# Two different approaches of implant therapy to replace ankylosis central incisors.

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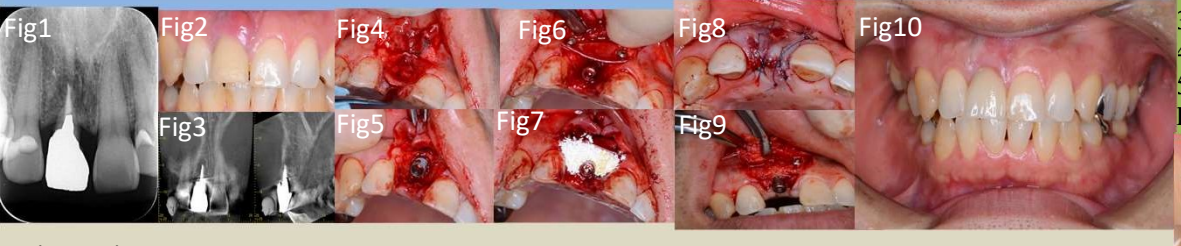
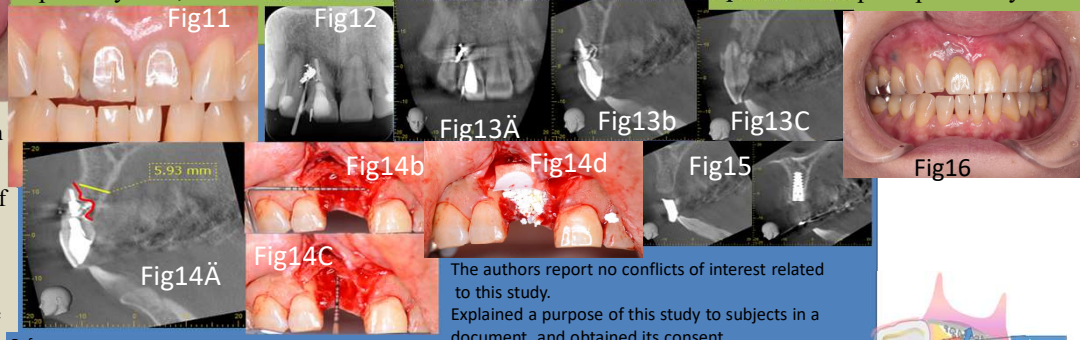
Introduction: Delayed replantation of avulsed teeth is inevitable but tentative. Ankylosis causes infra-occlusion and mal-esthetics and may be retreated with the other appropriate options at appropriate time in the patient's life. Implant therapy is one of the options but several aspects on bone healing around abutment must be considered before and during the procedures. The aim of this presentation is to discuss the indications of immediate implant placement with extraction of an ankylosis tooth and delayed one.

**Case 1:** man[A 30-year-old ].Chief complaint: Discomfort in tooth #8.
Past medical history: At the age of 25, for cosmetic reasons, the patient underwent prosthetic treatment and the placement of a resin facing for tooth #8 that had been injured during a baseball game at age of 15.
Clinical findings: Radiographic findings of external root resorption in tooth #8(Fig. 1), and gingival swelling and discharge of pus on intraoral photography (Fig. 2). Tooth mobility was 1° . Dental cone beam computed tomography (CBCT) for the evaluation of the implant site revealed bone loss in the labial alveolar bone (Fig. 3).
Treatment procedures:
1) Buccal bone loss was observed when scraping the tooth socket after extraction(Fig. 4).
2) Implant placement (NobelActive Implant System NPΦ3.5×11.5 mm; Nobel Biocare Co.) (Fig. 5).
3) In bone grafting, resorbable membrane(GC-MEMBRANE®,GC corporation Japan) and artificial bone material (Bio-Oss®, Geistlich, Switzerland) were used for guided bone regeneration (GBR) (Figs. 6–8).
4) In the second surgery performed 6 months later, the width of the alveolar bone was sufficient in both horizontal and vertical directions (Fig. 9).
5) As of today, 5 years after implant placement, the patient and physician are both satisfied with the treatment outcome (Fig. 10).




**Case 2**: A 49-year-old woman.Chief complaint: Swelling at tooth #8 and 9.Past medical history: At the age of 18, the patient suffered complete luxation of tooth #8 and subluxation of tooth #9 in a traffic accident. At a university hospital, tooth #8 was replanted after retrofilling with amalgam, whereas tooth #9 was stabilized affixed to the neighboring teeth and was placed in observation.
Clinical findings: In tooth #8, periodontal probing depth (PD) was ≥6 mm, and a fistula was observed in the cervical region. The plane of occlusion was slightly low. Percussion pain was noted. In tooth #9, occlusion was painful. Figures 11 and 12 show a dental radiographic image and intraoral photo. Figure 13a-c shows the CBCT images.
Diagnosis: Inflammatory and non-inflammatory root resorption and infraocclusion of tooth #8, attributable to inadequate treatment in the past. Apical periodontitis of tooth #9 induced by pulp necrosis because of traumatic injury.
Treatment strategy:1) For tooth #8: initial tooth extraction and GBR, and 6 month later, delayed implant placement. 2) For tooth #9: treatment of the infected root canal.
Implant treatment:
1) Pretreatment of tooth #8: Tooth extraction and GBR(Chose materials similar to case 1) for buccal bone loss（Fig14a-d）.
2) On the buccal side, horizontal and vertical bone loss was around 9 and 10 mm, respectively.
3) The bone was ≤6 mm wide (Fig. 14a ) and located ≤4 mm from the implant site.
4) Post-GBR and preoperative and CBCT image (Fig. 15).
5) Delayed implant placement was performed 6 months later (NPΦ3.5×11.5 mm, NobelActive Implant System; Nobel Biocare Co.). Figure 16 shows an intraoral photo taken postoperatively.




Discussion：Comparison between immediate and delayed implant placement following the extraction of injured teeth

As reported by Tsukiboshi and Tsukiboshi※1, it is important to remember that buccal bone resorption cannot be avoided even when preservation therapy, such as decoronation, is selected for residual ridge. In addition, the horizontal location of residual ridge is maintained two-dimensionally in many cases. In other words, because buccal bone resorption is a 3-wall bone defect, it is highly possible that GBR will be effective and produce good treatment outcomes. In addition, if the conditions allow the establishment of initial fixation, then subsequent tissue resorption is attributable to gingival biotype ※2. In our department, immediate implant placement is indicated when the width of the buccal bone, that is, the distance between the implant placement site and the buccal surface of the alveolar bone, is ≥4 mm (Fig. 17. This indication is based on clinical evidence reported by Hämmerle et al※3. and was also verified in this study conducted by Capelli et al※4).

Conclusion：With proper treatment, the horizontal width of alveolar bone can be maintained after traumatic tooth injury, but it is difficult to prevent the resorption of alveolar bone on the buccal side. The findings of this study suggest that when performing implant placement for traumatic tooth injuries, esthetic treatment outcomes can be achieved by examining the residual ridge three-

The authors report no conflicts of interest related to this study.
Explained a purpose of this study to subjects in a document, and obtained its consent.

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