



Forensic Odontology and Elder Abuse — A Case Study

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Teeth can be the best and sometimes the only remaining source of information that provide the clues to an unknown person's identity.

Teeth may also serve either as weapons of aggression or self-defense. Bite marks found on victims of homicide, rape, assault, or abuse can occasionally be the only evidence linking the suspect to the crime. Dentists with specialized training in forensic investigation, collection, and handling of dental evidence, play a pivotal role in bringing answers to these difficult legal questions. However, when it comes to abuse, all health-care personnel including dentists should be capable of recognizing it and knowing what to do about it whenever encountered. Once abuse is determined to exist, it is the responsibility of the forensic odontologist to provide the bridge that links the dental evidence to the legal world. This article discusses the aforementioned topics, the frequency, signs, and indicators of elder abuse, and demonstrates how the data and information collected by the dentist can be put to use in situations that require thorough dental investigation.

Background

Statistics gathered by the U.S. Department of Justice indicate that violent crimes against people ages 65 or older are approximately 4 in 1,000.¹

Numbers on non-violent abuse indicate that neglect of the elderly is the most frequent type of mistreatment, 48.7 percent; and that emotional/psychological abuse is next at 35.5 percent. Third highest is physical abuse, 25.6 percent; financial and material exploitation ranks fourth, 30.2 percent; and abandonment was found to be the least common form of elder abuse, 3.6 percent.

From other accumulated data, it is estimated that the majority of cases go unreported (1 in 14), although from 1986 to 1996 the number of reported cases steadily increased by 150.4 percent.² This trend may continue to grow with more and more education and training becoming available for law enforcement, social workers, and medical caregivers with each successive year.

Indicators of Abuse

Neglect

Neglect presents itself in several forms. Self-neglect can stem from an elderly person's inability to manage day-to-day tasks such as personal hygiene, housework, and preparing a meal for themselves. An elder may mismanage their personal finances by failing to pay bills, hoard money, or give money away. Other signs of self-neglect can range from failing to keep medical appointments, refusing medications, or

suicidal acts. Neglect from a caregiver is also an area wherein the elder may be abused by not receiving adequate attention to hygiene, clothing, nourishment, or medical care.

Emotional/Psychological

Signals that an elderly person may be experiencing psychological or emotional abuse can range from hesitation to talk openly, feelings of helplessness, fear, withdrawal, depression, disorientation, and even anger. One possible indicator that a caregiver is contributing to emotional abuse is that the elder may not be given an opportunity to speak for himself/herself. Inappropriate reactions by the caregiver, particularly unwarranted defensiveness or a reluctance to comply with service providers when planning for activities or supervision can be a warning flag. Engaging the elder and the caregiver in conversation to determine whether or not they are open and responsive to dialogue or if they are hesitant to talk could mean there is something going on that may need closer scrutiny.



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Physical

The signs and symptoms listed here are not intended to be a confirmation of abuse; only indications of a condition that may be ongoing and otherwise unnoticed. Some of the clues dentists may encounter that may give the impression that physical abuse of an elderly person is occurring are bruises, lacerations or puncture wounds, injuries with incompatible histories, loss of hair or hemorrhaging under the scalp, weight loss, malnutrition, and soiled clothing. Burns of questionable sources should be discussed in depth, such as from caustic chemicals, cigarettes, and friction injuries from objects that could be ligatures.

Even though there may be great reluctance or even fear for the elder to report abuse, it is the responsibility of the dentist to report cases of suspected abuse when encountered.³ If abuse is suspected, dentists should ask a few questions to check it out and contact the area's appropriate agency that handles reported elderly abuse. Professionals should handle it and make the determination of whether or not a complaint is valid.

Role of the Odontologist

Whatever the numbers say about the frequency and type of abuse, the forensic odontologist is regularly consulted when either law enforcement or health care personnel recognize that there is dental evidence connected to an incident. One area where the skills of an odontologist are needed for the elderly is in identification, both in the deceased and the living.

