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Dental Identification Using One Unique Tooth

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Abstract

A badly charred body was found inside an automobile. All traditional identification features were destroyed. A positive identification was established by comparison of periapical x-rays of molar teeth taken during life with the teeth of the deceased. The paper describes the problem, and the actual technique by which this case was solved.

Key Words

Identification, Forensic odontology

Introduction

The Office of the Chief Medical Examiner of the State of Oklahoma (OCME) requested forensic services regarding the identification of a badly charred body found in a motor vehicle. The cause of the fire was accidental. Registration of the automobile yielded a putative identification, but due to the tremendous amount of tissue destruction a positive identification would require additional forensic techniques.

Postmortem Examination

The case presented as the charred skeletal remains of a white female, which consisted of the base of the skull with portions of the parietal and frontal bones attached. The maxilla was still attached some teeth were present. The mandible distal to the angle of the ramus bilaterally was destroyed and not recovered. The cervical vertebrae were still attached as well as T1, T2, and T3. No other

remains were recovered.

The remains and dental structures were photographed with an Olympus C-2500 digital camera. The photographs were stored as Read Only files on a 650 MB CD-R disk. This technique is used to guarantee that the original photographs cannot be altered. All pertinent dental features were then radiographed. A Dexis digital system was used. It allows radiographs to be taken and stored on a laptop computer. In this way no wet processing is necessary and the operation in totally portable. It works with any xray source available. It also notifies the operator if any alterations have been made to the radiographs, which insures integrity of the evidence. The only tissue resected was the remnant of the right ramus that was removed for access to the maxillary right molar.

The dental postmortem examination and charting was completed. The universal numbering system was used. The upper right third molar is #1, continuing to the upper left third molar that is #16. The lower left third molar is #17 and the lower right third molar is #32.

Attention was directed to the maxillary and mandibular arches.

Tooth Number	*Comments*	*Tooth Number*	*Comments*
#1	Missing and healed	#17	No info
#2	Present, converging roots,pulp stone	#18	No info
#3	Missing and healed	#19	No info
#4	No info	#20	No info
#5	Present, crown lost PM	#21	No info
#6	Present, crown lost PM	#22	No info
#7	Present, crown lost PM, distal dilaceration	#23	No info
#8	Present, crown lost PM	#24	No info
#9	Present, crown lost PM	#25	No info
#10	Present, crown lost PM	#26	No info
#11	Present, crown lost PM	#27	No info
#12	Present, crown lost PM	#26	No info
#13	No info	#29	No info
#14	Missing, healed	#30	No info
#15	Present, palatal root only	#31	No info
#16	Missing and healed	#32	No info

Antemortem Examination

At this point, the antemortem record was begun. From the putative identification, a treating oral surgeon had been located. Requests for radiographs and records for this individual resulted in contacting an office manager who would not release them due to the assumption that they would be opening the oral surgeon to malpractice actions. An investigator for the OCME was requested to contact the surgeon and explain the statutes that apply in Oklahoma. The OCME can request any records pertaining to a medico-legal investigation. After this explanation the surgeon agreed to release the records. His final comment was that he didn't know what good a couple of periapical radiographs and some written records would do to identify this person.

Two days later two periapical radiographs were received, which represented the antemortem records available. They were of the maxillary right molar area and the mandibular right molar area. They revealed the following antemortem information.

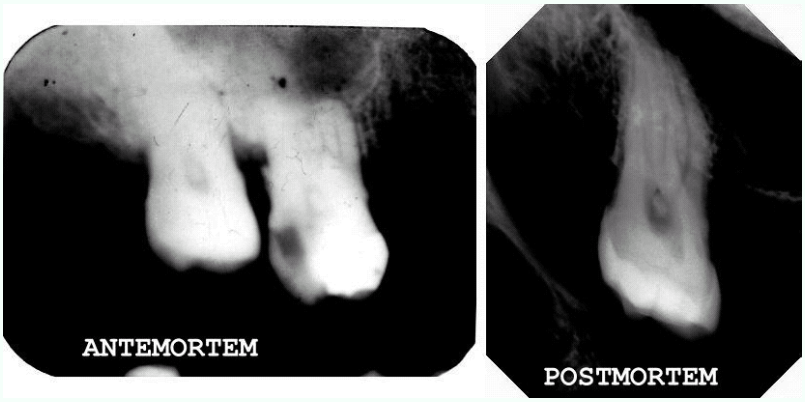
Tooth Number	*Comments*	*Tooth Number*	*Comments*
#1	Missing, healed	#17	No info
#2	Present, pulp stone, converging roots	#18	No info
#3	Missing, extracted 10-5-98	#19	No info
#4	Missing, healed	#20	No info
#5	No info	#21	No info
#6	No info	#22	No info
#7	No info	#23	No info
#8	No info	#24	No info
#9	No info	#25	No info
#10	No info	#26	No info
#11	No info	#27	No info
#12	No info	#28	No info
#13	No info	#29	No info
#14	No info	#30	Missing, healed
#15	No info	#31	Extracted 10-5-98
#16	No info	#32	Present

Comparison

This happened to be a case where only scant antemortem dental evidence was adequate for a positive identification. The evidence used to make the identification was the missing and healed sockets of #1 and #3, the convergent and dilacerated roots of #2, the

prominent distolingual cusp tip, and the presence of a calcification within the pulp chamber of #2. The Guidelines for Human Identification of the American Board of Forensic Odontology were followed in this procedure. A final report was generated for the OCME and a final positive identification was made.

A. Curved convergent roots. B. Pulpal calcification (pulp stone). C. Prominent distolingual cusp. D. #1 missing and healed. E. #3 missing and healed in postmortem and reported extracted after antemortem radiograph was taken.



Comparison of antemortem and Postmortem records.
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Conclusions

Dental identifications are an efficient, scientific, and well-accepted mode of human identification. Standardization of these procedures by using ABFO Guidelines or similar systems insures accurate and reproducible results, which can be easily understood by peers.

It has been noted that in some cases the treating dentists are poorly informed as to the forensic value their records can have. One should also note that many treating dentists do not understand the legal aspects of the information in a medico-legal investigation. Both of these situations were encountered when attempting to acquire antemortem records in this case. Education in forensics is the best way solve these problems. Dentists will keep the necessary records for identification if they are educated about the importance of their records in regards to forensics. Everyone who fills out a record or takes a radiograph is doing a bit of forensic work. We, in forensic science, need to educate those upon whom we depend for forensic information as to the importance of their work in regards to a forensic investigation.

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-Anil Aggrawal

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