Technique for Indexing an Immediate Loading Implant Position for a Provisional Restoration

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The transfer of an intraoral implant position to the cast for an immediate loading implant is an important step and may be difficult to achieve with commonly used transfer and impression methods. Thus, the purpose of this report is to describe a technique for the use of a surgical template to transfer the implant position for fabrication of a provisional restoration. This technique simplifies the procedure, eliminates the need for taking an impression, avoids surgical site contamination, and maintains an adequate emergence profile during fabrication of the definitive restoration. An indexing technique for transferring the position of the implant from the treated surface after extraction is described.

Key Words: dental implant, surgical template, implant-supported prosthesis

INTRODUCTION

Over the past 20 years, the number of dental implant procedures implemented has increased steadily worldwide, reaching about 1 million dental implantations per year by 2007.¹ Immediate loading of dental implants has been confirmed to be a reliable approach to the rehabilitation of partially or totally edentulous patients.²–⁶

Clinical studies of immediately loaded implants have demonstrated success rates similar to those for the traditional 2-stage procedure. Immediate loading increases patient comfort and eliminates the necessity for a second-stage surgery to uncover the implant. In addition, original hard and soft tissue contours may be maintained.⁷

The osseointegration rate for titanium dental implants is related to their composition and surface roughness. Rough-surfaced implants favor both bone anchoring and biomechanical stability. These therapeutic strategies enhance the osseointegration process for dental implants and allow both immediate loading and long-term success.⁸

The treatment of choice for tooth agenesis is replacement with a dental implant.
Tooth agenesis is the most common developmental anomaly of the human dentition, occurring in 25% of the population. Several investigations suggest a genetic and hereditary basis for the origin of such anomalies, related to number, size, position, shape, and timing of eruption.\(^9,10\)

Several impression techniques have been employed for fabricating the immediately loaded implant in the partially edentulous patient needing a fixed prosthesis. Loading can be carried out on the same day as the surgery by lining a temporary denture on abutments. Another option is to make an impression after the surgery, for preparation of a provisional restoration by the dental technician.\(^11\) This technique presents difficulties, however, and requires clinical skills to implement it.

This report describes an indexing technique for transferring the position of an implant from the treated surface after extraction for provisional implant-supported prostheses.

**TECHNIQUE**

1. Determine that the patient is a candidate for immediate loading implants. The patient must be evaluated preoperatively to ensure that clinical criteria for immediate loading implants are satisfied, including adequate bone quality and good systemic health (Figure 1).

2. Make an impression of the dental arch using an irreversible hydrocolloid (Hydrogum, Zhermack, Rovigo, Italy) of good quality or a condensation silicone (Zetaplus/Oranwash, Zhermack, Rovigo, Italy). Establish a diagnostic tooth arrangement on the definitive cast to verify functional and esthetic parameters. Use of a low-expansion dental stone type IV (Durone, Dentsply, Petrópolis, Brazil) is generally preferred.
3. Before surgery, fabricate a surgical template on this diagnostic cast with acrylic resin material (OrtoClass, Artigos Odontológicos Clássico, São Paulo, Brazil), allowing space for recording implant trajectory during the surgery (Figure 2).

4. After surgery, connect the tracking transfer to the implant and reposition the surgical template, adapting to adjacent teeth with the tracking transfer positioned in the mouth. If necessary, adjust the surgical template until the correct position is reached.

5. Connect the tracking transfer to the surgical template using autopolymerizing acrylic resin material (Duralay, Reliance Dental Mfg, Alsip, Ill) to record the implant trajectory (Figure 3).

6. After the resin polymerizes, unscrew the retaining screw of the tracking transfer, and remove it and the surgical template from the mouth. Select the appropriate shade (Figure 4).

7. Drill an opening into the diagnostic cast to fit the analog, and verify adaptation of the surgical template in the determined implant location as recorded. Take care that the analog does not touch the stone. Pour the stone (Durone, type IV, Dentsply, Petrópolis, Brazil) to secure the analog position (Figures 5 and 6).

8. Select an appropriate UCLA abutment, and fabricate the provisional restoration in the conventional form (Figure 7).

9. Install the provisional restoration, and verify occlusion without contacts to prevent occlusal overload (Figure 8).

**Discussion**

This technique facilitates the fabrication of esthetic and functional immediate provision-
Thorough examination and treatment planning are necessary to fabricate precise transfer tools for determination of the location of each implant during surgery, and for fabrication of an immediate fixed provisional restoration.

Through utilization of the indexing technique described here, the transfer of implant location after implant surgery at the same appointment eliminates the need for an impression to fabricate a provisional restoration, decreasing the risk of contamination of the surgical site by impression materials and the necessity for fabrication of a provisional restoration in the laboratory. The original implant protocol is modified through this technique, resulting in shorter rehabilitation time, improved esthetics, and increased comfort for the patient.

Advantages of immediate implants include reduction in treatment time and preservation of bone height and original soft tissue contours, thus contributing to better esthetic results. This technique also increases patient comfort and eliminates the need for a second-stage surgery to uncover the implant.

Potential disadvantages include increased risk of infection and possible failure of the implant immediately placed in the intraoral intraoperative connection of the transfer to the surgical template with auto-polymerizing acrylic resin as a result of handling the material. However, this technique does allow the provision of sufficient distance between the surgical template and the surgical site.

The indexing technique can be used in small edentulous areas, with adjacent teeth used to stabilize the surgical template, but it is contraindicated in bilateral edentulous areas located posterior to the remaining natural teeth (Class I), or in unilateral edentulous areas located posterior to the remaining natural teeth (Class II).

An optimal emergence profile can be established because soft tissue contours may be maintained and modified by the provisional crown profile in the same size and shape and do not need to be modified at the time of insertion of the definitive restoration.

Independent of the implant loading protocol that has been selected, a comprehensive treatment plan involving the restorative dentist, the dental technician, and the oral surgeon is imperative for successful osseointegration, optimal esthetics, and satisfactory function.

CONCLUSION

The transfer technique described in this report enables implant placement according to treatment plan using the same surgical template to transfer the implant position to the diagnostic cast for construction of an immediate fixed provisional restoration. In addition, a surgical template offers reference points for diagnostic, surgical, and prosthetic devices. Accurate transfer of the implant location to the diagnostic cast during implant surgery eliminates the need for an impression to fabricate a provisional restoration and maintain an optimal emergence profile.

REFERENCES


