

GUEST EDITORIAL

The Dilemma of the Fractured Instrument

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"The dentist who has not fractured the tip of a reamer, file, or broach has not treated many root canals. When one accepts the challenge of a curved, narrow or tortuous canal, one also assumes the risk of instrument fracture. Considering the delicate diameter of the instrument tip which is expected to cut a substance as hard as dentine, it is remarkable that so few root canal instruments are broken. It is also a tribute to the tactile sense and finger skill of the operator.

Who has not felt the pang, the anguish, the mortification caused by the breaking of an instrument? That moment of remorse lives on for days until it is faded out by time (1)."

These sage and emotional words were published by Dr. Louis I. Grossman almost 15 yr ago and yet "the pang, the anguish, and the mortification" continue to plague us.

Research articles have suggested the intentional use of stainless steel instruments as the root canal filling material (2, 3). The result of this technique differs little from the potential of the inadvertent instrument fragment to serve as the canal obliteration.

In spite of the fact that success-failure studies have been published reporting no statistical difference in failure rates between control and broken instrument groups (4, 5), the fracture of an instrument is accompanied by tense and uncomfortable emotions for both the patient and the dentist.

The dentist is certainly disturbed and frustrated as a result of the fracture and inability to remove the instrument. It is a constant radiographic reminder of its presence. And yet fragmentation can occur in spite of a careful and controlled technique. In addition, a fracture could result from occasional manufacturing defects.

This discouragement can be advantageous. It certainly behooves the operator to evaluate and seek considerations to minimize such episodes. It would be self-delusion to use Dr. Grossman's introduction to excuse a poor technique and frequent instrument fractures.

This evaluation must follow each fracture experience. If it does occur often, the dentist should not

conclude that it is merely due to a "run of bad luck." The canal preparation technique must be carefully examined for possible procedural errors. Grossman's guidelines (1) for the prevention of fracture of root canal instruments must be assiduously followed, including:

1. Carefully examine each instrument before reinsertion into the root canal.
2. Discard them frequently if doubt of the integrity of the instrument exists.
3. Use the instruments in sequence of size. Jumping in size leads to additional risk.

The dentist must be prepared for a gamut of reactions from the patient who is apprised that an instrument fracture has taken place. These reactions are somewhat natural and understandable, including fear, concern, anger and retaliation.

The first reaction is one of genuine fear of the realization that a metallic fragment must remain in their mouths. They will even ask the extent of harm possible. This is followed with concern as to the now-possible loss of the tooth that was to be saved endodontically.

The initial shock can then recede to a more "rational" direction. Since instrument failures are not anticipated and therefore not forewarned, then something unexpected must have occurred. Along with this train of thought, if so, should they have recourse? This anger could then be catalysed by the willingness of some lawyers to assist in seeking retaliation.

Although such reactions may seem unreasonable to those in the profession, one must be prepared to understandingly assist the patient in this trying moment.

It is most important to carefully consider the manner in which the patient is to be informed of the fracture. It would be unkind to adopt the attitude that since nothing "wrong" really took place, it is only necessary to advise the patient, and bluntly say, "I broke an instrument in your tooth." This gives rise to an exaggerated instant reaction as discussed previously. The operator's care and understanding must be demonstrated at this time. Soft euphemisms are not the

answer in every case. Is there really a great difference in the meaning of "There is a separated instrument which will be incorporated in the root canal filling" as opposed to "I accidentally broke an instrument in your tooth, in which I'll finish the treatment as well as I can."?

The exact words will differ with each case, covering the span between the above statements. Present the findings in the literature supporting the potential of success and favorable prognosis. The patient should be told that periodic recall examinations will be closely followed. However, it is not suggested to be completely optimistic. Periapical involvement may develop or fail to heal. Other directions of therapy, such as surgical correction, may in fact become necessary with, more often than not, a favorable prognosis.

Certainly, the legal aspect of the fractured instrument must be remembered. It is not malpractice to break an instrument. It is certainly poor judgment to hide from the issue by failing to admit its occurrence. The patient *must* be advised of what took place. Failure to do so is beneath the standard of care (J. A. Weichman, personal communication). Just as important, accurate description of what took place and that the patient was informed must be stated in the patient's records.

To summarize, every effort should be expended to prevent the inadvertent fracture of root canal instruments during endodontic treatment. And yet, even

under careful technique, accidental breakage can occur. More often than not, the instrument fragment cannot be removed or bypassed. The dentist can then only fill the remainder of the root canal to the level of the fragment.

This occurrence will lead to a natural concern as to the potential of success or failure along with a myriad of emotions of the dentist and patient, in spite of the fact that research articles have demonstrated that the broken instrument can serve as the successful root canal obliteration.

This editorial has been written out of concern for both the patient and the clinician.

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