# Relation of Tooth Fractures to Creep & Flow of Dental Mercury Amalgams

**Scientific Review**

**Restorative Dentistry**

| Received | 6/7/02 |
| Scientific Review | 7/5/02 |
| IAOMT Board Review | 9/27/02 |
| Reevaluation | 

**Explanation of IAOMT position:**
This SR is another reason to remove and replace mercury amalgam fillings. Do your examination of teeth and document thoroughly.

**Name of Scientific Review:**
Relation of Tooth Fractures to Creep & Flow of Dental Mercury Amalgams

**Alternative name(s) of Scientific Review:**

**This Scientific Review is related to:**
Dentistry

**This Scientific Review is:**
Procedure

**Purpose of Scientific Review:**
To determine if creep and flow of dental mercury amalgam are a contributor of tooth fracture.

**Scientific Review Topic History:**
Creep and flow of dental amalgams result in the extrusion of the restoration out of the preparation, over time. Craze lines and cuspal fractures are frequent clinical observations. Creep and flow are generally correlated to the marginal breakdown of amalgam, not to internal stress within the tooth. The older low copper alloys have a much higher degree of dimensional change (up to 6%) than the high copper alloys (0.5%). The high copper alloys actually have an initial negative dimensional change. The creep and flow is reportedly due to slippage within the alloy. Some phases act as voids.

**A brief description of the Scientific Review Topic:**
Creep and flow have a minor contributory effect on tooth fracture. Loss of the integrity of the tooth via tooth loss through preparation weakens the tooth. The type of restoration placed in/on the tooth will determine the degree of resistance to fracture. The vast majority of studies find that no internal restoration will return the tooth to its normal, pre-preparation strength.

The two greater contributors are:
1. Weakening the tooth by tooth reduction during preparation
2. Occlusal forces acting on the weakened tooth

**A specific description of this Scientific Review:**
- Creep and flow are minor contributors to tooth fracture
- Tooth preparation for internal restorations weaken the tooth
- Unfilled, prepared tooth is the weakest
- Amalgam filled tooth is the next strongest
- Bonded amalgam filling is next
- Bonded composite filling restores the greatest strength to the prepared tooth
- Tangential occlusal forces acting on the cusps, along with loss of tooth structure before or during the preparation act to render the tooth more prone to fracture
- Given appropriate isthmus width, the bonded composite imparts a greater degree of strength to a restored tooth than any other type of restorative material

**Manufacturer(s):**
n/a

**Scientific Literature:**
provided with application. Contact applicant.

**Legal Aspects of this Standard of Care:**
n/a
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