عنوان مقاله:

A Case study of Performance Improvement of Femur Prosthesis

محل انتشار:

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خلاصه مقاله:

Nowadays, the placement of artificial prostheses in human skeleton, etc. is common due to different reasons such as fractures or deficiencies. Prostheses are structures that assist the performance of organs by reconstruction of some body parts through different methods to enable the organ to re-obtain its performance completely or partially and, since the use of external prostheses might lead to issues such as severe traumas, slow recovery and imposition of enormous hospital costs on the patient, therefore, use of internal prostheses can be an effective method for accelerating the process of improvement for the patient. By using CT-scan photos of a ۵۴-year-old man weighing ۶۰ kg and with a femur length of ۳۶ centimeters, and also using a titanium prosthesis with diameters equaling ۹ and ۱۳ mm along with screws with diameters of ۴ mm whose placement are with angles of ±۴, ±۴ and ±۳۶ degrees, the geometry of the model has been provided and the model has been analyzed through the finite element method. Results indicated that in case of using the prosthesis with the diameter of ۱۳ mm and screws of ۴ mm with angle of +۳۶, the least stress will be imposed on the bone and prosthesis.

کلمات کلیدی:

Artificial prosthesis, Femur, Geometric modeling, Finite Element Analysis