## F12 A Consistent and Accurate Method of Interpretation of Duplicate Dental Films in Mass Fatality Incidents

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After participating in this session, the attendee will be able to properly determine the correct orientation of duplicated dental radiographs based solely on the orientation of identifying landmarks placed by the manufacturer in commonly used radiographic and duplicating films.

Objective: To prove through example that an easy, accurate and verifiable method exists to determine the correct orientation of a duplicated dental radiograph based solely on the position of the dimple, irrespective of orientation of either the source or duplicating film during the replicating process.

The World Trade Center disaster on September 11, 2001, was the worst terrorist act in the history of the U.S. and caused the loss of more than 2,800 lives. It also created a huge task for the New York City Office of the Chief Medical Examiner (OCME) in Manhattan. Even before the search and rescue effort was ended, the recovery and identification of the bodies began. Thousands of dentists from around the world were invaluable in supplying the antemortem dental records of the victims that was essential for the identification process to begin. This information was provided to the OCME, which had assembled one of the largest dental forensic teams in history. By the summer of 2002 the OCME had reported 1,229 victims (44%) of the victims have been identified from over 19,000 fragments recovered. Over 700 identifications had been done using standard technologies such as fingerprints, personal belongings, and, of course, dental identification. The primary tool used for dental identification was visual comparison of antemortem and postmortem radiographs. This process was greatly aided by the use of a computer program called WINID, which had been developed by Dr. James McGivney.

Due to the large number of radiographs coming from a diverse dental community worldwide, a number of problems arose with regard to the information contained in the antemortem dental records. Although the original radiographs were requested from all dentists, the OCME dental identification team received a large number of duplicate radiographs. Unfortunately, many lacked any type of reference markings making it impossible to determine the proper orientation of right and left. In some cases, the markings of the duplicate radiographs were thought to be inaccurate. Additional problems arose with regard to the several different types of dental film, as well as different types of duplicating film, used.

Without accurate antemortem records, the ability to obtain matches in a mass fatality incident is greatly complicated, if not impossible. The simplest solution was to contact the dentist or determine orientation from the most recent dental charting. Should that fail, another solution to the “orientation problem” was to create a mirrored duplicate entry of the same individual by creating a “mirror image” of the odontogram and “flipping” the companion scanned radiographs. This process was simplified by a feature built into WINID.

Contacting the dentist or verifying by the dental chart proved both cumbersome and time consuming. The creation of the mirror image, although easier, greatly increased the number of antemortem records and therefore the number of possible matches that WINID generated. This was especially problematic in cases where the victims had only a few restorations, which is common in younger individuals. This greatly slowed the identification process.

The easiest solution seemed to be to find a way to ascertain right and left on the actual duplicate. The method most frequently used by members of the dental identification team was the position of the image of the dimple from the original radiograph. The correct position of the dimple on a #2 periapical dental film of the posterior region is on the TOP LEFT of the RADIOGRAPH (TLR) or BOTTOM RIGHT of the RADIOGRAPH (BRR). In this position you are viewing the radiograph as if the dimple is out towards you. Although this seemed to be common knowledge among a number of dentists on the team, no one seemed to have a clear idea where this knowledge originated. In a process where accuracy was paramount, it was essential that this supposition could be proven beyond any doubt.

In achieving the author’s objective, common knowledge will be examined to determine if it is correct. In addition, the different types of film available will be discussed as to whether they can be treated in the above manner in determining right or left.

**Duplicating film, Dimple, Orientation**

 ** Presenting Author*