For instance, a person with Alzheimer's disease or dementia, but who is still ambulatory, unwittingly drives to a remote location where they become totally disoriented and lost, (i.e. mountains or desert). They then pro-



Figure 1. Bite marks on right shoulder and breast.



Figure 2. Multiple bites on upper back.

ceed to wander aimlessly until they become physically exhausted and collapse or worse — die, only to be found several days or weeks later. Having left their original location without personal identification, sometimes the only means of proving their true identity is through dental records. This scenario can present a difficult problem for the odontologist when the decedent is edentulous or has no recent dental history. Should that person survive the ordeal but suffer from complete memory loss, answers to their identity may again have to be confirmed through a dental examination.

Similarly, if several elderly people are sharing the same facility (convalescent hospital or assisted living community), the opportunity can exist where dentures may get misplaced or mismatched with their rightful owners, either by accident or through malicious intent. This presents a situation where placing a person's name or other identifying feature in both dentures is highly advisable. Dentists who make full or partial dentures for their patients, no matter what their patient's age, should recommend that the laboratory that processes them make sure to include an identification tag in the resin bases.

Several states, including California, have created laws requiring mandatory labeling of dentures; although many labs and dentists are not aware these statutes exist.

Bites are another form of dental evidence and usually occur during domestic arguments, homicides, battery, sexual assaults, and human abuse. Initially one might think that the older segment of the population is less likely to have these types of violent crimes committed against it rather than younger or middle-aged people. Unfortunately, perpetrators look upon the elderly person as an easy target, simply because of a possible diminished mental capacity or inability to resist physical attack. Once identified as a bite mark, a comprehensive investigation and collection of evidence must occur from several agencies. In emergency situations, the primary concern is the survival of the victim. If alive, once the patient is stabilized there should be collection of DNA evidence from the bite mark before the patient is washed or has the wound attended. The importance of DNA collection cannot be overemphasized. Crime scene analysts or other law enforcement personnel usually accomplish this by swabbing the bitten area for trace salivary residue.

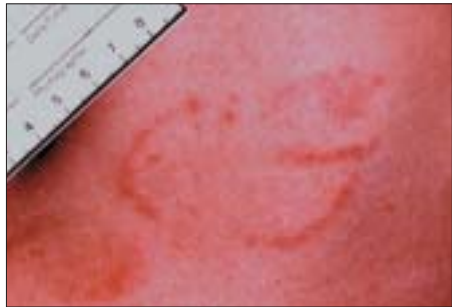


Figure 3. Close up of multiple bites on lower back.

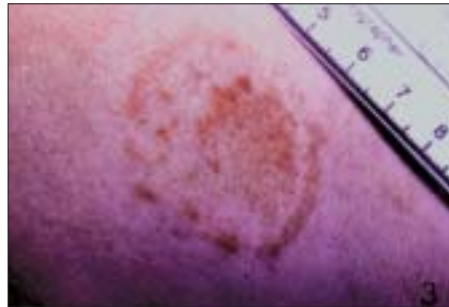


Figure 4. Closeup of bite mark on right shoulder.



Figure 5. Close up of bite mark on upper back.

DNA evidence is a crucial element in bite mark investigation. The odontologist is then responsible for accurately documenting the bite mark injury with photographs, analyzing and comparing it to suspects, and ultimately presenting his/her findings and conclusions in a judicial setting.

In living bitten victims, the initial contact usually comes from emergency care providers, social workers, nurses, doctors, or law enforcement agents. In the deceased, notification usually comes from a forensic pathologist, homicide investigator, or an official from the medical examiner's or coroner's department.

In regard to photographic documentation, timing is crucial in bitten living victims due to the process of inflammation response, healing, and other wound reactions and tissue changes that occur immediately after injury. With elderly victims, the skin is generally less elastic and bruises more easily than in children or young adults. This fact can render the appearance of the bite to become useless as evidence if not documented quickly. No matter what the age of the living victim, it is essential to accurately record the injury as soon as possible with adequate photography.

