

## Maxillary Anterior Teeth Defect Caused by Trauma - A Case of Implantation after Bone Augmentation -

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**Patient data:** A 52 year-old man (born in 1949) presented on January 22, 2002 wishing to receive implant treatment. Approximately 20 years before presentation, the patient was hit directly on the face by a ball while playing baseball and four maxillary anterior teeth were avulsed, resulting in extremely strong resorption of the bone. Although he was using a conus denture, he visited our clinic requesting implant treatment. According to a panorama radiograph and CT scans (transverse section and cross section, it was not possible to place implants in the left maxillary anterior tooth region where bone defect was extensive. The patient desired not only to receive prosthetic treatment for the defect, but also to restore the contour of the gingiva to its original shape. The treatment plan was to place two implants in the right maxillary anterior tooth region where bone was present, as well as to conduct bone grafting in the region with extensive bone defect, and placing implants after the bone volume has been augmented.

### Cause of treatment

2002.1.22: Presentation. Basic initial treatment such as periodontal treatment of the remaining teeth.

2002.3.27: Three implants were placed in the left mandibular molar region, and the bone eminence on the labial side was removed for the purpose of transplantation to the maxillary bone defect region. When the mucosa of the bone defect in the maxillary anterior teeth region was detached and turned over for examination, the bone in the right maxilla was found to have inadequate width. Consequently 2 implants were placed. In the left maxillary anterior teeth region, bone resorption was observed both in vertical and horizontal directions. Therefore the mandibular bone eminence was removed and the graft was screwed to the bone on the buccal side. During implantation, the powdered bone produced during bone grinding and rinsed out by sterile physiological saline (suction bone) was collected by a bone collector and mixed with Bio-Oss to pack around the transplanted bone graft. In addition, the top of the graft was covered with Bio-Gide modified to the appropriate shape. Then the mucoperiosteum was completely closed. CV-4 suture (GoreTex Inc.) was used, and horizontal mattress sutures combined with simple sutures were placed.

2002.10.18: After confirming that the bone grafted to the left maxillary anterior teeth region survived, the pin was removed and one implant was placed. During the procedure, a mixture of suction bone and Bio-Oss was used to fill the indented bone surface.

2003.5.16: The second operation was performed for the implants placed in the maxillary anterior teeth region. To prepare

for future attachment of screw-on type prosthesis, special abutments were placed and a torque of 32 Newton was applied. A temporary prosthesis was installed and the contour of the gingival was confirmed.

2004.5.17: After completing the prosthesis in the molar region, the prosthesis for the maxillary anterior teeth region was attached. After a frame was fabricated using the titanium grinding method, a metal bond was produced. For the gingival region, gingival-colored porcelain was used to reconstruct the contour of the gingiva.

### Discussion

Tooth avulsion caused by trauma is often accompanied by bone defect, and plate denture is commonly fabricated for the purpose of reproducing the contour of the gingiva. Nowadays, with increasing confidence being given to implant prostheses, treatment of cases with bone defect should consider not only replacing the tooth but also reconstruction of the gingival. For this purpose, either fabrication of gingiva using prosthetic material or bone augmentation can be used. In the present case, in the region where there was not enough bone for implant placement, bone augmentation was performed using an autologous bone graft and then implants were placed. After reproducing the gingival contour on the augmented bone surface, dental prosthesis was fabricated.

Since adequate integration was obtained between the bone and implant, a prosthesis that was functionally satisfactory was attached. From the cosmetic point of view, it would have been better if the gingival contour were more pronounce. On reflection, a shortcoming of the bone transplant procedure was that bone





augmentation in the vertical direction was inadequate. As material for bone augmentation, we used autologous bone combined with Bio-Oss and the presence of a mandibular bone eminence was conveniently utilized as the bone graft. In the absence of this

eminence, harvesting from the mentum can be considered.

In cases of tooth or bone defect caused by trauma, bone grafting combined with implantation is without doubt effective. In the future, more reliable method of bone augmentation should be developed.