Simultaneous implant placement in the atrophic posterior maxilla with autogenous bone graft

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INTRODUCTION:
After loss of teeth in the posterior maxilla, the alveolar ridge decreases by bone atrophy and pneumatization. Different strategies for implant placement have been developed using one- or two-stage procedures, which involve either simultaneous placement into the augmented sinus graft or secondary placement after reconsolidation of the bone graft. Various bone grafting materials have been used in sinus augmentation including autogenous grafts, freeze-dried bone allografts, hydroxyapatite, and xenografts.

METHODS:
2 patients were selected for the sinus elevation and implant placement procedure. All patients received a radiographic, clinical, occlusal examination and computerized tomographic (CT) scans at the initial visits and 3 months after prosthetic connection. The radiographic criteria of height of the remaining alveolar bone below the sinus floor is 5–7mm.

In these cases, autogenous bone from the symphisis area was used and carefully packed into the sinus cavity. Following graft placement, implants (Implantium, Dentium, Seoul, Korea) were inserted. The lateral wall of the sinus was then covered with a membrane (Bio-Gide, Geistlich Pharma AG, Wolhusen, Switzerland) to prevent migration of the graft particles.

RESULTS:
The soft tissue healing was uneventful in all patients and none of the patients had postoperative complications besides normal swelling and inflammation at the surgical sites. No implants were lost in any patients during follow-up periods. In sagittally reformatted CT scans, the average increase of mesial bone level around the implant was 8.4mm and the that of the distal side is 8.6mm. In the coronal reformation of CT scans, the mean gain of buccal and palatal bone were 9.7mm and 8.7mm respectively.

In periapical radiographs, the mean increase of mesial and distal bone were 7.6mm and 7.9mm respectively.

CONCLUSION:
The implant system used in the sinus floor elevation with simultaneous installation showed very stable results up to 3–month after prosthetic connection.
Simultaneous Implant Placement in the Atrophic Posterior Maxilla with Autogenous Bone Graft

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INTRODUCTION
After loss of teeth in the posterior maxilla, the alveolar ridge decreases by bone atrophy and pneumatization. Different strategies for implant placement have been developed using one- or two-stage procedures, which involve either simultaneous placement into the augmented sinus graft or secondary placement after reconsolidation of the bone graft. Various bone grafting materials have been used in sinus augmentation including autogenous grafts, freeze-dried bone allografts, hydroxyapatite, and xenografts.

MATERIALS & METHODS
13 patients were selected for the sinus elevation and implant placement procedure. All patients received a radiographic, clinical, occlusal examination and computerized tomographic (CT) scans at the initial visits and 6 months after prosthetic connection. The radiographic criteria of height of the remaining alveolar bone below the sinus floor is 5-7mm. In three patients, autogenous bone from the symphysis area was used and mixed with xenograft (Bio-Oss, Geistlich Pharma AG, Wolhusen, Switzerland) and was carefully packed into the sinus cavity. In ten patients, on xenograft was done. Following graft placement, implants (Implantium, Dentium, Seoul, Korea) were inserted. The lateral wall of the sinus was then covered with a membrane (Bio-Gide, Geistlich Pharma AG, Wolhusen, Switzerland) to prevent migration of the graft particles.

RADIOGRAPHIC EVALUATION

RESULTS
The Clinical observations
In autogenous graft case, one patient suffered from severe pain up to 2 weeks and the symptom remained until 2 months. The other patient complained about different sensation. The prosthesis seemed to last 3 months. In the other patients, the soft tissue healing was uneventful and no patients had postoperative complications besides normal swelling and inflammation at the surgical sites.

Radiographical findings
In nasally reformulated CT scans, the average increase of mesial bone level around the implant was 8.4±0.8mm in autograft and 8.6±1.6mm in xenograft, and the that of the distal side is 8.6±1.8mm in autograft and 8.8±1.2mm in xenograft. In the coronal reformulation of CT scans, the mean gain of buccal and palatal bone were 9.7±1.0mm in autograft and 9.0±1.2mm in xenograft. In the lateral radiograph, the average marginal bone loss around mesial side of the implant was 0.2±0.2mm in autograft and 0.1±0.3mm in xenograft and the that of the distal side is 0.2±0.3mm in autograft and 0.1±0.3mm.

The volume in grafted area seemed to decrease in both cases, but the change in autograft was greater than the xenograft patients.

DISCUSSION
This study used sinus augmentation with simultaneous implant placement. The one-step procedure offers the advantages of reducing the number of surgical procedures and the time needed. Various clinical investigations and case reports have indicated that, although sinus augmentation can be clinically successful with various grafting materials, autogenous bone still provides the best osteogenic potential and biomechanical properties of the regenerated bone. The use of CT scan allows us to gain significant information and allows full tomographic examination of the sinus augmentation region.

CONCLUSIONS
The implant used in the sinus floor elevation with simultaneous installation showed very stable results up to 6-month after prosthetic connection. Further study is needed to evaluate the long-term follow-up results.