

UGM Develops Gama Hip Prosthesis, Bone Implant of Indonesian People

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Hip prosthesis is one type of medical equipment which is used as implant to restore the function of thigh bone which is broken. In Indonesia the number of hip prosthesis implants is quite large and has increased from year to year. Unfortunately, most of the stock is still supplied from abroad while the imported product has a different bone size from that of Indonesian people.

This fact encouraged Dr. Alva Edy Tontowi, a lecturer of Department of Mechanical and Industrial Engineering, Faculty of Engineering UGM, to develop a hip prosthesis suitable for Indonesian people. Its relatively low price is expected to replace the imported hip prosthesis so that more patients with fractures could be treated.

Alva said the data recorded in a number of big hospitals in Yogyakarta showed that every month there are about 16 patients who have a hip prosthesis implant, or about 192 units per year with a hip ball size varies between 36-46 millimeters. Meanwhile, domestic demands are still met by imported products with different bone posture characteristic.

"The results of material study and the experience of orthopedic surgeons at Dr. Sardjito Hospital showed that though hip prosthesis is made of 316L stainless steel which has been recommended by the Foods and Drugs Agency (FDA) in the United States as an implant material, but the nature of the biocompatibility and bioactivity is not fully guaranteed," the founder of UGM Bioceramics Minifactory said recently at UGM.

Therefore, he was trying to develop a hip prosthesis named Gama-Hip prosthesis which is different



from the imported ones in the market. His hip differs in the stem which is coated with Hydroxyapatite (HA) made by UGM Bioceramics Minifactory. "The addition of HA in the stem is to give the bioactive properties and bio-integration (binder) with the surrounding tissues," Alva said.

Gama-Hip prosthesis is relatively cheaper than imported products. The price of monopolar-hemiathroplasty type-316L stainless steel or AlTi6V4 is 8 million - 12 million rupiah per unit. Meanwhile, Gama-Hip Prosthesis is planned to be sold at 5 million rupiah. "Regarding the number of patients and the expensive price, not all patients with fractures get appropriate service. Therefore, the cheaper price of this product is expected to be able to replace imported hip prosthesis so that more patients can be treated," he explained.

Gama hip development has been done since 2011 and was a research project of UGM Risnas program 2011. It involves Orthopedics division of Dr. Sardjito Hospital and CV Perkakas Jogja.

Alva added up to this time he has not conducted clinical trials on patients directly. "Before being commercialized, clinical trials will be conducted first. Meanwhile, the patent is being submitted to the Directorate General of Intellectual Property Rights," he said.

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