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Chewing Gum—An Unusual Clue in a Recent Homicide Investigation

Human bite marks on human tissue have been important items of evidence in homicide and rape convictions in recent years. The literature also describes the apprehension of burglary suspects based on booth marks left on foodstuff. This report is the first case description recorded where chewing gum has been an essential part of the evidence in a homicide conviction.

Eleven days before Christmas, 1976, acting upon information supplied the San Diego Police Department, members of a homicide team forced the door of a private residence and found an adult male lying dead across a bed. He had been shot and stabbed. Amongst the clutter of the room, evidence technicians and detectives began their investigation.

Subsequently, two female adults were arrested in connection with the murder. Of immediate interest was the fact that the fingerprints of one suspect were found in the murder room. There was not, however, any physical evidence that placed the second suspect at the site, although it was believed that she was involved. The detective in charge, in sifting through the crime scene, did find a wad of used chewing gum on the top of a bureau. In the hopes that the gum might provide further information, it was brought to the San Diego Police Department crime laboratory and then to the author by two detectives, one the sergeant in charge of the investigation.

Procedure

Examination of the gum under magnification made the author aware that it had last been in contact with the inside (lingual) of the upper and lower incisor (front) teeth of some individual (Fig. 1). The gum was red in color and smelled of cinnamon. Since the victim had not yet been released by the San Diego County Coroner's Office, it was agreed that the author would obtain dental impressions of the decedent and that a court order would be obtained so that similar impressions could be obtained from the two suspects, in custody at the San Diego County jail. In the meantime, to prevent distortion, the gum was stored in a closed waxed cup under refrigeration.

Impressions of the three individuals were obtained and models fabricated of dental stone (Fig. 2). Color and black and white photographs, suitable for enlargement, of the chilled gum were taken by an evidence technician. The author made a silicone reproduction of the gum that could be placed and pressed against the models for comparison. In addition, a small piece of gum that did not bear imprints was cut away with a sterile scalpel and set aside for further testing.

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FIG. 1—Wad of gum found at the scene of a homicide. (All of the figures are replicas of trial aids prepared by the Technical Division, San Diego District Attorney's Office.)

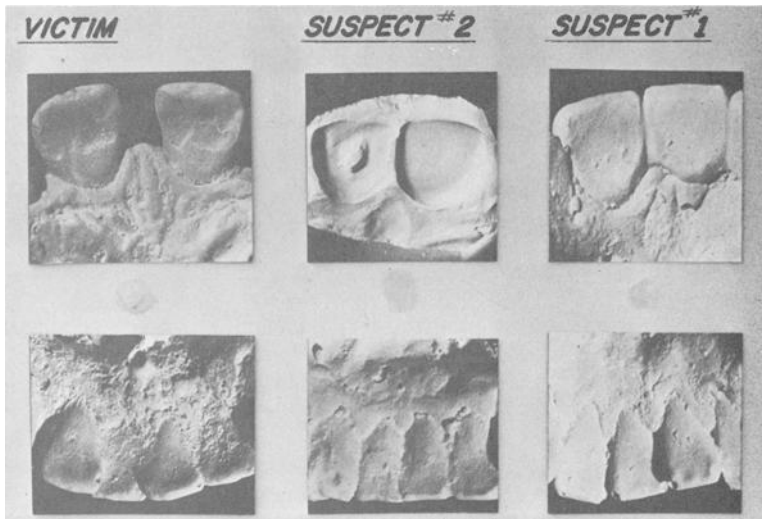


FIG. 2—Dental models of the victim and both suspects.

Comparison of the models of the victim with the gum ruled him out as having left the imprints found in the gum. Similar comparisons ruled out the first suspect, whose fingerprints had been found at the crime scene. It was simple to eliminate these two because both had irregularities and spaces not present in the gum. Although chewing gum is not the most accurate impression material, it began to appear as if the gum had been chewed by the second suspect. Her upper and lower teeth matched in width and position with the gum. Remarkably, the suspect had an opening drilled in the back of her upper incisor,

