New technique performing a ceramic coating on the surface has been developed to enhance bone bonding strength, and various test results by type of ceramics and coating have been published. The purpose of this study is to evaluate the effect and usefulness of the ceramic coating (BGS-7), a CaO-SiO$_2$-P$_2$O$_5$-B$_2$O$_3$ system of bioactive glass-ceramics to bone bonding of Steinman pin biomechanically and histomorphometrically.

Using enameling method, a test was performed inserting three S-pins on each ilium; 2.2mm Steinmann pin (S-pin) with a coating of BGS-7 (30µm), Cerabone-AW (30µm, Cerabon), Hydroxyapatite (100nm, HA1), two times of coatings of Hydroxyapatite (300nm, HA2) as opposed to S-pin without coating. The test divided 50 live rabbits to 14 of 2 week-group, 20 of 4 week-group, and 16 of 8 week-group. Rabbits were raised and sacrificed after 2 weeks, 4 weeks and 8 weeks respectively. After euthanization, tensile strength test, histological and histomorphometrical evaluation were performed. With regards to the tensile test results, BGS-7 group has statistically higher tensile strength than S-pin group and HA1 group for 2 week-group. For 4 week-group, BGS-7 has statistically higher tensile strength than S-pin, HA1, and HA2 groups. In addition, Cerabone group has statistically higher tensile strength than HA1 as well. For 8 week-group, BGS-7 and Cerabone has statistically higher tensile strength than S-pin, HA1, HA2 groups. From the histomorphometrical result regarding contact ratio between a bone and S-pin, Cerabone group has statistically higher contact ratio than HA1 group for 2 week-group. For 4 week-group, BGS-7 has statistically higher contact ratio than S-pin, HA1, and HA2 groups. In addition, Cerabone group has statistically higher contact ratio than HA1 while HA2 group has statistically higher contact ratio than HA1 group. The result of test from biomechanical and histomorphometrical point of view showed that the ceramic coating (BGS-7), a CaO-SiO$_2$-P$_2$O$_5$-B$_2$O$_3$ system of ceramics had superior bone bonding to groups without coating from the initial stage of the insertion and also kept high bone bonding strength after 4 weeks and 8 weeks, which gives an idea that S-pin with coating will enhance bone bonding strength.

**Key Words:** CaO-SiO$_2$-P$_2$O$_5$-B$_2$O$_3$ glass-ceramics, hydroxyapatite, nanocoating, Steinman pin, osseointegration