



Review Paper

Accuracy of bite mark analysis in solving criminal cases and reliability of dental evidence as a form of identification

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Abstract

Bite mark analysis plays an important role in personal identification in forensic casework if bite marks are recorded in cases of violent crimes such as sexual offences, homicides and child abuse. Teeth, acting as tools leave recognizable marks depending on the tooth arrangement, malocclusion, habits, occupation, tooth fracture, and missing or extra teeth. Bitemark identification is based on the uniqueness of a dentition, that are been used to fit the bitemark to the suspect. Bite marks may be seen as a substitute to fingerprint and DNA identification for forensic examinations. The present review describes the classification, characteristics, mechanism of production, and appearance of bite mark injuries, collection of evidence and comparison techniques of the bite marks. Some forensic sciences, especially those relying on pattern matching, have been progressively thought to show deficiency in scientific foundation required to rationalize continuing admission as trial evidence. This scrutiny goes for bitemark identification as well, as a number of DNA exonerations have happened in the recent past for individuals who had been convicted based on erroneous bitemark identifications leading to intense scientific and legal scrutiny. The popularity and the decline since in demand for bitemark identification evidence has broader implications. It has highlighted the weak scientific culture of forensic science and the challenges faced by the courts and legislators in evaluating and responding to unreliable and unscientific evidence. Forensic odontology is a branch that connects dentistry and the legal profession. Dentists play an important role in various aspects of the identification of persons in various forensic circumstances. The dental record is a legal document possessed by the dentist consisting of documents related to the history of present illness, clinical examination, diagnosis, treatment, management, and the prognosis, it contains subjective and objective information about the patient. It is a well-known fact that the dental structures are the hardest and most protected structures in our body. The dental structure can battle decomposition and high-temperatures and they are the last ones to dis-integrate following demise. The foundation of dental identification is based on the fact that no two oral cavities can be a like, and each set of teeth is unique to the individual. Dental features such as tooth morphology, variations in size and shape, restorations, pathologies, missing tooth, wear patterns, crowding of the teeth, colour and position of the tooth, rotations and other irregular dental-anomalies gives each person a unique identification. When there are no ante-mortem dental records for comparison, the set of teeth may be useful for determination of sex, age, habits, race, ethnicity, occupations, and so on; that might give indication of involvement of the individual in a criminal act involving bite mark evidence.

Keywords: Bitemarks, class and individual characteristics, expert evidence, dental records, odontology, identification.

Introduction

Research Objectives: Understand the factors that are important in tooth/ personal identification. What is the latest technology used in forensic odontology and its purpose?. What is the reliability of bite mark analysis and how accurate are forensic odontologists' examination?. What are the challenges faced by bite-mark experts that is leading to the inaccurate findings?.

Methodology

While doing research on this topic, I realized that there are a lot of research papers published in established journals already, some of them relied on data-based research others on analysis-

there was enough information out there to meet my research objectives. That is why my research is based on secondary data and not primary data. There were two separate set of research I carried out; one was on bite mark analysis which was to match a person to the bite surface and then dental identification which is to find the identity of a person based on the set of teeth.

Limitation of Scope for Bitemark Analysis: For the purpose of this study the focus will be on bite marks that are inflicted by one human on to another human, when the manner of causation is criminal in nature that is categorized as offensive (upon victim by attacker) and defensive (upon attacker by victim) bitemarks.

Categories and Classification of Bitemarks: Bite Marks are classified into 7 types: ‘Hemorrhage’ (a small bleeding spot), ‘Abrasion’ (undamaging mark on skin), ‘Contusion’ (ruptured blood vessels, bruise), ‘Laceration’ (near puncture of skin), ‘Incision’ (neat punctured or torn skin), ‘Avulsion’ (removal of skin), and ‘Artefact’ (bitten off piece of body).

Now certain types of bite marks have been proven to be less effective as they lack enough class characteristics and do not make good evidentiary value and are so classified as Class I, II.

When a bite mark has both individual and class characteristics, these are referred to as Class III. These bite marks have great evidentiary value and are used mostly for comparison purposes. This type of bite is mostly found on the shoulder, upper arm, chest or buttocks. The pressure and deep penetration of tissue are held to record the lingual surface of anterior teeth.

When there is an avulsion or laceration of the tissues caused by the bite, it is classified as Class IV. In this class, class characteristics and individual characteristics are not present. This type of bite is commonly found where there is avulsion of an ear or finger.

