

Role of bite mark characteristics and localizations in finding an assailant

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Abstract

The location, size, and number of bite marks can be used as a beneficial indicator of the crime type and feasible group of suspects. This study aims to present information about the bite mark locations, the bite mark characteristics, and the perpetrator's profile based on three cases which were carried out by the same biter. The attack bites, which observed in all of the three cases, were characterized by serious wounds and tissue loss. Analysis of bite mark characteristics and bite mark localizations of these three cases by the relevant experts provided helpful information for the police units which searched for the assailant. But, in order to conduct criminal profiling from bite marks objectively, the number of case series is advised to be expanded.

Key words: Bite marks, bite mark characteristics, criminal profiling, forensic science, forensic odontology

Introduction

Crimes commonly associated with biting are homicide, rape, sexual assault, robbery, and child abuse.^[1] The crime type, age, and sex of the subject impact on the likely anatomical location of a bite injury. Hence, recognition of the locations and characteristics of bite marks will assist to solve the crime.^[2,3] Bite marks which have the specialty of a forensic case give not only information about the dental characteristics of the criminal but also enlightening opinions pertaining to his/her psychological background.^[4] After reviewing cases reported in the literature and after conducting psychological interviews with perpetrators, three major groups of perpetrators seem to be apparent.^[5] The anger-impulsive bite is said to often result from frustration and incompetence in dealing effectively with conflict situations on the part of the

perpetrator and is "governed by time, location, situation, and type of anger." The sadistic bite is said to satisfy the need for power, domination, control, and omniscience. The ego cannibalistic biter bites in an attempt to satisfy egoistical demands by annihilating, consuming, and absorbing life essences from the victim.^[5] In the cases of bite marks associated with violent crime, defining the bite mark type is helpful in order to solve the crime.

In the present cases, it is aimed to analyze the locations and the characteristics of bite marks which were produced by the same offender, and the contribution of bite marks for the criminal profiling was discussed.

Technique

Bite marks, determined on three different victims and in three different times, caused by the same aggressor, were analyzed. The photographs that belong to the two victims exposed to the attack in different times were taken. The third case was a tourist and her statement was taken and her physical examination was done after the attack. Bite marks detected in the physical examination and the photos of them were taken but she did not give permission for representing the photos of bite marks in this study.

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The dental impressions of four different suspects who were considered to be related with these cases were taken. Photographs of bite marks were resized to 1:1 scale using Photoshop® of Adobe Systems®. Dental study casts were scanned using the flatbed scanner. Hollow and compound overlays were produced from these casts. The methods used for both procedures are described by Bowers and Johansen.^[6] The life-size photographs were imported into the image perception program and processed.

Case Histories

Case 1

On December 20, 2002, as it has been every morning, a 75-year-old woman was returning to her house from a public soup kitchen, where she took her family's daily foods. She was a widow and living together with her son and her daughter-in-law. On that day, when she reached her house's door, the street was still dark; she pushed the door opening and turned on the lights at the entrance. At the same time, the perpetrator had crept up on the woman and then wanted to snog her. Then, he bit her because she had stood up to him and shouted. Her son and her neighbors woke up by her screaming, meanwhile he had already run away from the building and the old woman had been injured severely. She was taken under treatment in an emergency service.

In her physical examination, very harsh bite marks and wounds were found on her face and her body [Figures 1-3]. There was an open wound with tissue loss, which was a result of biting, under and lateral side of her left eye. The widest point of this wound was 8 × 2 cm. Also, there were lacerations due to biting on her face. One of them was spring-shaped and 5 cm long and other one was above and left side of upper lip lying to middle of upper lip, "n" shaped and 6 cm long. Other lesions on her face were ecchymosis and scratches around bilateral eyes, right side of forehead and nose. In terms of other body parts, ecchymosis and scratches on dorsal side of both hands, on bilateral knees and bite marks on lateral side of 1/3 middle part of right thigh, on lateral side of left knee and on dorsal side of left hand were found. Besides, it was found that some of the wounds on her right forearm had been caused by a sharp and penetrating instrument.

Case 2

On February 10, 2003, an 83-year-old woman was found dead at her squatter house, which is located in Zeytinburnu, Istanbul, Turkey. Her house was on fire, she was found nude lying on her back, her eyelids bruised, and her right hand covered her face.

