

ABSTRACT

EFFECT OF ALENDRONATE ON BIO SCREW COMPRESSIVE STRENGTH OF BOVINE HYDROXYAPATITE-GELATIN-GLUTARALDEHYDE

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Background: Bone fractures, around 300-400 cases per month, were treated with orthopedic surgery method using internal fixation by bone screw. Bone screw divided as bioscrew and metal screw. Bioscrew has biocompatible effect and biofunctional effects, as well as having an important element of biodegradable. These advantages make patient do not need to get the second operation or the implant.

Method: Compression strength was tested to 5 groups of bio screw formulas using autograph instrument. Formula 1 bovine hydroxyapatite (BHA) –gelatin (GEL), formula 2 BHA-GEL-glutaraldehyde(GTA), formula 3 BHA–GEL-GTA-alendronate (ALE 1%), formula 4 BHA-GEL-GTA-ALE 2% and formula 5 BHA-GEL-GTA-ALE 4%.

Results: The aimed of this research was to analyze the value of compressive strength in bio screw with addition of alendronate. Statistical analysis was used one-way analysis of variance (ANOVA). From this data showed the five test groups did not have a significant difference ($p > 0,05$).

Conclusion: Addition of alendronate with 3 varian of concentrations (1%, 2%, 4%) did not affect the compressive strength of the bio screw. From this research, the highest compressive strength were obtained on treatment F4 with 2% alendronate.

Keyword : bioscrew, bovine hydroxyapatite, alendronate, gelatin, glutaraldehyde, compressive strength