Individual Characteristics of Bite Marks: Individual characteristics are deviations from the standard class characteristic(s). They could be a feature, an attribute or a pattern which denotes an individual variation rather than the probable findings in the tooth class characteristics. Dental characteristic is specific to an individual tooth and makes one tooth different from the other. Individual differences may be formed by various bodily or chemical injuries that had an effect on the teeth over the years, for e.g. attrition, abrasion, erosion, tooth decay, impaired dental hygiene, and restorations or replacement of the tooth, these itself produces distinct and unique characteristics within a tooth.

Analysis and Identification of Bite Marks: The precise identification of a living person using distinct attributes and features of the set of teeth as well as jaws that serves as a foundation of bite mark analysis. Bite mark identification is founded on the individuality of a dentition, which is essential to match a bite mark to a suspected person. Bitemarks having good evidential value could be utilized for comparisons with the accuser’s teeth set.

Forensic evidence that are used to build criminal prosecutions, certainly face a new kind of legal and scientific scrutiny than they have ever faced in the past. Some categories of forensic science experts’ testimonies have in the recent past come to be recognized as standing on weak foundations and making inflated claims that the justification for allowing them into evidence for the court has raised serious doubt. Some of those types of forensic testimony that are being considered for years without much legal concerns have indeed raised eyebrows in the recent past.

According to the Innocence Project in New York, there are numerous documented cases in the literature where people had been wrongfully convicted on the basis of bite mark evidence and sent to prisons only to be exonerated after decades after the DNA collected from the identical bitemarks proved that indeed the bitemarks did not belong to them. Bite marks if analysed properly not only can prove the participation of a particular person or persons in crime but also aid in exoneration of the innocent. The science of bite mark evidence is continuing to develop, and so is the need for those who are skilled, trained, qualified, and experienced in the identification with regard to the cases involving bite mark evidence.

Context Effects and Observer Bias: They discuss the need to limit the amount of contextual information available to the odontologist doing the ‘analysis’ to diminish bias. This is a good practice for comparison; however, just like forensic pathologists look at history, circumstances of the event and scene photographs in combination with their personal observation of the body for analysis, forensic odontologists need to do the same. They need to look at every possible connection with how the patterned mark was made or could have been made.

Deficiency in Bite Mark Analysis: One of the most well-known pronouncements on the deficient nature of bitemark analysis was in the National Academy of Sciences’ Committee in its 2009 report, it read that “in many of forensic science disciplines, forensic science professionals have failed to establish the validity of their approach and the accuracy of their conclusions... A lot of the forensic evidence which includes, for e.g. bitemarks identifications is introduced in criminal cases without telling scientific validation, determination of error rates, or reliability testing”.

The claim that forensic odontologists have been making is precisely that they can associate a bitemark to a unique set of teeth that only exist in one individual which could lead to having produced the bitemark indentation at the scene of the crime. However, the scientific ground for making this claim is yet to be proven.

Admissibility in United States: The Texas Commission on Forensic Science has asked for to halt the usage of bitemark testimony in criminal trials, so that the Commission for their viewing old cases which involved the usage of bitemark as evidence in court. As, crime scene bitemarks contain only a minute fraction of information obtainable from the full dentition of mass-disaster victims, furthermore the inadequate dental information obtained is not clear and dependably accurate.

In *People v. Marx*¹ decided by Californian court, it presented what three forensic dentists believed was a reasonable exception to the rule among forensic dentists’ that crime scene bitemarks could not be relied upon to produce precise source identifications.

In this case there was an individual victim who was found with an elliptical cut on the nose. At first, this cut was thought to be a result of human bite; the impressions of the wound were made and compared to a cast of the defendant's teeth. During the court trial, the dentists appeared to state that the visible portion of the unknown teeth that made the wound had been indistinctly a like the comparable teeth of the suspect².

The expert evidence was presented during the criminal case and the following conviction was challenged. Court of appeals twisted the ground of attack by rendering a method's novelty and referring to the tools employed to envisage the bitemark and the accused's dentition. Indeed, the most sensible reading from the case would be that the court understood, that the crime scene scenario presented indeed a very stable bitemark wound of a seemingly very rare set of teeth. This case set a precedent in subsequent decisions about acceptability of bitemark expert testimony. What had been an exception to the rule, became the rule, not only for courts but for forensic dentists as well.