In the forensic autopsy, at her physical examination nasal bone fracture, bilateral periorbital ecchymosis, ecchymosis on her nose, chin, lips, head of tongue, back of her neck, left shoulder, wounds considering a sharp and penetrating

instrument on left ear, left side of neck, on both side of chest, on left lower quadrant of abdomen, on right hand third finger and bite marks were determined on several parts of her dead body. The localizations of the bite marks were as



Figure 1: Bite marks on the face-photographs in Case 1



Figure 2: Wounds on lateral side of left knee-photograph in Case 1

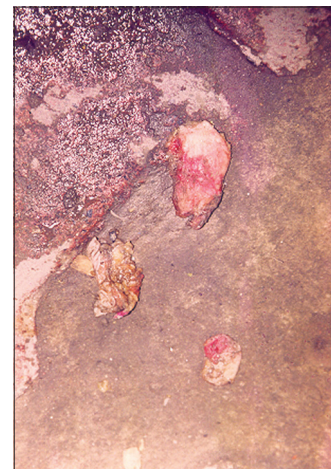


Figure 3: Tissue parts belong to Case 1 in the crime scene.

follows: On left cheek, on the inner part of the left wrist, on the middle part of right wrist, on left breast, on outer part of right wrist [Figures 4-6]. Totally, there were 7 wounds created by a sharp and penetrating instrument, a cutting wound and 10 bite marks. In hymen examination, vagina was hyperemic, hymen's walls were erased and there was an erosive, petechial hemorrhagic area, size of 2 × 1 cm at 6 O'clock according to clock method. In anal examination, there was not any pathological finding except postmortem dilatation. At internal examination, there were widespread ecchymosis and hemorrhagic areas on soft tissues of neck, hyoid bone, around the thyroid cartilage, a cut at small intestine and penetrating wound to the thoracic cavity. At biological examination, no spermatozoid at anal and vaginal swabs and on the victim's clothes was located.

According to the result of the forensic autopsy and other examinations, the cause of death was determined as internal hemorrhage connected with injury of internal organ; the cause of death was not a fire or gas poisoning.

Case 3

The last attack was on June 10, 2003 and committed in Bakirkoy Coastal Road, Istanbul, Turkey. A 60-year-old woman was a tourist in Turkey and she was waiting for a taxi to the airport in the early morning. The perpetrator had crept up on behind the woman and then wanted to snog her. When she stood up to him, he had severely bit her face; especially there was a soft tissue laceration with tissue loss at the upper part of her right eye.

Information about crime investigation and perpetrator

When the bite marks were analyzed, it has been determined that bite marks belonging to three cases were caused by the same perpetrator and the killer had two pronounced specialties. The first one is that he had canines much larger than normal. The second one is that he did not have upper front incisors. This information provided a great help for the security units as it narrowed down the number of suspects. After the first assault, the police was warned about the fact that there might be a risk for repetition of the crime. Because, after the bite mark cases in the literature are evaluated, it was seen that most of these kinds of perpetrators tend to repeat the same crime until they get arrested.

Police got alarmed in regions of Bakirkoy and Zeytinburnu. All suspects wandering in the crime scene were searched. On June 15, 2003, a 25-year-old young man came to Bakirkoy Coastal Road, where the last attack occurred. There were three stray dogs with him. Young man was playing with dogs and at the same time he was careful about not moving away from the last crime scene. This attracted the attention of the policemen and they searched him in detail. He had a criminal record filled with rape, injuring, and molestation. During the chase, when he spoke, police saw that he did not have upper front incisors and then he was taken into custody.



Figure 4: Photograph of bite mark on face with American Board of Forensic Odontology (ABFO) scale II in Case 2



Figure 5: Photograph of bite mark on right wrist with American Board of Forensic Odontology (ABFO) scale II in Case 2

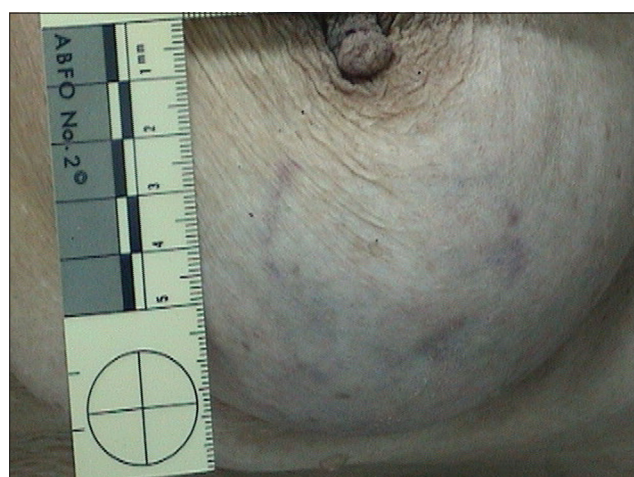


Figure 6: Photograph of bite mark on left breast with American Board of Forensic Odontology (ABFO) scale II in Case 2.

Suspect said in his declaration at police station that he has been sleeping on the streets in Bakirkoy, he was a substance user (thinner), on June, 2003, a woman walking in front of

him, he thought that she was a prostitute and then followed her, while he wanted to kiss her from her eyes, he bit her and then ran away. He added that he achieved this act after he took a narcotic drug (including flunitrazepam) and another drug (including sildenafil citrate) which is used in order to help men to have sexual intercourse and also after using thinner. He admitted that he committed the homicide and two attacks.

Before the court, information about bite marks taken from the victims' bodies and suspect's dental impression was compared with each other by a forensic odontologist (first author). The result was positive; they were compatible with each other. It was determined that bite marks on victims were belonged to the suspect, who was caught in Bakirkoy Coastal Highway. There were three more suspects, but their dental impressions were not compatible with bite marks on victims' bodies. Also, Case 1 identified the offensive during the trial.

