4036103 DTPE/M : MAJOR : PERIODONTICS ; M.Sc. (PERIODONTICS)
KEY WORDS : DIGITAL SUBTRACTION RADIOGRAPHY/ PERIODONTAL DIAGNOSIS

SASITORN SIRISAMBANDHA: EFFICACY OF DIGITAL SUBTRACTION RADIOGRAPHY IN IMAGE - PRO PLUS PROGRAM IN DETECTING ARTIFICIAL ALVEOLAR BONE CHANGES. THESIS ADVISORS: JULALUX KASETSUWAN, Grad. Dip. in Clin. Sc. (Periodontics), Dip. Thai Board of Periodontology, ORAWAN MANOMAISANTIPHAP, D.D.S., Grad. Dip. in Clin. Sc. (Radiology), THEERA SIRIPICHAYAKUL, B.Sc. 58p. ISBN 974-665-004-1.

The purpose of this study was to determine whether digital subtraction radiography in the Image-Pro Plus software program could improve the detection of artificial alveolar bone changes. The amount of bone loss measured in area calculated by the subtraction technique was compared with that measured by a veneer caliper and an image processing technique. Thirty artificially induced bone lesions were created in buccal alveolar bone of dry porcine mandibles. The depth of defects was increased incrementally by 1 mm. to produce lesions of 1, 2 and 3 mm. Standardized radiographs were taken before a lesion was made and again after each drilling. The diameters of these defects were measured by veneer caliper and the areas were subsequently calculated. The radiographs were then converted into digital images with 256 gray levels by using a scanner and the extent of alveolar bone changes were measured by the image processing technique (Image-Pro Plus program), both before and after the subtraction process. The differences of area between 3 measurements in each defect depth were evaluated. The result of this study indicated that the digital subtraction radiography had a greater sensitivity score than conventional radiography in the identification of artificial bone changes at a depth of defect of 1 and 2 mm. However, there was no significant difference in sensitivity between subtraction and conventional radiograph at a 3 mm.depth of defect. Additionally, the mean area of artificial lesions that obtained from 3 measurement showed significant difference only at a defect depth of 1 mm. ($p<0.001$). In conclusion, the subtraction image could virtually enhance the detectability of minute bone changes.