The following year, Illinois considered the matter of permissibility of bitemark evidence. They relied partly on the case above in *People v. Milone*³, in this Illinois Court of Appeals case it was considered permissible as a logical extension of the accepted opinion that every person's dentition is unique. Court of Appeal founded it on its previous recognition of the identification of accident victims with help of the individuals' dental records. Court of Appeal found that the general acceptance standard had been met. Moreover, it held that questions about the scientific soundness of the prosecution's experts' claims were mostly build on the basis of expert testimony, not to its permissibility, and that these were questions for juries to consider and not for courts.

In the case, *Ege v. Yukins*⁴ in presiding on a habeas petition, the district court had found admission of bitemark expert opinion at the original trial to be so unreliable and grossly deceptive, in order to constitute an ultimate rejection of due process. The defendant had been convicted of murder for nearly a decade after the original incidence had happened and had been incarcerated for over a decade by the period the federal court arranged release.

During the running of the original case in court, expert witness-an odontologist stated that out of the 3.5 million people living in Detroit metropolitan region, the perpetrator happened to be the only one whose dentition could match the stated bitemark on the body of the victim⁵. The petitioner contended that this bitemark testimony was admitted improperly, on the ground that it was short of any scientific foundation and the arithmetical probability stated was inflated in order to influence the juries.

The error rates of forensic dentists possibly are the highest in any of the forensic identification field that is in practice. Bitemark testimony is introduced in the criminal cases without much scientific validation, determination of error rates, or

reliability testing. No scientific studies have concluded that bitemark comparisons may conclude in a positive match.

Admissibility in India: The admissibility of bite mark evidence in the Indian context can be traced to the developments in the international arena. The first case in 1954 which was the case of *Doyle v. State of Texas*⁶ involved the admission of evidence pertaining to bite mark identification. In this case, the evidence came to be admitted even though the experts involved in the case had no prior exposure to bite mark analysis. This case paved the way for admissibility of bite mark evidence for judiciary all over the world including India.

The landmark case for bite mark analysis that exists in India is the case of *Mukesh v. State (NCT of Delhi)* which dealt extensively with the same⁷. Prosecution placed reliance on the report prepared dealing with bite mark analysis. The said reports linked the accused with the crime. Reference was made to a book on "Medical Jurisprudence and Toxicology"⁸ and the same was also referred to in the High Court. The relevant part pertaining to bite mark analysis was extracted as follows-

"They are useful in identification because the alignment of teeth is peculiar to the individual. Bite marks may be found in materials left at the place of crime e.g., foodstuffs, such as cheese, bread, butter, fruit, or in humans involved in assaults, when either the victim or the accused may show the marks, usually on the hands, fingers, forearms, nose and ears⁹."

The case acknowledged the importance of bite mark analysis and has been regarded as playing an imperative role in the criminal justice system. It was also stated that in order for an analysis of the bite mark, there must be sufficient information dealing with the distinctive nature of the mark. Forensic odontology as an important science was also established. The court upheld the credibility of the bite mark analysis report in the case on the basis of the matching of the bite marks on the victim with the teeth of the concerned accused. Thus, it is evident based on this landmark case that the admissibility of bite mark analysis is a well-established principle in the Indian jurisprudence.

The Logic of Forensic Identification: Forensic identification, including bitemark identification, involves two essential stages. The first stage is to compare the crime scene markings to the possible sources of that mark or that the resemblances seem to be of the extent that the suspect should be added to the pool of possible contributors. In the scenario of crime scene markings, the faithfulness of the transfer from the original to the receiving surface, and the capability of the receiving surface to keep the impression unaffected, can be crucial to eventual probativeness of the comparison.

Difficulties in affirming a match: While comparing the visual images of the questioned and the known subject, if examiners are left to their own subjective judgement of how comparable

two images need to be in order to affirm them similar enough to be added to the pool, then inconsistencies will occur when diverse set of examiners look at the identical evidence. The less the criteria are defined, constructed, and held in common among examiners, the more inconsistent their work will be.

The term 'match' has multiple meanings in the forensic context, one meaning is with the observation. Differences will always exist in all forensic pattern matching. A key task the examiners must undertake is to try and decide which differences can securely be overlooked as unimportant and which resemblances are of consequence. The second meaning has to do with interpretation. The examiner's final goal is to attempt at deducing whether the questioned and the known subject have a common source.

