



### F5 Dimples, Pimples, and Operator Error: Impact on Dental Identification

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After attending this presentation, the attendees will become familiar with the orientation of dental radiographs as a function of the victim identification process.

This presentation will impact the forensic science community by alerting ID team members to the possibility of film reversals in antemortem records.

Mass disaster victim identification, as well as individual cases, require accurate and complete antemortem records. Dental radiographs have proven to be of significant value in this task. Orientation of the film for left and right sides of the oral cavity is crucial to successful interpretation of the deceased victim's dental records.

While many practices have made the conversion to digital sensors in their offices, there are many that continue to use film. In addition, it seems reasonable that for some time into the future the ID team will be receiving ante mortem film even if they are using digital technology postmortem. Many times the antemortem data received represents dental examination and/or treatment that took place some time in the past; anywhere from several weeks to several years. Even as new technology becomes more prevalent in general and specialty practices, the dental identification team will continue to see the results of traditional methods.

Traditional intra-oral dental film has a small dot in one corner that helps orient the film. Most dental offices read intra-oral radiographs with the raised dot toward the viewer. This makes the teeth on the viewer's right actually the left side of the patient's mouth. When mounting newly exposed radiographs it is important to pay careful attention to the direction of the dot. The literature also calls this feature a raised bump, an occlusal dot, or a button. Conversely, this same feature on the opposite side of the film may be referred to as a depression or concavity.

Operator error in the placement of the dental film will result in a confusing situation with the dot appearing backwards. Fortunately, a telltale pattern in the lead foil of the film packet will show up in the processed image. Visualization of the pattern is the clue that the film needs to be reversed.

The components and packaging of the intra-oral dental film are such that their details are significant. The emulsion coated film is of

primary importance. The film is protected by a wraparound sheet of black paper that folds over the film and a piece of foil. The outer most protection is the light and moisture proof plastic envelope, which is actually two layers (light and dark) fused together. The periphery of the plastic packet is hermetically sealed. Frequently it is this careful seal that is responsible for patient complaint and discomfort.

Inserted between the black paper and the outer packet is a single sheet of lead foil. The foil is the same size as the film sheet and protects the film from secondary radiation, assuring a higher quality radiograph. It is this foil that has become the focus of this investigation.

In preparation for this presentation the literature was reviewed and professionals were consulted for historical information about the composition and packaging of dental radiographic film. It was discovered that changes were made many years ago that have never received much publicity.

In addressing the dental professionals in the audience, they will be asked to recall the early days of their careers when the exposure of dental radiographs was new. The "herringbone" pattern on dental films was an indicator of a mistake. This presentation will explore the misconceptions of operator error and expose possible ante mortem ambiguities.

#### **Dental, Radiographs, Antemortem**