

DESIGN OF A TOTAL HIP PROSTHESIS

TOTH-TASCAU Mirela, BUGARIU Delia, BERETEU Liviu

“POLITEHNICA” University of Timișoara

mirela@mec.upt.ro, delia@cmpicsu.upt.ro, liviu.bereteu@mec.upt.ro

Keywords: CAD software, 3D modeling, total hip prosthesis

This paper proposes a model of a total hip prosthesis for a patient affected by coxarthrosis. This disease affects both the bone structure and the joint cartilage.

The proposed solution for the total hip prosthesis consists of two assemblies: one composed of a stem and a ball, representing the femoral component, and a sandwich assembly, which replaces the acetabular component. All component parts of the implant created in this study have been realized using the Solid Edge facilities.

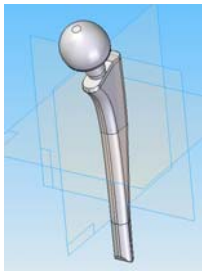


Fig.1. The stem and the ball of the prostheses

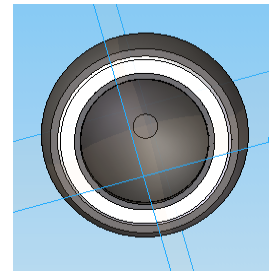


Fig.2. The sandwich assemble

The acetabular component is composed of three cups: two external metallic cups and one middle polyethylene cup. The role of the polyethylene cup is to absorb the shocks during the motion.

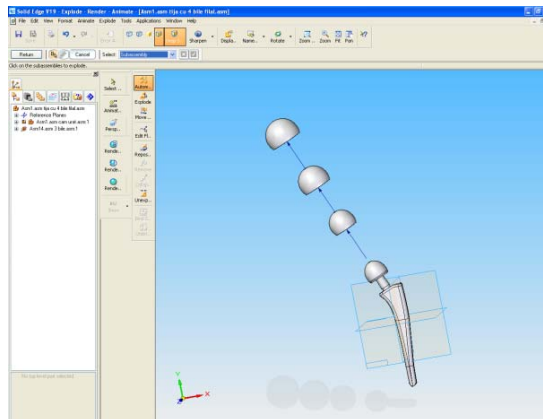


Fig.1. The total hip prosthesis for the coxo-femoral joint

The materials used to fabricate the hip prosthesis are titanium and polyethylene. The designed prosthesis is metal on metal. At this prosthesis, the stem, the ball and the external parts of the acetabular cavity are made out of titan.