Evaluation of an inclusion: If the decision taken by the examination process is inclusion of the suspected source, the next phase is to assess the meaning of that inclusion. Its probativeness depends on how many other members of the population could also have produced markings with similar appearance to the crime scene marks.

Bite mark Identification: The origin of bite mark: The human adult dentition consists of thirty-two teeth, each tooth having 5 anatomic surfaces. Making there in all hundred and sixty dental surfaces which contain recognizing features. However, in most bite mark cases, often only four to eight of them happen to be biting teeth which will be used to make comparison. Likewise, all 5 anatomic surfaces will not be engaging in the act of biting; only the edges of the front teeth come into action.

The substrate for bite mark pattern imprint: In the context of crime where bite marks are found, the skin is usually the substrate. However, the skin happens to be a poor substrate for recording the bite mark pattern of teeth. Skin is not very reliable in capturing and dependable in retaining the features of, say, a tooth being swapped by a crown, this is because skin is a viscoelastic material, its elastic property would mean that indentations left by teeth would rebound, leaving potentially no record of the 3-dimensional structure of the biting edges of teeth. As a result, there is little information left that may be used for comparison.

To further complicate the situation, live flesh would react to injuries, it would become inflamed, it will change its shape, and even swells as the healing process in the body starts. In case of demise, changes in the skin and flesh would occur as a result of decomposition, animal predation and insect attack. The pliability, elasticity, and responsiveness of the skin and flesh would generate major challenges for bite mark identification and is the reason for being so different from other types of pattern comparison forensic identification¹⁰.

Approaches to evaluation: When a forensic dentist takes on the comparison of a questioned bite mark with a suspect's dentition, there are many techniques that exist and are

recognized. The issue is that the several methods of bite mark analysis continue to thwart any efforts to standardize procedures. Although there are some published research-comparing techniques, that have found some to be significantly better than others at helping the visualization of bite mark-to-dentition similarities and differences, there is no rule or regulation that specifies criteria under which one method should be favored.

Every examiner goes on to form his or her own judgement about which features of the bite mark to compare and whether to declare the suspected bite mark and the suspect's dentition to be considered so alike, leaving the examiner with no option but to affirm an inclusion.

Insufficient data: Assume, an optimal case: sufficient information from source dentition is available and it is impressed upon a stable substrate on the body of the victim. The succeeding phase would be to evaluate what that decision can tell a fact finder about the likelihood that the suspected person's dentition did produce the bite mark. Unfortunately, forensic dentists do not have enough information to know the actual probabilities, because no population studies have been carried out to determine what features to consider, variation in teeth shapes, sizes, positions.

Uniqueness: Identification of a suspect by matching his or her dentition with a bite mark found on the victim's body relies on a theory that every person's dentition is unique. However, this impression/ assumption of uniqueness having progressively increased, it has come to be recognized as unproved and unsound, it also has stopped serving as a feasible solution to the problem of how to assess the definition of a 'high degree of similarity' between the bite mark and the accused's dentition.

Considering recent studies, the American Board of Forensic Odontology 'ABFO' has lately retracted back from the 'theory of uniqueness' and an associated notion of identification-to-the-exclusion-of-all-others. The ABFO suggest that any attempt to narrow identification to a single individual has to be limited to cases involving 'closed populations'— a small number of known persons who could have inflicted the questioned bite.

Question of Reliability: The earliest of these tests for bite mark analysis was conducted in the middle of 1970's by a forensic dentist named David Whittaker. In his experiment, the bites were made on pigskin. It should be noted that pigskin happens to be a more stable material for recording and retaining a bite mark in comparison with living human skin, therefore the experiments using pigskin as the substrate would in all probability overstate the accuracy obtained by bite mark examiners. "Incorrect identifications of the bites made in the Whittaker study ranged from twenty four percent under ideal conditions to ninety one percent when identifications were made from photographs taken twenty-four hours after the bites were made"¹¹.

Forensic Dental Identification - Introduction: Forensic deontology is a branch of dentistry dealing with proper management and examination of dental evidence as well as proper evaluation and presentation of dental findings for the prosecution in a criminal trial.