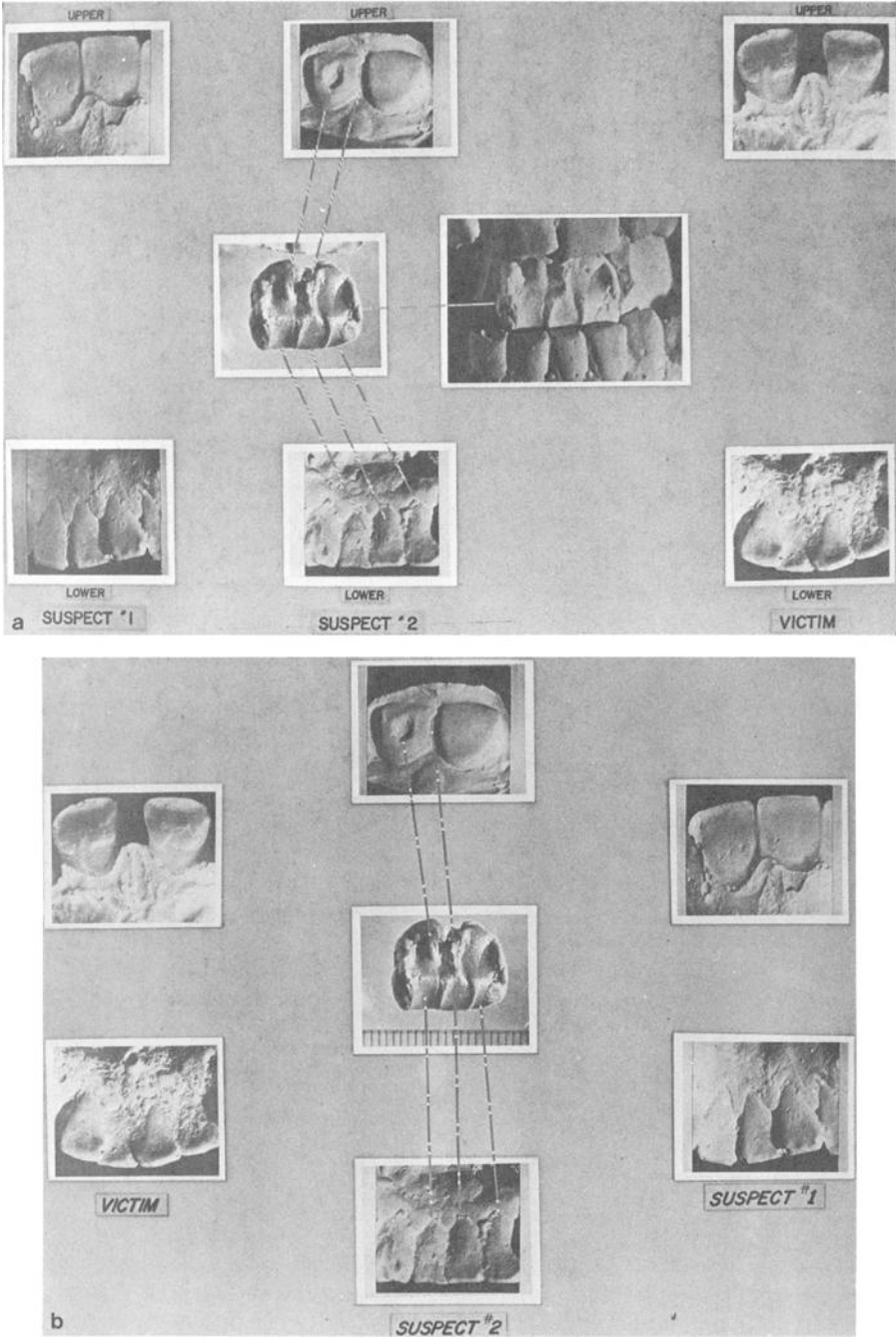


FIG. 3—Comparisons of the dental models with the wad of gum.

consistent with root canal therapy, and the same tooth was missing a filling (or had decay) on the mesial (the portion of the tooth that approximates the adjacent tooth) aspect. These same defects were noted on the gum. In fact, the tear-shaped opening was identical in size, location, and inclination to the imprint on the gum. In addition, the gum revealed an area that had been forced into and withdrawn from the mesial opening between the teeth already discussed (See Figs. 3*a* and *b*). It was the author's opinion that the gum had been imprinted by the second suspect's teeth.

Upon revealing the above facts to the detectives, the author suggested that the crime lab test the piece of gum already set aside to determine the blood type of the individual who had chewed the gum. Eighty percent of the populace are secretors, revealing their blood type in their saliva, perspiration, tears, and in the case of men, seminal fluid. Laboratory results showed that the gum had been chewed by a secretor with the relatively rare blood classification of AB. Table 1 shows the distribution of blood types among all individuals, while Table 2 indicates the salivary and blood typing of the suspects taken at time of arrest. Thus, the second suspect possessed the same rare blood type as analyzed from the gum.

TABLE 1—*Blood types in the United States.*

Type	Frequency, %
O (+ and -)	44.0
A (+ and -)	42.0
B (+ and -)	10.0
AB (+ and -)	4.0

TABLE 2—*Salivary and blood types of the two suspects.*

Item Tested	Blood Group
First suspect	
Blood	O
Saliva	O (secretor)
Second suspect	
Blood	AB
Saliva	AB (secretor)
Chewing gum	AB (secretor)

Conclusion

There was no trial in this case because shortly after the above findings were established, a guilty plea to murder in the second degree was accepted by a San Diego Superior Court judge. Both suspects were subsequently sentenced from five years to life and are presently serving this sentence.

Summary

1. This case is the first time, to this author's knowledge, that chewing gum has been an important evidence factor in a homicide investigation.

2. Salivary traces on bitten food or other materials, such as beverage containers, may possibly be used to determine blood types of suspects.

3. The case involved unusually close cooperation between the members of an investigation team consisting of police detectives, evidence technicians, criminalists, investigation technicians from the District Attorney's office, and a forensic odontologist.

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