

Use of Primary Tooth as a Surgical Guide in Implant Insertion: A Case Report

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ABSTRACT A variety of surgical templates are being used routinely in implant dentistry to guide a surgeon in proper implant insertion. One additional technique is being suggested in this article. It relates to the placement of a dental implant immediately after extraction of the retained primary molar, using the crown of the deciduous tooth as a surgical guide for implant insertion. The clinical case and related technique are presented in this article.

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Collaboration between surgical and restorative colleagues in implant rehabilitation of the stomatognathic system has become a mainstream approach in implant dentistry. In the majority of cases, common diagnostic work up prior to the surgical phase includes study models, diagnostic wax-up, fabrication of surgical template, and construction of transitional prosthesis.

One of the key points in this synergy between different dental practitioners of the implant team is the construction of a precise surgical template by the restorative doctor in order to guide a surgeon to a proper 3-D insertion of a dental implant.

Different materials and techniques have been employed for the fabrication of a surgical implant guide, including resin (ortho resin, acrylic resin, composite resin), vacuum-forming material (“suck-down” stents), a combination of resin teeth and vacuum-forming techniques, Essex appliance, use of a transitional

appliance as a template, and the use of computed tomography, etc.¹⁻⁴ A precise surgical template can also facilitate use of a flapless approach in implant placement.⁵ Transitional implants have also been used for the same purpose.⁶

This article introduces another technique for using a primary tooth as a surgical guide for implant insertion in cases where both extraction of the retained deciduous molar and immediate implant placement are indicated.

A Case Report

A 25-year-old female with retained primary molar #T was examined for an extraction and possible immediate implant placement. A preoperative evaluation and radiograph revealed disto-occlusal caries of the crown and short and divergent roots of the primary lower right second molar (#T) (**FIGURE 1**).

A decision was made to use the retained deciduous tooth before its extraction as a guide to implant insertion. Preoperatively, marker lines of

the channel through the center of the crown into furcation, as well as a planned implant position below it, were drawn on the panoramic radiograph (FIGURE 2).

Intraoperatively, a 1 mm high-speed round bur was used to make a vertical pilot hole from the middle of the occlusal surface through the crown of the primary molar to the root furcation, extending about 3 mm into the bone underneath it (FIGURE 3). Next, a 2.3 mm twist drill (Implant Innovations, Inc., Palm Beach Gardens, Fla.) was used to broaden and deepen the pilot hole, extending about 4-5 mm below the furcation into the underlying supporting bone. A direction indicator was placed into the hole to confirm the planned path of implant insertion. Deciduous tooth #T was then atraumatically removed with the help of a periostomes (FIGURES 4 AND 5). (Divergent roots and presence of solid bone just below the furcation, that commonly seen in the primary lower or upper molars, make for easier use of this technique.)

Extraction of the deciduous molar in this case did not require sectioning of the crown. In some cases, when a retained primary molar has thin and divergent roots, sectioning of the crown may assist in its atraumatic removal. This eliminates the possibility of leaving small and fragile root tips behind or the need to reduce bone in order to elevate them.

After the extraction of the tooth, the pre-drilled pilot hole was located in the middle of the socket (FIGURE 6), and the direction indicator was placed again into the osteotomy to reconfirm its alignment and emergence (FIGURE 7). A standard sequence of twist drills was then used to lengthen and widen the osteotomy. Next, a 4 mm 3i Osseotite "Certain" (internal connection) implant (Implant Innovations, Inc.) was inserted into the prepared osteotomy site (FIGURE 8). The implant had good primary



FIGURE 1. Preoperative view of the deciduous tooth (#T) (primary mandibular right second molar). Occlusal and distal caries can be visualized.

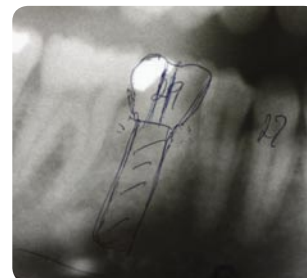


FIGURE 2. Preoperative radiograph of the deciduous tooth #T. Two small and divergent partially resorbed roots of the primary tooth can be seen. Permanent second premolar is missing.

The drawing represents a preoperative assessment of the proposed channel through the center of the crown into the furcation, as well as a projected implant position



FIGURE 3. Intraoperative view of a channel made with a 1 mm round bur in the middle of the crown from the occlusal surface into the furcation.

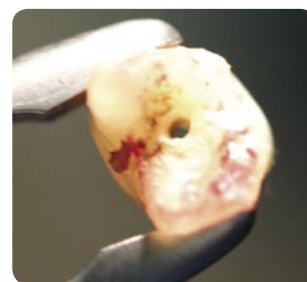


FIGURE 4. Postoperative view of the removed primary tooth with a channel that served as a surgical guide for insertion of the implant.



FIGURE 5. Postoperative view of the removed primary tooth. Divergent roots are shown.

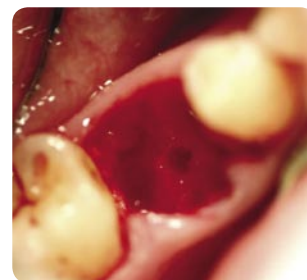


FIGURE 6. Intraoperative view of the socket after removal of the primary molar. Pilot hole in the middle of the socket is shown and it is an extension of the pre-drilled channel through

the crown of the primary molar. It extends about 5 mm deep into the bone.



FIGURE 7. Intraoperative view of the direction indicator placed into the pre-drilled pilot hole after removal of the primary tooth.

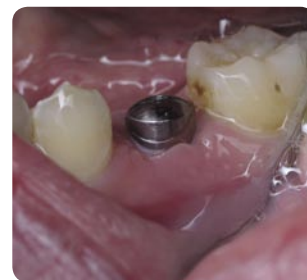


FIGURE 8. Postoperative view of the inserted implant.



FIGURE 9. Postoperative radiograph of the inserted implant (area #29).

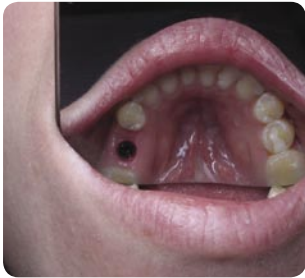


FIGURE 10. Restorative stage, ideal implant emergence, prior to fixture-level impression.



FIGURE 11. Abutment-level impression, restorative stage.



FIGURE 12. Final cement-on PFM implant-supported crown in ideal restorative position.



FIGURE 13. Final smiling photograph.

stability. A temporary healing abutment (stage 2) was placed within the same surgery. The postoperative clinical evaluation and radiograph showed ideal implant placement (**FIGURE 9**). A final screw-retained PFM implant-supported crown was delivered two months after the implant surgery in the office of the restorative dentist. It had an ideal prosthetic position and emergence profile (**FIGURES 10-13**).

Discussion and Conclusion

It is commonly accepted that implant dentistry is an integrative dental discipline that requires close collaboration of restorative and surgical colleagues. The three most important components for ensuring long-lasting success in dental implantology are: planning, precision, and teamwork. A surgical template as a part of the diagnostic work-up is a connecting link between restorative and surgical implant specialists that helps to achieve the necessary precision.

Sometimes, due to cost or other reasons, a surgical guiding template may not be available. The described method can be used in cases when both an extraction of the retained lower or upper

first or second primary molar and immediate root-form dental implant insertion are planned. In these cases, the presented approach may either eliminate the necessity of a traditional surgical stent or may add a second technique to an already existing surgical guide in order to assure proper restorative-driven implant placement. ■■■■

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