



Bite Mark CSI Found Faulty

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The science of forensics and criminal psychology has advanced a lot in recent decades. Unfortunately courtrooms haven't kept up. Bad guys go free and innocent people get locked up.

As one example, people get convicted on questionable "[repressed memories](#)," which scientists generally discount is implausible but which courtrooms listen to with great interest. Both [fingerprints](#) and [lie detectors](#) frequently lead to false convictions or fail to produce arrests, studies show.

A [recent report](#) from the National Research Council said that with the exception of [DNA evidence](#), "no forensic method has been rigorously shown able to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source."

Add bite mark analysis to the list of questionable methods.

"Bite mark identification is not as reliable as DNA identification," says Raymond G. Miller of the University at Buffalo. That probably comes as no surprise to most readers. But unlike fingerprinting and lie detectors, which have been proven faulty, the validity of bite mark analysis hasn't even been adequately studied. Until now.

"With DNA, the probability of an individual not matching another can be calculated," Miller said. "In bite mark analysis, there have been few studies that looked at how many people's teeth could have made the bite."

Miller and colleagues recently used stone models of real teeth on real cadavers to look into the technique.

They impressed bite marks on cadaver skin, using a hundred different teeth patterns that had been divided into 10 groups, each with distinct patterns of misalignment. And then like CSI staff they photographed the results. Using real skin, albeit on dead bodies, was seen as superior to previous efforts with wax or Styrofoam.

"Living bitten tissue may bleed or bruise," Miller noted. "The initial bite mark indentations rebound shortly after infliction often leaving a diffuse bruising that may be difficult to measure accurately. The indentations produced in our study represented the best conditions for measurement."

When dental alignments were similar, it was difficult to distinguish which set of teeth made the bites, the researchers found. Distortion noted in the bite marks allowed matches even with stone teeth from the different alignment groups.

"Bite marks should be very carefully evaluated in criminal investigations where perpetrator identity is the

focus of a case," the researchers conclude in *Journal of Forensic Sciences*.

"In the past 10 years, the number of court cases involving bite mark evidence that have been overturned led us to question the reasons for the erroneous bite mark identification," Miller said. "It's important to recognize the serious consequences of a misidentification for the accused, the victim, the families involved, the justice system and the possibility that the perpetrator is still at large."

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