Suspect's psychiatric examination was not done, because he and his lawyer refused this examination.

Discussion

Criminal profilers often analyze the position and characteristics of wounds to develop a profile of the offender.^[4,7] The profilers have been able to develop typologies by identifying commonalities of bite marks for useful information about violent crime investigations.^[4,5,8] The categorization of bite marks from a behavioral perspective has been called into question by different researchers.^[7,9,10] According to the classification of offender typologies by Walter,^[5] these three cases which are presented above are compatible with the characteristics of the sadistic bite. These kind of wounds are not peculiar to sadistic behavior type but also can be seen after drug facilitated crimes and sexual assaults.^[11] We think that to have a healthy analysis of bite marks with deep tissue losses in terms of offender typologies, there should be more investigations on further such cases.

It was reported that there was more than one bite mark in/at a large number of cases in the studies about bite mark localization.^[1,2] The numbers of bite marks were also more one than in the cases which are presented in this study. Both of the two studies, which analyzed the bite mark localization distribution, reported that the bite marks were mainly seen on the breasts.^[1,12] There was a bite mark on the breast in only Case 2. Bite marks were reported mainly on the breasts in sexual assaults by Freeman *et al.*,^[2] In other study, bite marks on neck, front of the shoulder, arm, breast, pubic area, buttocks, and thigh might be associated with sexual assault against female victims.^[13] Such bite marks which associated with sexual assaults in terms of localization were available in Case 1 and Case 2 as well. In his testimony, the

perpetrator's confession of his sexual desires in the assaults supports this fact. In all of the three cases presented, it was one of the remarkable findings that the bite marks were mainly on the faces of the victims. In addition to his sexual desires, the fact that most of the bite marks were on the faces in presented cases urges us to think that the assaults were also aimed for satisfying sadistic feelings.

Smelling thinner and taking drugs which increase sexual power before the crimes might have been resulted as a facilitative effect for the assaults. It is known that these kinds of drugs have encouraging effects. According to the testimonies of the assailant and the victims, and to the autopsy results of the death victim, there were no concrete facts which indicate any sexual intercourse. Assailants, who tend to repeat the same crime, fulfill their sexual desires from their control upon their victims and from their sense of dominance over them. An assailant, who kills a woman, commits such a crime not just in order to fulfill his sexual desires, but rather in order to control the victim, and feel the inability of the victim by using force upon her. The sense of dominance over their victims gives such people a hedonistic (lust) identity.^[14]

Evaluation of bite mark characteristics and localizations in the cases presented here by the relevant experts, provided a significant contribution for the security units in the arrest of the assailant and in the investigation of his profile. However, in order to have objective results of criminal profiling from bite marks, case series should be expanded.

References

1. Pretty IA, Sweet D. Anatomical location of bite marks and associated findings in 101 cases from the United States. *J Forensic Sci* 2000;45:812-4.
2. Freeman AJ, Senn DR, Arendt DM. Seven hundred and seventy-eight bite marks: Analysis by anatomic location, victim and biter demographics, type of crime, and legal disposition. *J Forensic Sci* 2005;50:1436-43.
3. Kavitha B, Einstein A, Sivapathasundharam B, Saraswathi TR. Limitations in forensic odontology. *J Forensic Dent Sci* 2009;1:8-10.
4. Webb DA, Sweet D, Hinman DL, Pretty IA. Forensic implications of biting behavior: A conceptually under developed area of investigation. *J Forensic Sci* 2002;47:103-6.
5. Walter RA. An examination of the psychological aspects of bite marks. *Am J Forensic Med Pathol* 1984;5:25-9.
6. Bowers CM, Johansen RJ. Digital analysis of bite mark evidence using adobe photoshop. Santa Barbara: Forensic Imaging Services; 2003.
7. Douglas J, Olshaker M. *Journey into darkness*. London: Vintage; 1998.
8. Cook PE, Hinman DL. Criminal profiling: Science or art? *J Contemp Crim Justice* 1999;15:230-41.
9. Sweet D. Human bite marks: Examination, recovery, and analysis. In: Bowers CM, Bell G, editors. *Manual of Forensic Odontology*. Ontario: Manticore; 1995.
10. Keppel RD, Birnes WJ. *Signature killers*. London: Arrow Books; 1998.

11. Pittel SM, Spina L. Investigating drug-facilitated sexual assault. In: Savino J, Turvey B, editors. Rape Investigation Handbook. Amsterdam: Elsevier; 2004.
12. Vale GL, Noguchi TT. Anatomical distribution of human bite marks in a series of 67 cases. J Forensic Sci 1983;28:61-9.
13. Lane B, Gregg W. The encyclopedia of serial killers. New York: NY: Diamond Books; 1992.
14. Holmes RM, Holmes ST. Profiling violent crimes, 2nd ed. Thousand Oaks: Sage Publications; 1996.

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