The role of the dental practitioner is to be aware of the signs and symptoms

of human abuse, and to know when and where to report it whenever encountered. The forensic odontologist then assists law enforcement by providing a link between dental evidence and the judicial system. Whether it is an identification or investigation of a bite mark, the odontologist acts as a neutral party whose function is to demonstrate to the court the facts of the dental evidence. A typical example of how forensic odontology integrates with abuse of the elderly follows.

Case History

Original contact in this case came from the principal homicide investigator at the police department in Ontario, Calif. Circumstances as explained were that the younger of two male co-tenants living in a detached rental house owned by an 84-year-old landlady, committed assault and battery on the older co-tenant, sexually assaulted the landlady and fatally stabbed her in the neck with a pair of scissors. Several suspected bite marks were observed on both victims. The author's first encounter was with the surviving 64-year-old co-tenant who was examined at Ontario Community Hospital. He presented 13 separate bite marks distributed over his head, torso, and back (Figures 1-5).

These bites were all 2-dimensional

(no depth of penetration) and were photographically documented for subsequent comparison to any suspect(s) dentition.

Immediately after examining the male co-tenant, attention was turned to the deceased 84-year-old female. Two bites marks were recognized and photographically documented: One bite was centrally located on the abdomen, the other on the right breast (Figures 6-8).

Several days after the examination of the two victims, dental impressions were made of the suspect's dentition. From the stone casts, clear acetate tracings were prepared that indicated the incisal edge outlines and positions of the anterior maxillary and mandibular teeth. These overlays were compared to life-size photographic prints of the injuries to both victims. A few samples of these comparisons are presented in Figures 9-11.

Numerous consistencies were present in both arches, including the arch size, shape, and distribution of teeth to the bruise pattern. Additionally, under close examination of the incisal edges of the suspect's mandibular teeth, an unusual intra-dental feature was observed in the tissue of the bite. The distal-incisal corners of the mandibular lateral incisors, (Nos. 23 and 26) were fractured, leaving sharp edges of enamel (Figure 12).

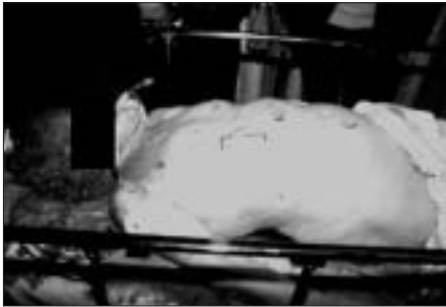


Figure 6. Orientation photo of homicide victim.

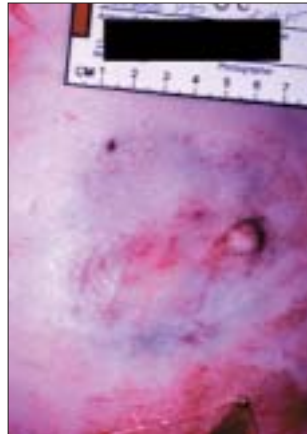


Figure 7. Close up of bite mark on right breast. Note diffuse deep bruise pattern and surface scratches.

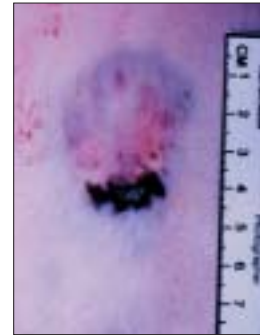


Figure 8. Close up of abdominal bite mark. Lower arch is darker area at six o'clock position.



Figure 9. Comparison of suspect's lower dentition to bite on male victim. Overlay is just below bruise to facilitate seeing the concordant points of injury.