A dental record is a legal document that contains all subjective and objective information about the patient, and it is available with the patient's dentist. The dental record contains the patient's dental complaints, the history of illness and associated systemic illness, clinical examination, dental charts, diagnosis, investigations, treatment done, and notes on consequent follow-ups. Dental charts have information about the specific particulars of all the teeth in the mouth, e.g. the teeth present or absent, restorations, pathologies such as caries, furcation involvement and periodontal health. The dental record also constitutes radiographs, including skull and panoramic radiographs, computed tomography (CT), study and treatment casts, impressions, laboratory investigation reports, clinical photographs. Dental records should be kept for at least 7-10 years.

Duty of Dental Professionals: Dental professionals are compelled by law to produce and maintain adequate patient records. With the increasing awareness among the general public of legal issues surrounding healthcare, a thorough knowledge of dental record issues is essential for any practitioner as part of good quality patient care system. The dental record provides for the continuity of care for the patient and is critical in the event of a malpractice insurance claim.

Comprehensive and accurate records are a vital part of dental practice. Dental records can also be used for forensic purposes and have an important role in teaching and research, as well as in legal matters. Dentists are regularly insisted upon to recognize the remains of individuals who cannot be identified visually.

Maintenance of dental record is legally obligatory in the American, European and Oceanic countries, but in developing countries like India, the scenario is totally different. There is unawareness regarding the same among the dentists, with most of them maintaining a substandard record. Also, identification using dental records is less time-consuming and cheaper than fingerprint- or DNA-based identifications.

In addition to this, identification by comparing ante mortem and postmortem records can be a cheaper method as compared to other methods like DNA analysis. Thus, it can be a very useful tool for victim identification in developing country like India.

Retention and storage: There is usually a different requirement for the retention of records of children. These records must be kept for a certain period after the child becomes a major. Dental records may be preserved on microfilm or microfiche, stored with a records storage service or scanned for electronic storage.

The great benefit of storing records from these means is that they take up less space than paper records. Diagnostic and / or treatment casts may be photographed and stored in some cases. When conventional radiographs are digitized, care should be taken that the radiograph is not scanned in the reverse order.

Forensic Uses of Patient Records: Forensic dentistry is the overlap of the dental and legal professions. The most common element of forensic dentistry that a general practitioner is likely to encounter is to supply ante mortem (before death) records to aid in personal identification. Forensic dentists are frequently called upon to identify the remains of individuals who cannot be identified visually¹². This encompasses a large number of situations such as burnt, grossly decomposed or mutilated remains. The identification of the deceased individuals is an essential element in the process of death certification and is a crucial component in the investigation of homicides or other suspicious deaths. Until identification can be confirmed the death certificate cannot be made to a name. Identification of the dead is an essential component of the grieving process and to bring justice to the dead.

Importance of Dental Records: A forensic investigation team may involve law enforcement officials, forensic pathologists, forensic odontologists, forensic anthropologists, serologists, and other specialists subject to the scenario in question. Dental records are important, and they play a crucial role in the personal identification of persons who are beyond visual recognition as a consequence of barbaric crimes, workplace and motor vehicle accidents, aviation and navy disasters, wars, fire, flood, manmade / natural mass disasters and casualties, and in circumstances where the body is in an unrecognizable, decomposed state.

Because teeth are hard, stable, and unique structures, they are not easily decomposed as other body structures even after death. Teeth survive even disastrous environmental conditions, which makes these a trusted source in the identification process. Variations in shape, color, position, age, wear patterns, caries, periodontitis, dental restorations, and prosthetic work render the dentition of an individual like that of fingerprints. The Disaster Victim Identification (DVI) Guide¹³ states that if a positive match is found using dental identification, it can be trusted as a stand-alone identifier.

Identifying Unknown Persons through Dental Records: Ante-Mortem records, such as case history sheet containing dental chart, written notes, study casts, full mouth impressions, dental radiographs, and high-quality photographs, can be used in the positive identification of the deceased when compared with Postmortem findings. Ante-Mortem dental records are particularly helpful in mass disasters. People who often visit dentists and get restorative and prosthetic treatments are more likely to be identified by this method.

The dentist then records dental characteristics of the teeth and the surrounding structures in the Postmortem record. Postmortem radiographs should be obtained at similar angles as those of the available Ante-mortem radiographs. The characteristics examined are erupted teeth, missing teeth, jammed teeth, tooth malposition, contour of dental-arch, occlusion, dental restorations and its contours, root-canal treatment, super-numeracy teeth, dental-anomalies, deciduous teeth, crown-root and pulp chamber root-canal morphologies and pathologies, periodontal tissues morphologies and pathologies; and having foreign substances such as wires, implants, plates, etc. There may be inconsistencies when both radiographs are compared. Understandable inconsistencies relate to the time elapsed between the Ante-Mortem and the Postmortem records.

