Bioactive Effect of Acid-treatment on Alkali and Water-treated TiO\textsubscript{2} Nanotubes
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Objective: NaOH and heat treatments improve the bioactivity on implant surface. Sodium removal of surface by water treatment can convert sodium titanate layer into a more bioactive state. The anatase phase affects on the formation of apatite nucleus in SBF. In this study, acid treatment was performed between alkali and water treatment to enhance bioactivity through increasing formation of anatase phase. The aim of this work is to verify that the properties and bioactivity of the alkali and water-treated TiO\textsubscript{2} surface were improved by acid treatment. Method: Pure Ti foil was prepared for surface modification. The specimen was conducted by anodization in glycerol electrolyte, alkali treatment in 5M NaOH(60°C, 24h), acid treatment in 10 & 50M HCl(40°C, 24h) and water treatment in ultra-pure water(40°C, 24h). Finally, specimens were thermally treated at 550°C. Surface properties were evaluated by FE-SEM, EDS and XRD. The contact angle between the SBF drop and the surface was measured. To estimate bioactivity, the specimens were soaked in SBF for 5 and 10 days. Result: After HCl treatment, the concentration of O ions and anatase peaks was increased. After 5 days of immersion in SBF, apatite-like compound accelerated on the surface of all groups. The HA peaks and concentration of C and P ions is highly increased in 50mM HCl treated group. Conclusion: The hydrophobic property was demonstrated in the HCl treated groups via contact angle value, and an apatite-forming ability was also enhanced by increase of TiO\textsubscript{2} groups after 50mM HCl treatment. Thus, it is suggested that the HCl treatment is a favored surface modification method to improve the bioactivity of alkali and water-treated TiO\textsubscript{2} nanotubes. This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education, Science and Technology(2012012671 & 2012078616) and by the Korea government(MEST)(No. 2011-00208709).

Bond Strength Of Dental Posts with Zinc Phosphate Luting Cement
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Objective: Post retention to root canal dentine is an important parameter that directly affects the restoration success. The objective of this in-vitro study was to examine the push-out bond strength of four commonly used dental posts including titanium alloy, fiber, stainless steel, and new experimental zirconia posts luted with zinc phosphate cement. Methods: Forty extracted single-rooted canine teeth were randomly divided in four groups (N=10) and restored using four selected types of dental posts (Para Post XP, Coltene/Whaledent, USA), fiber posts (Para Post Fiber Lux, Coltene/Whaledent, USA), and the new experiment zirconia posts (BTS Tools Manufacturing Sdn Bhd, MALAYSIA) with conventional zinc phosphate luting cement (Elite 1000, GC Corp, Japan). The mixed luting cement paste was inserted into a parallel post spaces, 1.25±0.01 mm (diameter) and 15.00±0.01 mm (length) with a spiral file and applied to the post surface that was seated into the canal. After water storage for 7 days at 37°C, the teeth were sectioned horizontally to obtain three disc-shaped specimens (coronal, middle and apical) with thicknesses of 2mm from each tooth. The specimens were further subjected to push-out tests using a universal testing machine at a cross-head speed of 0.5 mm/min. Statistical analysis was performed using SPSS Statistics 22 and general linear repeated measure with 95% confidence interval. Results: The results showed a significant interaction between the push-out bond strength and the type of dental post. The mean push-out bond strengths in the middle sections of fiber-reinforced post (2.41±2.45 MPa) were significantly higher than titanium (0.98±0.92 MPa), stainless steel (1.44±1.39 MPa), and new-experiment Zirconia (1.11±0.95 MPa) posts. Conclusion: With the limitation of this study, fiber post has the highest bond strength to the root dentin than other type of evaluated posts in push-out tests.

Dentin Adhesion of Sealer with Soft Core Gutta Percha
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Objective: The aim of this ex vivo study was to determine the correlation between different instrumentation techniques, irrigation protocols, and contact of the sealing material with root canal wall. Method: Eighty freshly extracted human teeth were used for this study. The teeth were divided into two major groups according to the instrumentation technique (Manual and ProFile), sealing material (the samples were obturated with AH26 or Sealapex and Soft Core Heating Gutta-percha), and then each major group into four subgroups according to irrigation protocol (Saline solution, 17%EDTA, 5.25% NaOCl). The evaluation of the objectives was performed using a Scanning Electron Microscope. Result: Each instrumentation followed with irrigation of 17% EDTA and 5.25% NaOCl, sealed with AH26 or Sealapex and Soft Core Heating Gutta-percha provided maximal contact at the S/D interface. The S/D interface had a serrated appearance due to effective penetration of the sealer into the root dentin tubuli. Conclusion: Adhesion of the respective sealer is more successful in cases when the smear layer was removed completely. The removal of smear layer has been possible when irrigation was done with a combination of two solutions (17% EDTA and 5.25% NaOCl), regardless of the instrumentation technique.