

P-16 임프란트 생체금속들과 골조직간의 생체적합도에 관한 연구

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Screw-shaped implants of commercially pure (c.p.) titanium, c.p. niobium, c.p. zirconium, and stainless steel(Sus 304) were inserted in the rabbit tibial bone over 12 weeks of follow-up. New developed torque gauge instrument was used to evaluate the implant holding power and a image analysis program coupled to a microscope was used for histomorphometry. Quantitative analysis at 12 weeks revealed a partial bone contact to the four kinds investigated metals. There were no obvious adverse tissue reactions to any of the biomaterials. At 12 weeks the average removal torque for titanium, niobium and zirconium were better than that needed for Sus 304 screws, on the other hand high score of bony contact ratio of titanium and niobium were showed in comparison to those of zirconium and Sus 304. There was no significant differences in the amount of interfacial bone of zirconium and Sus 304 where as there was significant difference in the torque forces of niobium and Sus 304.

Three months after implant insertion, the average removal torque was 6.64 Nom for the titanium, 6.57 Nom for the niobium, 6.38 Nom for the zirconium, and 4.25 Nom for the Sus 304. On average bone contacts there were 51.24% in the titanium, 48.19% in the zirconium, 23.54% in the Sus 304.

Biocompatibility of the titanium, niobium and zirconium was acceptable level in comparison to the Sus 304.