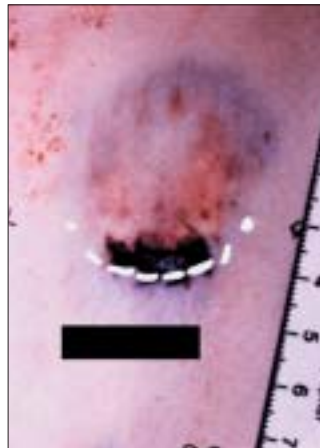


Figure 10. Overlay of suspect's lower teeth compared to bite on abdomen of homicide victim.



Figure 11. Overlay of suspect's maxillary dentition compared to bite on abdomen.

Macroscopic examination revealed tissue disruption and surface scratches evident in corresponding areas of the abdominal bite. These two areas of surface abrasion were created during the motion of biting by the sharp, fractured edges of these teeth (Figures 13-15).

A microscopic examination of these linear abrasions to the skin was performed using a ballistics comparison scope. Measurements of the actual widths of the parallel surface scratches proved to be identical to the distances between the distal corners of the laterals. Additionally, the sharp fractured edges of both teeth could be attributed

to parallel linear abrasions within their respective areas of the mandibular arch component of the bruise.

Once faced with this and other incriminating evidence, the suspect pled guilty to multiple charges of battery and one count of homicide. After a preliminary hearing, he received a maximum allowable sentence of incarceration in a state correctional facility.

Summary

This case presented an opportunity wherein a crossover of forensic disciplines occurred. By utilizing equipment normally employed in ballistics examination for a dental comparison, the

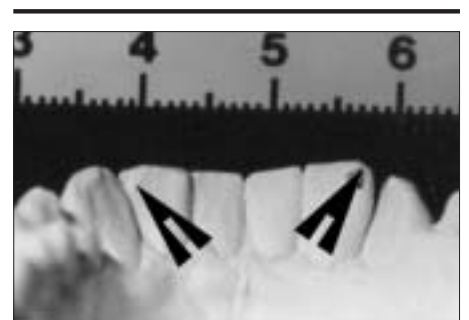


Figure 12. Fractured distal-incisal edges of Nos. 23 and 26 — lingual view.

CASE STUDY



Figure 13. Arrows indicate two areas of tissue abrasion from the indicated mandibular teeth.

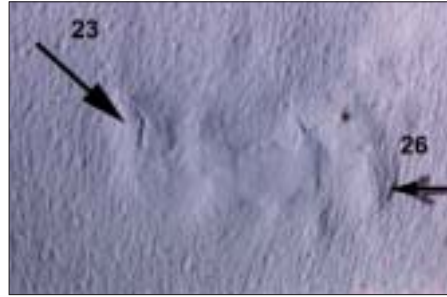


Figure 14. Silicone model of same area of bite in Figure 13. Note improved surface detail.



Figure 15. Comparison of model to silicone duplicate of bite mark indicating corresponding teeth to the injury and locations of tissue abrasion to fractured incisal corners of laterals.

author was able to indicate to a reasonable dental certainty that the perpetrator of multiple bites on two individuals was the same person and had a unique den-

tal feature that was represented in the abdominal bite on the homicide victim. In any investigation that offers a multidisciplinary approach as an option (such

as DNA testing), the forensic odontologist/investigator should utilize all the available techniques at hand. With a comprehensive approach, both in the clinical environment and in the forensic arena, the dentist becomes a central component for prevention as well as investigation of elder abuse. **CDA**

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References / 1. Rennison C, Criminal Victimization 1999, Changes 1998-99 with Trends, 1993-99, NCJ 182734, Washington, DC., U.S. Dept. of Justice, Bureau of Justice Statistics, August 2000.

2. Tatara R, "Reporting Requirements and Characteristics of Victims," Domestic Elder Abuse Information Series No. 3, Washington D.C., National Center on Elder Abuse, November 1997.

3. California Penal Code (PC) Section 11166, and California Welfare and Institutions (W&I) Code, Section 15630.