Tooth Characteristics and Analysis: Tooth characteristics, like cusps of Carabelli, shovel-shaped incisors, enamel pearls, and multicusped premolars, can also aid in determining the ancestry. Furthermore, a DNA analysis can aid in revealing the sex of the victim. The individual's chronological age may be up for determination with the use of dental structures. The age of a young child, counting fetuses as well as neonates, could be calculated by analyzing the tooth development as well as succeeding comparison using developmental charts. In general, age estimation is based on the use of radiographs showing root and crown formations, closure of the apical foramen, calcification changes, and the eruption pattern. Assessment of pulpal volume can also be a guide in the age estimation of adults. The quality, quantity, presence or absence of dental treatment might be an indication of the socioeconomic status.

Availability of DNA- reliability of results

DNA extraction from saliva and oral mucosal cells are helpful. The comparison of DNA maintained in and obtained from the teeth of an unknown individual can be compared with the Ante-Mortem sample such as stored blood, hairbrush, clothing, biopsy, etc., or compared to a parent or sibling. Dental pulp which is enclosed distinctively by the hard as well as resistant enamel, furthermore dentin also happens to be a precious source for obtaining DNA.

The tooth print that was an invention of Dr. David Tesni, is an arch-shaped thermoplastic dental impression wafer, which records the individual's dental characteristics, teeth position, and occlusion. Another benefit exists, happens to be the DNA found in the saliva which is collected simultaneously through this method.

Race Determination, Occupation, Habits and Cultural Practices: Certain morphological features of the teeth are known to show population variation which can be used to distinguish the ethnicity or ancestry. However, the determination of race from morphological features of the teeth remains debatable. These features as well as occupational signs

provide experts with an impression about the habits and cultural practices of their ethnicity group. For example, the dental characteristics of shoveling or scooping of the upper incisor (is most common in Asiatic Mongoloids and Amerindians)¹⁴.

From observation, it is known that teeth provide important evidence and indications of one's habits and occupations. For example, dressmakers or tailors keep needles between their teeth; cobblers, carpenters and electricians hold nails between their incisors; pen as well as pencil biting, opening tops of bottles using teeth. Then certain habits like cigarette smoking and tobacco chewing tend to leave their mark on the teeth. Extreme tooth wear-down is observed in the mining industry as it is associated with great exposure to olivine dust in the work environment.

Comparison of Dental Records and Anomalies in the Teeth:

The forensic dental comparison involves the comparison of certain important features of the teeth, also known as individualizing features such as dental fillings, extractions, surface structures, root configuration, aligned teeth, crowding of particular tooth, diastema, dental spacing, twisted/ tilted tooth, tooth rotations and transpositions, missing tooth, extra tooth and supernumerary cusps.

"Dental anomalies and variations include disturbances in tooth size; disturbances in the number of teeth; disturbances in eruption of teeth; disturbances in shape of the tooth, and variations in the number of roots of the teeth; disturbances in eruption of the teeth¹⁵". These anomalies and variations aid by providing comparison of ante-mortem as well as post-mortem match and confirm the identity of an individual.

Conclusion

Bite mark analysis is an important part of forensic dentistry which is vital in solving crimes and in identification of persons involved in criminal activities. The human bite mark is a ready source of information that is available to be identified even for the deceased. The science of bite mark identification is however quite new but it serves great potential value¹⁶. Though relying on it too heavily can be dangerous considering how some of the cases relying on bite mark evidence have been overruled.

Using unique characteristics and morphological variations of the teeth for the purposes of personal identification is well-recognized in forensic examinations and in the criminal trial system. The comparison of dental records plays an important role in the identification of the deceased. Even if the ante-mortem dental records are not available for comparison, the forensic odontologist could provide signs with regards to the age, race and sex of the victim from the dental evidence recovered from the crime scene¹⁷. The production, retention, and release of clear and accurate patient records are an essential part of the dentist's professional responsibility.

As forensic odontologists play a major role through Disaster Victim Identification and other medico-legal cases, there is a pressing requirement to promote this specialty. It's necessary to sensitize the science graduates specializing in dentistry towards this field as well as directing those dentists who have associated casework knowledge and involvement in order to encourage them to be a part of investigation and identification teams.

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