

## Short Shaft Prosthesis

Hip endoprosthesis, endoprosthesis

### DESCRIPTION OF TECHNOLOGY

Hip short shafts are designed to introduce force into the femur as proximal as possible. Conventional shafts can ensure that the femur is stiffened due to their rigidity.



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In order to improve the anchoring behaviour and the elastic deformation behaviour of short hip shafts, the newly developed prosthesis has a distally tapering shape and a double T-beam cross-section in the upper shaft course. The prosthesis no longer causes deformation of the femur, but follows the physiological curvature of the femur with a so-called counterswing. This leads to a more physiological load and to a reduction in bone loss in the area of the prosthesis.

### ADVANTAGES OF THE NEW PROSTHESIS

The newly developed hip short shaft prosthesis represents an innovative shaft design. Due to its shape, the new prosthesis deforms elastically and therefore counteracts the bone remodeling processes that occur due to the altered stress mechanism of the prosthesis. In addition, the innovative shaft design ensures optimized preservation of the cancellous bone structure and thus immediate torsional stability.

### AT A GLANCE ...

#### Application Fields

- orthopedic surgery
- endoprosthesis

#### Business

- medical technology

#### USP

- higher elasticity
- easier to adapt to individual anatomy of the patient

#### Development Status

- FEM analytical investigations according to ISO-7206-4 already carried out
- enhanced prototype in planning stage

#### Patent Status

Priority application, filed 25.03.2019 at the European Patent Office.

## ADVANTAGES OVER THE PRIOR ART

The new short shaft prosthesis is easier to adapt intraoperatively to the individual anatomy of the patient due to different flank inclinations of the medial and lateral flanks. The mobility of the hip does not differ from conventional prosthesis systems. The prosthesis is similar in length to conventional prostheses, but the shaft design described above allows better and faster osteointegration (ingrowth into the bone) of the prosthesis by approximating the deformation behavior of the prosthesis to the physiological femoral curvature.

## STATE OF THE PRODUCT DEVELOPMENT

FEM-analytical investigations according to ISO-7206-4 were carried out. The development of an enhanced prototype for the execution of mechanical tests is in planning stage.

## MARKET POTENTIAL

In 2016, 122,961 initial hip implantations were performed in Germany alone (EPRD Annual Report 2016, p. 18 Table 5). Demographic change is expected to lead to an increase in this figure. Thus, there is a great need for short shaft prostheses in Germany and other European countries.

## COOPERATION OPPORTUNITIES

On behalf of its shareholder Justus-Liebig-University Giessen TransMIT GmbH is looking for cooperation partners or licensees for distribution or further development in Germany, Europe, US, and Asia.

## A TECHNOLOGY OF



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