

Editorial

Forensic Odontology-Renowned Cases Solved

The term “forensic” implies “court of law.” Forensic odontology has been defined as that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of dental findings. It also contributes to the detection of crime and bringing those responsible to justice.

Forensic odontology can utilize every dental discipline including, among others, oral medicine and radiology, oral pathology, oral and maxillofacial surgery, periodontics, prosthodontics, conservative dentistry, orthodontics, and community dentistry. It has also played a role in the identification of multiple casualties from disasters such as earthquakes and tsunamis, mass atrocities, and road accidents. The collation of antemortem and postmortem dental records for unidentified victims continues to be one of the best and most frequently used methods of identification. Knowledge about the various aspects of forensic science as well as dental and related evidences can help a dental practitioner in assisting the civil agencies in such cases.

IDENTIFYING THE CULPRIT

The oral cavity is a useful source of DNA. The latter is obtained from saliva, the oral mucosal cells, and the teeth. The main DNA source is blood, though in some situations, this type of sample is not available for analysis. In teeth, DNA is found in the pulp tissue, dentin, cement, periodontal ligament, and alveolar bone. Due to the resistance of the hard tissues of the teeth to environmental actions such as incineration, immersion, trauma, or decomposition, pulp tissue is an excellent source of DNA. Bite mark analysis is another important area in forensic odontology. The individual bite characteristics must be documented in order to positively identify the suspect. Certain important dental features can include fractures, dental rotations, attrition and wear, and congenital malformations.

The physical and biological findings deteriorate from the moment of the actual bite and therefore should be documented as quickly as possible. Saliva is deposited in the skin at the time of biting and should be collected preferably using the double cotton swab technique. Dry saliva is hard to detect, and the amylase test is needed to identify its presence. Rugoscopy is an identification technique based on the study and analysis of the number, shape, length, direction, and merging pattern of the palatal ridges or rugae (rugosities). Cheiloscopy involves the study of a series of elevations and depressions that form a characteristic pattern on the lips known as lip prints. In the same way as the finger prints, the lip prints are permanent and constant and are, therefore, unique to each individual (except monozygous twins).

FORENSIC ODONTOLOGY IN INDIA

India has a significant history of forensic science. Application of science and technology for the detection and investigation

of crime and administration of justice is new to us. Although still a nascent field in India, forensic odontology is proving to be extremely valuable in criminal and civil cases.

FIRST CASE OF IDENTIFICATION USING DENTITION FROM INDIA

In 1191, M. Raja Jayachandra Rathore of Canouj died on the battlefield. His body was recognized by his false anterior teeth. This was probably the first case of identification using dentition from India.

NIRBHAYA CASE: DELHI GANG RAPE - 2013

On December 16, 2012 in Delhi, India, Nirbhaya, a 23-year-old female was the victim of multiple rape when she was a passenger on a private bus. She was accompanied by a male friend. Due to the severe injuries which she received in the brutal assault, she later died on December 29, 2012. The suspects were traced within 24 h. Six men were found guilty including a juvenile. The numerous bite marks on the victim's corpse were compared with the dental models of the accused. Dr. Ashit B. Acharya (secretary of the Indian Association of Forensic Odontology and an associate professor at SDM College of Dental Sciences and Hospital in Dharwad) analyzed the bite marks with the aid of computer software and postulated that two of the bite marks were identical with two suspects. The submitted evidence was approved by the court on May 6, 2013. One of the accused committed suicide during his trial, and the juvenile was sentenced to 3 years imprisonment. The remaining four adults faced the death penalty.

ANNIGERI-GENOCIDE

In 2017, rows upon rows of human skulls were found in Annigeri in Karnataka's Dharwad district during an expansion of the area's drainage system. As speculation about a possible genocide arose, forensic experts were roped in by the local authorities to make a decisive assessment of what had happened. After examining them in the lab and developing a statistical formula to understand the results, forensic odontological concluded the skulls belonged to both men and women. Eventually, the team deduced that the 600-plus skulls dated back to 1790. It also contributes to the detection of crime and bringing those responsible to justice.

FORENSIC ODONTOLOGY INTERNATIONAL

IDENTIFICATION OF ABRAHAM LINCOLN'S ASSASSIN

On April 14, 1865, John Wilkes Booth escaped capture after the assassination of President Lincoln. After 12 days on the run, he was shot and killed on April 26 by a Union soldier of the 16th New York Cavalry. However, there were still rumors that John Wilkes Booth had escaped arrest. To prove that he was dead, Wilke's body was exhumed and his family dentist, Dr. William Merill, identified Booth by his abnormal jaw and the gold restorations which he had made for the deceased a few days before the assassination.

IDENTIFICATION OF JOHN F. KENNEDY'S ASSASSIN

John F. Kennedy was assassinated on November 22, 1963 in Dallas, Texas. The assassin, Lee Harvey Oswald, was captured 2 days later and was subsequently fatally shot by Jack Ruby.

Fourteen years afterward, the English author Michael Eddowes, claimed that the body buried in Oswald's grave was that of a Russian spy. The assassination of John F. Kennedy and murder of Lee Harvey Oswald has caused many persistent rumors. To ascertain the truth, Lee Harvey Oswald's body was disinterred; his identity was confirmed by antemortem dental records on October 4, 1981.

THE FIRST BITE – LINDA PEACOCK MURDER CASE

Fifteen-year-old teenager, Linda Peacock had gone missing from her home in Biggar, Lanarkshire, Scotland on August 6, 1967. Her body was recovered the next day near the cemetery of St. Mary's Church. The deceased had two open wounds on her head and prominent teeth marks on her right breast. No incidence of rape was reported. Photographs were made of an odd bruise on her right breast and sent to Dr John Furness, lecturer in forensic dentistry, Liverpool. Linda had been strangled and beaten to death. The detectives began their investigation at a local, residential, approved local school for teenaged boys. Dental impressions were made for the residents and narrowed to five which may have caused the bites marks on the body. Suspicion lay on the 17-year-old teenager Gordon Hay. In court, Hay strongly rejected the suggestion that he had played any part in Linda's murder. The prosecutor responded by producing the casts of his occlusion. Hay's bite mark matched the postmortem photographs, and he was charged with the murder of Linda Peacock in February 1968. Mr. Muncie, the enquiry chief, said that this was the first time a murder conviction has relied totally on dental evidence.

IDENTIFICATION OF SADDAM'S SONS

Saddam Hussein's sons were killed by the US military on July 22, 2003 in Mosul, Baghdad. The fortified site of the confrontation was defended by a teenager and three adults; there was exchange of fire for 4-6 h. As the result of numerous missile attacks, the bodies of the deceased were badly burned but forensic evidence revealed their identities. Both of Saddam's sons, Uday and Qusay Hussein, were positively identified from their dental records.

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