conferenceseries.com

J Biotechnol Biomater 2018, Volume 8
DOI: 10.4172/2155-952X-C1-089

3rd Annual Conference and Expo on

BIOMATERIALS

March 05-06, 2018 | Berlin, Germany

Numerical simulation of the femur fracture for different cemented hip femoral prosthesis under forces during stumbling

Zagane Mohammed El Sallah, Sahli Abderahmen, Benouis Ali and Benbarek Smail
University of Sidi Bel Abbes, Algérie

Biomechanics is the study of the structure and function of biological systems by means of the methods of mechanics. Finite element analysis is a computer based numerical analysis method which can be used to calculate the response of a model to a set of well-defined boundary conditions. Hip total prosthesis was used for the patients who has the hip fracture and unable to recover naturally. To design highly durable prostheses one has to take into account the natural processes occurring in the bone. In this paper, the static load analysis is based by selecting the peak load during the stumbling activity. Two different implant materials have been selected to study appropriate material. The results showed the difference of maximum von Mises stress and detected the fracture of the femur shaft for different model (Charnley and Osteal) implant with the extended finite element method (X-FEM), and after the results of the numerical simulation of X-FEM for different was used in determining the stress intensity factors (SIF) to identify the crack behavior implant materials for different crack length. It has been shown that the maximum stress intensity factors were observed in the model of Charnley.

salah_fao@yahoo.fr