

CASE REPORT

Case report on the identification of a murder victim by forensic dental techniques

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مع الزيادة في استعمال علم طب الأسنان للتعرف على هوية الموتي المجهولين . أصبح طب الأسنان الشرعي فرعاً معروفاً في علوم طب الأسنان . مسحت حالات هوية بواسطة الأسنان بالتعرف على ضحية قاتل ذكر . تم التعرف عليه بالتاميس و التنسيق بين الطب الشرعي والشرطة . لا يمكن البدء في البحث عن الجاني قبل تأسيس طريقة التعرف على هوية الجاني عليه .

With the increasing use of dental findings in the identification of unknown dead persons, forensic odontology is rapidly becoming recognized as a sub-speciality of dentistry. A case of dental identification is reported in which the identity of a male murder victim was established in cooperation with colleagues in forensic medicine and the police. Having established the identity of the victim, the search for the perpetrator of the crime could follow.

Introduction

One of the common methods of identifying unknown dead persons is by confrontation identification. This method is used by the police on the basis of a presumed identity of the body, which a relative or someone else subsequently visually confirms when confronted with the face or the general appearance of the dead person's body and clothes. The facial features can also be compared with a past photograph or other identity cards.

However, if the body is damaged in some manner, be it by fire or simple putrefaction, the facial features may be missing and then other features or characteristics have to be used. One such feature is the anatomy of the frontal sinus according to a posterior-anterior radiograph.¹ But a dental identification is usually easier to perform, since radiographs are only infrequently unavailable, because most people are likely to have visited their dentists at least once and had radiographs taken of the teeth. Moreover, teeth are the hardest tissue of the body² and can resist severe external damage, including fire. Using dental or medical radiographs for identifications is one of the most reliable methods³ for identification. Consequently, the involvement of experts in forensic odontology in the identification of unknown dead human beings is becoming common practice in many countries today.

Case Report

In 1985, a severely burnt body was discovered in the burnt-out remains of a toilet for the handicapped in one of Stockholm's suburbs (Fig.

1). Evidence immediately suggested that the cause of the fire was arson and that it was a recent event. However, it seemed that local residents had noticed nothing unusual, except for one woman who told the investigating police that she saw "a light in the sky the other night."

The burnt body was taken to the Department of Forensic Medicine, Karolinska Institute, Stockholm for an autopsy investigation. In addition, the police invited the forensic odontologist (LK) to assist in the investigation, in particular to establish the identity of the victim.

The autopsy revealed that the victim was a male, probably middle-aged and that the cause of death was not attributable to the fire. Post-mortem examination found no signs of soot or debris in the lungs and this indicated that the victim must have been dead before the time of the fire. There were signs of trauma to the head, likely to have been caused by a blunt weapon, as well as some fractures of the head bones. The conclusion, based upon these findings, was that death was the result of an inflicted trauma caused by beating the head, and the body being subsequently placed in the toilet before it was set on fire.

Although the body was really severely burnt, most of the teeth, however, were intact post-mortem.

Based upon, among other observations, the sutures of the skull and the condition of the heart and blood vessels, the victim's age was narrowed down by the chief examiner to about 30 years old.

Often an investigator is aided in identification by the presence of possessions such as identity and credit cards as well as rings and other worn jewelry. In this case, nothing was found that could be of help. The police asked the forensic experts to assist in estimating more accurately the age of the

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victim and to record all relevant dental findings. This was done with the intention of gathering all possible material evidence that could be pertinent to definitive identification.

It was decided to make a rough age estimation of the patient on the basis of the impressions of the appearance of teeth themselves and the intraoral post-mortem radiographs (Fig. 2). From this, it was concluded that the age of the victim was about 45 years.

However, there is an inherent variation in such an estimate, and in the report, the forensic odontologist had to suggest that, with a probability of 95%, the age of the victim was between 35 and 55 years with the mean being 45 years and the limits representing 2 standard deviations.

Other examinations revealed a metal-ceramic bridge in the maxillary arch using 21 and 23 as abutment teeth, with a small retained root fragment in the 22 region (Fig. 3). This bridge was typical of a technique commonly used in Scandinavia and some other countries, and was probably made subsequent to trauma some years previously. This and some other observations led to the conclusion that the deceased in all probability was a Scandinavian.



Fig. 1. The severely burnt body remains.

