in 2014 for individuals with serious limbal stem cell deficiency caused by eye burns. Stem cells are being researched for a variety of reasons. The molecules and exosomes released by stem cells are also being researched in an attempt to develop medications. Aside from cell functions, paracrine dissolved factors produced by stem cells, known as that of the stem cell secretome, have been discovered to be another mechanism by which stem cell-based therapies mediate their effects in degenerative, autoimmune, and autoimmune disorders. A large number of high-quality stem cells are required for research or treatment applications. As a result, culture systems that generate pure populations of stem - cell stem cells in vitro without losing stem-cell possibility are required. For this purpose, two approaches are used: Cell culture in 2 dimensions and three dimensions.

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CONFLICT OF INTEREST

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