Splinting of Periodontally Involved Teeth: Indications and Contraindications

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Deciding when to splint and when not to splint a tooth is one of the most subjective judgements a dentist makes in daily practice. For example, is 40%, 60%, or 80% radiographic bone loss an indication for splinting? Should a tooth be splinted if it has 1, 1+, 2, or 2+ mobility?

To answer this question and to develop a more objective approach for determining when to splint, it is necessary to go back to the dental literature and examine the research on tooth mobility and on primary and secondary trauma from occlusion.

Primary Occlusal Trauma

As was traditionally taught, primary occlusal trauma was defined as an abnormal force on a tooth with normal bone height. A classic illustration would be the placement of a high amalgam on the occlusal surface of a tooth. The tooth would become mobile. It might also initially be painful, and radiographically there would be a widening of the periodontal ligament space.

However, once the amplitude of the tooth caused by the high filling is reached — when the other teeth in the arch come into occlusion — the mobility will plateau and no longer increase, and any pain present will lessen.

In this situation the indicated treatment would be occlusal adjustment to eliminate the high spot. Splinting the tooth would obviously not be necessary. It is important to note that in a state of primary occlusal trauma, the tooth becomes mobile so it can adapt to the abnormal force placed upon it.

face is defining when a tooth is in true secondary trauma. In other words, when is a tooth no longer able to withstand the normal forces placed upon it? While bone loss and mobility are factors involved in identifying this condition, they are subjective measurements and as such have inherent limitations in their diagnostic precision.

Table 1 — Suggested categorization of primary, "intermediate," and secondary occlusal trauma.

TYPE:	CONDITION I (Formerly Primary Trauma)	CONDITION II ("Intermediate")	CONDITION III (Formerly Secondary Trauma)
Bone Height	Normal	Reduced	Reduced
Mobility	Adapted	Adapted	Progressive
Pain on Function	None (After Adaptation)	None	Yes
Pathologic Migration	None	None	Yes
Ligament Width	Widened	Widened	Increasing
Treatment	Occlusal Adjustment No splinting	Occlusal Adjustment (if excessive forces are present) No splinting	Splint

It follows that the mobility of the tooth could thus also be classified as an adapted mobility.

Secondary Occlusal Trauma

Secondary occlusal trauma is defined as a condition where a tooth has lost so much support that it cannot withstand even the normal forces placed on it. A tooth in true secondary trauma would therefore require splinting to help stabilize it.

The problem practitioners

Recently, a series of papers has been published which offer a different set of parameters for identifying true secondary occlusal trauma. These were presented as (1) progressive mobility, (2) migration of teeth, and (3) pain on function.

Progressive Mobility, Migration, and Pain on Function

Progressive mobility means that a tooth is getting increasingly mobile during successive evalua-

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tions. It was consequently reasoned that a continued clinical progressive mobility would indicate an inability of the tooth to withstand the forces placed upon it, and a condition of true secondary occlusal trauma would exist.

The second criteria for true secondary occlusal trauma is tooth migration. Continued flaring or migration following any necessary periodontal therapy and restoration of any posterior bite collapse would indicate that the remaining attachment and bony support around the tooth was not adequate to withstand the forces placed upon it. Splinting would be indicated.

Similarly, if all abnormal occlusal forces have been removed, and a tooth continued to show pain while the patient was chewing, biting, or even just talking, the tooth would not be able to withstand the forces placed upon it. Splinting would be indicated.

By using progressive mobility, migration, or pain on function as parameters for diagnosing secondary occlusal trauma, the practioner gains more objective criteria for determining when to splint a tooth. It is important to note that the presence of any one of these factors either alone or in combination is enough to provide an indication for splinting.

By more clearly defining secondary occlusal trauma it becomes evident though that still another condition exists that many practioners had also previously been placing in the same classification.

Intermediate Occlusal Trauma

The condition is illustrated by a tooth having residual mobility due to previous bone loss, but showing no progressive mobility, no pain on function, and no pathologic migration. The tooth is thus able to withstand the forces placed upon it, and the mobility present is considered to be an adapted mobility, as opposed to the progressive mobility of a tooth which is true secondary trauma.

It was the inability to distinguish between these two conditions in the past that inadvertantly led to the unnecessary splinting of many teeth. Therapeutically it is important to understand that teeth with adapted mobility do not have to be splinted, while teeth with progressive mobility do need splinting.

If the terms primary or secondary occlusal trauma are to continue to be used, an additional similar category, possibly called intermediate occlusal trauma, may be indicated to classify the situation mentioned above.

Conditions I, II, and III

Another way to categorize these three conditions might be to simply call them condition I for primary occlusal trauma, condition II for intermediate occlusal trauma, and condition III for secondary occlusal trauma. (See Table 1.)

It should be clear that the importance in differentiating condition II and condition III is more than academic as teeth in condition II do not require splinting despite their residual mobility while those in condition III do.

This is not to say that if a quadrant of teeth have large, broken down restorations with bone loss from previous periodontal disease and are scheduled for crowns, the crowns should not be splinted. If the crowns have high solder joints and open and cleansible embrasure spaces, splinting will not have a deleterious effect.

It should further be emphasized that any assessment of whether a tooth needs splinting should be made when all active periodontal disease has been eliminated. Splinting is not a substitute for periodontal treatment, since mobility is a symptom of the disease and not the cause. □

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