F13 Radiologic Procedures in the Thai Tsunami Victim Identification Procedure: Do It Nice or Do It Twice

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After attending this presentation, attendees will understand that radiology provides the basis for most dental identification. Adequate numbers and types of postmortem films must be taken. Rigid attention to the requirements of film selection, exposure and processing is required. The chemical method of film rescue will be reviewed.

This presentation will impact the forensic community by providing case examples of what can go wrong in a large mass disaster and what was done and can be done to make sure that things go right in future mass disasters.

In the aftermath of the Thai tsunami, a multidisciplinary team was tasked with the identification of a large number of human remains. For the first six months of the process, dental identification was the primary means of establishing identity. Dental radiographs provided objective data for data entry, and later, reconciliation of antemortem and postmortem records. In the process of acquiring the antemortem records, and obtaining archivalquality postmortem radiographs, a number of issues arose, that could have been improved upon or avoided altogether.

The problems with radiography at the TTVI can be divided into antemortem and postmortem ones. Antemortem issues included image quality, quantity, and accessibility. Some practitioners elected to ignore multiple requests from Interpol for original AM records. In other cases, the images were either few or of low quality. In many instances copies or copies of copies were sent with no indication of right and left. Finally some practitioners produced photographic contact sheets wherein radiolucency and radiopacity were reversed. The quality of images received from the country of origin was beyond the control of dentists at the TTVI and this limited the ability to identify decedents.

Postmortem (PM) image problems were more complex but should have been more controllable than AM ones. Improvements in the system were done as the process proceded. There were problems with the following:

1. Radiographs were exposed after the dental autopsy rather than before it in many cases.
2. An inadequate radiographic examination (bite wings only) was done in most cases which necessitated re-examination.
3. The radiographic examination was conceptualized in terms of a typical clinical radiographic examination rather than a forensic dental radiographic examination.
4. There was a mix of analog and digital images and integration of both into one system was problematic.
5. Numerous analog imaging problems occurred including cone-cut, reversed film position, under exposure, over-exposure, under development, under fixing and under washing. These resulted in some radiographs with “temporary archival properties” that looked fine in the mortuary but weeks or months later had become useless.
6. Errors in tooth identification and positioning in the cadavers sockets occurred.
7. There were problems in the use of different automatic developers requiring different chemistry that could have been avoided.

Finally there were safety issues. There was no barrier lead shielding, exposure to adjacent personnel occurred and there was little or no personal dosimetry monitoring.

Most of the problems encountered could have been avoided if there was a single radiographic quality control person on-site with sufficient background knowledge and access to experts to deal with problems that would inevitably arise. This would have increased the speed of the operation. Many other problems could have been avoided and re-autopsy or reexaminations reduced by being flexible in the approach to the radiographic needs, keeping the mission goals and the nature of the antemortem imaging in mind. The authors of this paper will show case examples and describe how to improve the procedure for controlling radiographic quality at large mass disasters.

Disaster, Radiology, Radiography

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