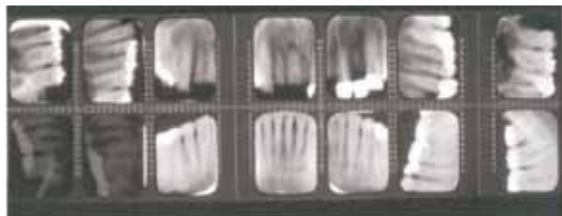


Fig. 2. The intraoral radiograph taken during the post-mortem examination.

Based upon our preliminary conclusions, and in conjunction with the findings of the post-mortem chief examiner, an advertised appeal was

made to the public in the most prominent newspapers in Sweden to assist in the identification of the victim. Details of the most important findings were published, including the general and dental characteristics of the victim, which included the bridge, in the hope of obtaining an early identification.



Fig. 3. The metal-ceramic bridge with 21 and 23 as abutment teeth.

Within one week, a woman telephoned the police to say that upon her return from the holidays, she could not find her husband and has regarded him as missing. She told the police that a friend had told her of an advertisement in a newspaper about an unknown dead person who could be about 45 years of age.

The woman felt that as her husband was 44 years old, he could be the unidentified deceased man. She was also able to tell the police that her husband had visited a Public Dental Service Clinic just a few months previously, and thus the dental records and radiographs were quickly made available to the forensic odontologist (Fig. 4). A comparison between the ante- and post-mortem radiographs was made and the forensic odontologist was able to establish legal identification confirming the victim as the missing husband of the woman.

Having identified the victim, the search for the perpetrator(s) commenced. The police began with identifying the huge circle of acquaintances of the deceased but the task turned out to be so extensive and time consuming that the matter remained unsolved for a long time.

However, a couple of years later, a male criminal, well known to the police, was arrested, charged and condemned for murdering two of his "friends." The similarity in these brutal murders and "the said case" as well as other circumstances, convinced the police that both murder events were committed by the same person. They felt that the similarity in the sequence of killing and disposing of the bodies with subsequent attempts at destroying evidence by fire was a powerfully persuasive coincidence.

Discussion

In many countries, there are laws regulating the issuance of death certificates prior to burial. Under most circumstances, it is considered a legal problem to bury the unidentified remains of human beings. At the emotional level, it is a problem for surviving relatives if they cannot reliably be assured of who the dead is. To be left with perhaps a lifelong doubt whether or not a close relative is dead is very distressing.

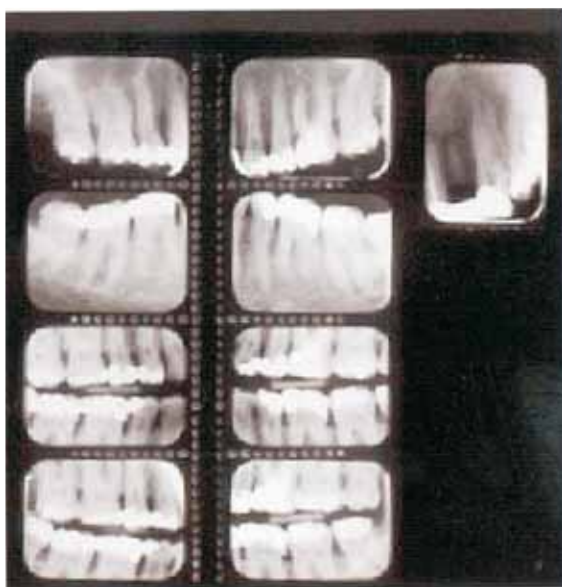


Fig. 4. The ante-mortem radiographs taken in a Public Dental Service Clinic.

If the body is in a state of advanced putrefaction, or severely damaged in some other manner, an identification based upon dental findings is a common solution in many countries today.⁶ A dental identification can be based upon a comparison between ante-mortem data (written records, photographs, casts or radiographs) and the post-mortem findings in the mouth of a deceased person.

Of these methods, the one which is based upon radiographs is the most accurate and reliable and has been found to be very valuable.^{7,8} The validity for matching ante- and post-mortem radiographs from the same person has been found to be extremely high,⁹ as long as the time separation between the radiographs does not

exceed 20 years. In the case described, not only could an identification be established based upon dental findings, but also an estimation of chronological age based upon a dental age estimation was made. The estimated age made in this case later turned out to be an important factor to help to establish the deceased's identity.

Ideally a tooth could have been extracted, and sectioned for microscopic chronological evaluation based upon the numerous known features of aging with respect to secondary dentine, alveolar bone and levels of periodontal attachment, translucency of hard tooth tissue, attrition and root resorption. The limited time allocated for identification precluded the time-consuming task of preparing tooth slices needed for such an assessment.

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