

**PROGRAM
GUIDE**

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An experimental study of maxillary sinus floor elevation following simultaneous implant placement using beagle dogs frontal sinus.

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Purpose: To investigate the possibility of clinical use implant placement without grafting in the severely atrophic maxilla, we compared osseointegration of new bone developed in the space under the detached membrane in hydroxyapatite coated (HA) implants. **Materials and methods:** Self-tapping type HA implant (JHA implant, 55 % HA crystallinity, Japan Medical Materials Corporation, Japan) and non self-tapping type HA implant (KHA implant, 95% crystalline HA, Zimmer Dental Corporation, USA) were placed into frontal sinus of four beagle dogs. At 3 and 6 months after surgery, dogs were sacrificed and undecalcified ground sections were prepared for histological and histomorphometric measurement. Statistical significance was evaluated by two-way ANOVA. **Results:** The average length of the outer of the implant attached to new bone had increased from 14.1 ± 7.8 mm (3 months) to 17.3 ± 9.4 mm (6 months) in JHA group. In KHA group, no significant difference (17.6 ± 3.6 mm at 3 months and 16.8 ± 2.4 mm at 6 months) was observed. In terms of bone implant contact (BIC) rate of new bone, there was a little decrease at 6 months ($77.0 \pm 7.9\%$) compared to 3 months ($88.8 \pm 10.5\%$) in JHA group. No significant change was found in KHA group ($85.3 \pm 7.6\%$ at 3 months, $87.3 \pm 17.0\%$ at 6 months). **Discussion:** The connection between implant surface and HA is strong

and the thickness of HA layer is thin in JHA implant. JHA implant has self-tapping function to get good initial fixation in thin bone of severely atrophic maxilla. These results identify the JHA implant as a possible candidate of osseointegration as KHA implant in thin bone volume of dog frontal sinus wall. Conclusion: The JHA implant has a possibility with clinical applications of non-graft, one stage maxillary sinus floor elevation for severely atrophic maxilla.