H27 The Accuracy of the Lamendin Method of Dental Aging in Teeth With Fillings

Kristin E. Horner, MA, Secchia Center, 15 Michigan Street Northeast, Grand Rapids, MI 49503*

After attending this presentation, attendees will understand the results and implications of a study to determine if the presence of a filling in a tooth effects the accuracy of the Lamendin method (Lamendin et al., 1992) of dental aging.

This study will impact the forensic science community by providing validation for the application of a commonly used aging technique to a unique subset of teeth. This validation is important in the post-*Daubert* era, where established error rates are important. Although error rates are known for the Lamendin method, and some dental aging studies have included teeth with fillings, no investigation has previously been made into the effects that these fillings might have on the accuracy of age estimation.

The purpose of this presentation is to discuss the effects of dental restorations on the accuracy of the Lamendin dental aging method. The Lamendin method uses two measurements, tooth root translucency and periodontosis. Tooth root translucency begins at the tip of the root and proceeds toward the crown with advancing age, and is believed to be caused by calcification within dentinal tubules (Bang & Ramm, 1970). This changes the refractive index within the dentinal tubule so that it is similar to that of the material surrounding the dentinal tubules, making the area appear transparent. It has been established that root canal

treatment can have a significant effect on the development of tooth root translucency (Thomas et al., 1994), but there has been no published work documenting the effects of fillings.

The utility of the Lamendin method is clear; it is fast, easy to use, does not require any special equipment, and utilizes a simple formula. The method provides a relatively accurate estimation of age that is useful in both forensic and archaeological contexts. However, it is important to determine if any external factors affect the rate of development of tooth root translucency. If any factors are discovered that do affect the rate of translucency, these factors would influence the accuracy of dental aging methods, such as the Lamendin method, that rely on tooth root translucency.

Premolar teeth (N = 100) from the William M. Bass Donated Skeletal Collection were used for this research. The sample consists of 50 teeth with no dental restorations and 50 teeth with fillings. All teeth were selected from individuals age 30 or older because the Lamendin method cannot be used in individuals younger than 25, and tends to be unreliable at younger ages. Measurement of periodontosis and root height were taken in millimeters with sliding calipers. Measurement of root translucency was observed using a light box and taken in millimeters with sliding calipers. Age-at-death was recorded from the collection database.

Age at the time of death was estimated using the Lamendin method. The difference between the estimated age and known age was calculated for each tooth. Error was compared between teeth with no restorations and teeth with fillings using a student's T-test. No significant difference ($p < 0.05$) was found between the errors of the teeth with fillings and the teeth without fillings.

It is concluded that the presence of dental fillings does not significantly impact the accuracy of the Lamendin method, and that teeth with fillings may be used to estimate age using the Lamendin method.

Lamendin, Dental, Aging

 ** Presenting Author*