Models suggest treatments for fractures that won't heal

September 2 2010

New models, reinforced by in vivo experimentation, show why 5-10% of bone fractures don't heal properly, and how these cases may be treated to restart the healing process. Results of the model, published September 2 in the open-access journal *PLoS Computational Biology*, may benefit the ageing population in which the occurrence of bone fractures is expected to rise substantially in the near future.

In 5 to 10% of bone fracture cases, the *healing process* does not succeed in repairing the bone, which leads to the formation of delayed unions or even non-unions - fractures that fail to heal. Using a combination of an *animal model* mimicking a clinical non-union situation and a mathematical model developed for studying normal fracture healing, researchers at the Katholieke Universiteit Leuven (Belgium), University of Ličge (Belgium), Edinburgh University (United Kingdom) and Oxford University (United Kingdom) investigated this health problem.

For example, the authors investigated the potential to treat non-unions by transplanting cells from the bone marrow to the fracture site. This was also tested in a pilot animal experiment; both the simulations and the experiments showed the formation of a bony union between the fractured bone ends. In addition, the researchers used the *mathematical model* to explain some unexpected experimental observations.

The study demonstrates the added value of using a combination of mathematical modelling and experimental research, as well the potential of using cell transplantation for the treatment of non-unions.

Provided by Public Library of Science

Citation: Models suggest treatments for fractures that won't heal (2010, September 2) retrieved 18 April 2024 from https://phys.org/news/2010-09-treatments-fractures-wont.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.