

### Flapless Implant Placement on Maxillary Anterior Region Using Guide Pin : A Case Report

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# Introduction

In the anterior maxilla, dental implant-support prostheses need to replicate the dental hard and soft tissues in order to be esthetically acceptable.<sup>1</sup> Achieving esthetic success is suggested to be dependent on ideal three-dimensional implant position, maintenance of adequate buccal bone over the implant buccal surface and tissue biotype.<sup>2</sup> Mesio-distal positioning of implants has been shown to influence the height of the interproximal papilla. Placing an implant too close to the adjacent tooth/implant may cause crestal bone loss and papillary recession.<sup>3</sup> Facial crest thickness was suggested to be critical to prevent future bone dehiscence and marginal recession.<sup>4</sup> In the buccolingual position, an implant shoulder placed too far facially will result in a potential risk for soft tissue recession, because the thickness of the facial bone wall is reduced by the mal-positioned implant. In addition, potential prosthetic complications could result in restoration-implant axis problems, making the implant difficult to restore.<sup>3,4</sup> Implants positioned too far palatally can result in emergence problems, such as ridge-lap restorations.<sup>4</sup> Recently, surgical guide using computerized tomography(CT) and scan data is popularly used improving the accuracy of implant placement. There are new method that is using guide pins can assist in proper surgical placement and angulation of dental implants.

## <u>Guide pin</u>

The guide pin allows to the operator visualize the morphology and inclination of the patient's alveolar bone covered with soft tissue during surgery.
The implant placement can be performed more accurately by referring to the angulation and distance of the guide pins.

#### Implant installation













Fig 3. (A) The pilot and all subsequent drilling were performed on the retained root.(B) The distance was measured between guide pins.

(C) The remaining root was extracted.

(D) all subsequent drilling were performed

(E) The implants were placed in the extracted socket according to the distance and angulation between the pins.

# <u>Case report</u>

### 1. Diagnosis





Fig 1. Patient intraoral statement (A) Frontal view (B) Occlusal view

- C.C: 보철물이 빠졌어요.
- Sex/Age : F / 50Y
- **P.M.H** : N/S
- **P.I**: #21 root rest
- Dx : Caries of dentine

### 2. Treatment Procedure

### **Gingival marking & Guide Pins insertion**



(F) A healing abutment was connected to the implant.

#### 3. Treatment Result





**Fig 4.** Pre-operative intraoral statement (B) Post-operative intraoral statement Mid-facial cross-sectional CBCT slice of (C) pre-op (D) post-op (E) final restoration delivery after 3month.

# <u>Discussion</u>

The patient in this case is a patient who needs implant installation after extraction of retained root because of secondary caries in the upper anterior tooth. In this case, guide pins were placed appropriately in the position on the labial and palatal bone for implant placement. A pair of guiding pins provided information on the distance between the labial and palatal outer border and the angulation of the alveolar ridge. CAD/CAM (Computer aided design/computer aided manufacturing) surgical guide is another available tool for the same purpose. However, deviations between the planned and actual position of the implants placed with the CAD/CAM surgical guide, especially in angulation, has been reported in various studies.<sup>6-8</sup> Especially, in the extracted socket, drilling in a planned angulation with a surgical guide is difficult because the tip of the drill can easily deviate to the empty extracted space from the solid socket wall. Therefore, placing implants may follow the long axis of the extracted socket instead of the angulation of the alveolar ridge, although the surgical process is guided by a metal sleeve. In this case, the drilling was performed on the retained root for implant placement so the path was formed at a planned angulation without deviation. It is recommended that guide pin be used for immediate implantation with flapless surgery.





Fig 2. The location for placing guide pins was indicated on the mucogingival junction.

- (A) Labial surface (B) Palatal surface
- (C) After insertion of guide pins, path of guide pins was confirmed with taking a periapical radiograph.
- (D) Occlusal view and illustration after insertion of guide pins.

#### Table 1. Guide pin vs Computed surgical guide<sup>5</sup>

	Guide pin	Computed surgical guide
Advantages	<ol> <li>Precise implant positioning</li> <li>Shorter surgery planning time</li> <li>Verifying the surgical procedures</li> <li>Cooling efficiency during osteotomy</li> <li>Cost effective</li> <li>Useful to all implant indication cases</li> </ol>	<ol> <li>Precise implant positioning</li> <li>Preservation of anatomic structures</li> <li>Shorter surgery times</li> <li>Flapless surgery</li> </ol>
Disadvantages	<ol> <li>Additional soft tissue injury</li> <li>Additional surgical instruments required</li> </ol>	<ol> <li>Longer surgery planning time (for radiographic template fabrication)</li> <li>Additional surgical instruments required</li> <li>Instrumentation can be operated in limited inter-arch space situation.</li> <li>Increased cost.</li> </ol>

### <u>Reference</u>

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