Unintentional Replantation: A Technique to Avoid
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Many times in a dentist’s career, he or she will make a decision that has unintended consequences. In the case reported here, some quick thinking was required to resolve the outcome of an unexpected series of events. Because clinical learning is best achieved by retrospective analysis, a list of lessons to be learned from this case is also provided, in the hope that it helps readers to avoid this particular situation.

Case Report
A 63-year-old woman presented with severe pain and extraoral facial swelling in the upper left quadrant, which had begun the day before the visit and was worsening. Her medical history was noncontributory except for mitral valve prolapse (with regurgitation); she was receiving antibiotic prophylaxis for subacute bacterial endocarditis. Her general dentist had attempted endodontic therapy that day on the upper left second premolar, but could not find the canals because of pulp calcification and difficulty achieving complete anesthesia; the patient had therefore been referred for specialist treatment.

Clinical examination revealed extensive extraoral and intraoral swelling extending from the upper left lateral incisor to the upper left second premolar; the greatest contour of the alveolar swelling was over the upper left cuspid. Both teeth had been prepared as bridge abutments, but the temporary bridge was not present. There was an open endodontic access in the premolar with no pulp exposure and a small composite resin restoration in the cuspid. Both the cuspid and the second premolar were tender to percussion. The cuspid was also very tender to bite (determined with a Tooth Slooth instrument, Professional Results Inc, Laguna Niguel, Calif.) and to buccal alveolar palpation. The premolar was not tender to bite or palpation. The cuspid did not respond to cold tests, whereas the premolar was hyperresponsive but with nonlingering pain consistent with reversible pulpitis. Intra-oral radiography (Fig. 1) showed the presence of a periapical radiolucency around the root end of the cuspid. There was thickening of the periodontal ligament space all around the root of the premolar consistent with occlusal trauma. There was also distal vertical bone loss associated with a 5 mm probing depth on this tooth. It was determined that the pain originated from the cuspid, and the final diagnosis for that tooth was pulp necrosis with acute apical (phoenix) abscess. The patient selected nonsurgical root canal therapy (NSRCT) from the list of options provided.

The premolar access was filled with intermediate restorative material (Caulk Dentsply, York, Penn.), and the patient was warned to watch for symptoms of pulpitis that could necessitate root canal therapy in the future. An access preparation made in the cuspid tooth produced copious purulent exudate. A cotton pellet was placed...
in the access preparation to allow the tooth to remain open for drainage, since the exudate did not stop despite thorough debridement. Two days later, the cuspid was cleaned, shaped and closed. The treatment was finished uneventfully 2 weeks later, and the patient was referred back to her general dentist for post and core fabrication and placement of a fixed partial denture (Fig. 2).

The patient returned 1 year later with an intermittent spontaneous ache in the upper left quadrant which had started 10 days before. She had sensitivity to bite on the new bridge but no sensitivity to temperature. The bridge retainer on the cuspid was loose, whereas that on the premolar adhered well. Periapical radiography (Fig. 3) showed thickening of the periodontal ligament space on the premolar with associated condensing osteitis. The apical lesion around the cuspid had completely healed, but the post space in the cuspid was empty. Clinical testing confirmed pulp necrosis with subacute periradicular periodontitis in the premolar. After discussion of the options, the patient chose NSRCT. The general dentist was informed of the situation. He asked if there was any way to remove the bridge intact to allow its reuse; he was informed that it was unlikely but could be attempted. The patient agreed, despite the risk of exarticulation of the premolar. A careful attempt to remove the bridge with a Morell crown remover (Henry Schein, Port Washington, N.Y.) (Fig. 4) resulted in inadvertent removal of the premolar with the prosthesis attached (Fig. 5).

The tooth was immediately replaced in the socket to allow time to procure the armamentaria needed for replantation. The tooth was gently exarticulated again and bathed in Hank’s balanced salt solution (EMT Toothsaver, SmartPractice, Phoenix, Ariz.) (Fig. 6). A 0.5-mm section of the root end was resected, and the canal was reverse instrumented using rotary ProFiles (Dentsply Endodontics,

Figure 3: Radiography 1 year after initial treatment shows thickening of the periodontal ligament space on the premolar and complete healing of the cuspid

Figure 4: Morell crown remover

Figure 5: The premolar was inadvertently removed with the bridge. (Reprinted from Cohen and Hargreaves,3 with permission from Elsevier.)

Figure 6: Hank’s balanced salt solution was used to bathe the premolar.
Tulsa, Okla.), with the salt solution as the irrigant. The canal was obturated with gutta-percha and an epoxy resin sealer (ThermaSeal Plus, Dentsply Endodontics). A small retropreparation was made using a high-speed handpiece cooled with sterile water; the retropreparation was filled with mineral trioxide aggregate (ProRoot MTA, Dentsply Endodontics) (Figs. 7 and 8).

After disinfection of the cuspid post space, a #4 Parapost (Coltene/Whaledent, Cuyahoga Falls, Ohio) was cemented with glass ionomer cement (Fuji-Cem, GC America, Alsip, Ill.). The cuspid retainer was filled with Durelon (3M ESPE, St. Paul, Minn.) and reseated simultaneously with final replantation of the attached premolar (Figs. 9 and 10). Total time out of the socket was 35 minutes; the tooth was continuously bathed in the salt solution during that period. The patient had minimal soreness over the next few days, which resolved completely. Re-evaluation at 30 months (Fig. 11) showed complete healing around both asymptomatic abutments, and the prosthesis was clinically intact.

**Lessons Learned**

This case illustrates some pitfalls in clinical decision-making that need to be avoided. The following guidelines represent lessons learned from this case.
Do not attempt to perform endodontic therapy on a tooth (in this case, the second premolar at the time of the initial swelling) unless you are certain of the diagnosis. If you cannot accurately determine the cause of a patient’s problem, you must refer the patient to someone who can. At the very least, you should not perform any treatment if there is any uncertainty about the diagnosis.

If an endodontic access has been attempted on a tooth, especially one that is to be used as a bridge abutment, perform the endodontic therapy, even if there is no exposure of pulp and the pulpitis appears to be reversible. In this situation, there is a high likelihood that pulpal pathosis will develop.

If there is a post space in a tooth, fill it with a post, with gutta-percha and sealer, or with some other restorative material. In the case reported here, the presence of a post and core might have prevented the cuspid retainer from being dislodged.

Do not attempt to remove a bridge intact unless both abutments are sound and firmly attached to the periodontium. Even under ideal circumstances, this procedure frequently results in damage to the prosthesis or teeth, and it is often impossible to remove the prosthesis in any case. Despite the great success of intentional replantation in endodontics, unintentional replantation cannot be recommended, because of its uncontrolled nature.

Never perform any treatment simply because a patient or another practitioner requests it. If you have any reservations about a course of action, find an acceptable alternative. Otherwise, your practice may become more “exciting” than you would like.

References


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Post Script
This radiograph, made 7 years after treatment shows continued optimum health of the apical tissues. Note that the post in the cuspid has been changed (it is an active, screw-type post now) indicating that the bridge has been remade since the last treatment.

Note: this image did not appear in the original printing of this article.