FORENSIC ODONTOLOGY IN CRIMINAL INVESTIGATIONS: SCIENTIFIC RELIABILITY, EVIDENTIARY VALUE AND LEGAL CHALLENGES IN INDIA

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ABSTRACT

Forensic odontology, the application of dental science to forensic investigations, plays an important role in human identification, age estimation, examination of bite marks, and identification of deceased persons in criminal investigations and mass disasters. Dental structures and records may provide valuable evidence when conventional identification methods are unavailable or inadequate. However, the scientific reliability of different odontological techniques, particularly bite mark analysis, has raised concerns about subjectivity, methodological limitations, and the possibility of erroneous conclusions. This research examines the evidentiary value of forensic odontology within the Indian criminal justice system, with particular reference to the admissibility and evaluation of expert opinions under Section 39 of the Bharatiya Sakshya Adhiniyam, 2023. It further analyzes the legal and procedural challenges associated with the collection, preservation and interpretation of dental evidence, including the competence of forensic experts, maintaining the chain of possession, lack of uniform operational standards and protection of the rights of the accused and victims. The study adopts a doctrinal and analytical approach by examining relevant statutory provisions, judicial decisions, scientific literature and comparative legal developments. It distinguishes the established utility of dental records in identification from the contested reliability of individual techniques, especially the attribution of bite marks to a specific person. The research argues that the evidentiary weight of forensic odontology should depend on the scientific validity of the method employed, the qualifications of the expert, the quality of the available evidence and independent corroboration, rather than the mere assertion of scientific expertise. It recommends standardised protocols,

Indian Journal of Contemporary Legal and Social Issues

specialised training, transparent expert reporting and rigorous judicial scrutiny to promote the fair and responsible use of forensic dental evidence.

Keywords: Forensic Odontology – Dental Identification –Forensic Age Estimation – Bite Mark Analysis –Expert Evidence –Scientific Reliability– Criminal Investigation.

INTRODUCTION

Forensic odontology is the application of dental science to legal investigations. It can help identify unknown deceased persons by comparing their dental records with records made during their lifetime. It may also assist in estimating age and examining injuries involving teeth and the mouth. However, not all methods used in forensic odontology have the same level of scientific reliability. One important area of concern is bite mark analysis, in which marks found on a person's body are compared with the teeth of a suspected individual. Although this method has been used in criminal investigations, its scientific reliability has been questioned. In 2023, the United States National Institute of Standards and Technology (NIST) published a scientific foundation review examining the evidence supporting bite mark analysis. This provides an important scientific source for evaluating claims that bite marks can reliably identify a particular person.

The legal relevance of forensic odontology must also be examined under Section 39 of the Bharatiya Sakshya Adhiniyam, 2023, which deals with expert opinions on scientific and other specialised matters. The provision allows relevant expert opinions to be considered as evidence, but it does not make every scientific technique automatically reliable or every expert conclusion conclusive. This research examines the scientific reliability of forensic odontology, its evidentiary value in Indian criminal proceedings, and the legal challenges associated with expert opinions. It aims to identify safeguards that can help courts distinguish reliable dental evidence from conclusions that may exceed what the available scientific evidence can establish.

Indian Journal of Contemporary Legal and Social Issues

MEANING AND SCOPE OF FORENSIC ODONTOLOGY

Forensic odontology is a branch of forensic science that applies dental knowledge to legal investigations. It involves examining teeth, dental records and oral structures to assist in identifying individuals or answering questions relevant to legal proceedings. Dental evidence can be particularly useful when a person's identity cannot be established through ordinary methods.

The usefulness of forensic odontology depends on the type of examination conducted and the quality of the available evidence.

Identification through dental records

Dental identification involves comparing dental records made during a person's lifetime (ante-mortem records) with dental findings obtained from an unidentified body or dental remains after death (post-mortem findings). Ante-mortem records may include dental charts, radiographs, the arrangement of teeth, missing teeth, fillings, crowns, bridges, root canal treatments, and other documented dental characteristics. During a post-mortem examination, the examiner records the available dental features and compares them with the ante-mortem records to determine whether the findings are consistent.

This method is particularly useful when a body is decomposed or damaged, making visual identification difficult. However, the reliability of dental identification depends on the availability, accuracy, and quality of the dental records. Incomplete, outdated, or insufficiently detailed records may limit the comparison. Any discrepancies between the ante-mortem records and post-mortem findings must be carefully examined before reaching a conclusion. Dental identification should not be based merely on the general assertion that every person's teeth are unique; rather, it must rely on the actual correspondence between the available records and the post-mortem findings, supported by proper documentation.

Age estimation

Dental age estimation involves examining the development and condition of teeth to estimate a person's age. In children and adolescents, a forensic odontologist may examine tooth development, root formation, and the eruption of teeth. In adults, different methods may be required because the developmental stages commonly used for younger individuals may no longer be available.

Dental age estimation can be useful in forensic investigations and criminal proceedings, particularly when a person's age affects the applicable legal framework. However, an age estimate does not necessarily establish a person's exact chronological age, as biological development can vary between individuals. The reliability of the estimate depends on the method used, the person's developmental stage, the population data available, and the age range being examined. Therefore, a forensic report should clearly explain the method used, the basis of the

Indian Journal of Contemporary Legal and Social Issues

estimate, and its limitations and uncertainty. A biological estimate should not be presented as an exact age without appropriate qualification.

Examination of dental and oral injuries

Forensic odontologists examine injuries involving the teeth, jaws, and oral tissues to describe their nature, extent, and distribution. Their findings may assist in assessing the possible cause of an injury and contribute to investigations involving suspected physical abuse or other incidents in which oral injuries are relevant. Dental examination can also support the medical and forensic assessment and reconstruction of an event.

However, identifying the nature of an injury is different from identifying the person who caused it. An injury may be consistent with a particular mechanism or explanation without conclusively establishing how it occurred or who was responsible. Therefore, a forensic odontologist must clearly distinguish the observed physical findings from any further conclusions drawn from them. An injury report may support an investigation, but it does not necessarily establish the identity of an individual offender.

Bite mark analysis

Bite mark analysis involves examining an injury or mark suspected to have been caused by human teeth and comparing its features with the dentition of a suspected person. Historically, forensic practitioners have used photographs, impressions, dental casts, and patterns of tooth arrangement to assess similarities and differences between a bite mark and an individual's teeth during criminal investigations.

However, identifying a mark as a possible bite mark is different from identifying the person who caused it. Human skin is not a rigid recording surface; its appearance can be affected by elasticity, movement, swelling, healing, and other conditions. Consequently, a mark on the skin may not accurately preserve the original arrangement of the teeth, making it difficult to establish that a particular individual caused the injury based solely on its appearance.

The National Institute of Standards and Technology (NIST), in its 2023 report, NIST Scientific Foundation Review, examined the scientific foundations of this technique and raised substantial concerns about the scientific support for bite mark analysis, particularly conclusions attributing a mark to a specific individual. Therefore, bite mark attribution should be evaluated cautiously and should not be treated as scientifically equivalent to dental identification based on the comparison

Indian Journal of Contemporary Legal and Social Issues

of ante-mortem dental records with post-mortem findings. These methods have different scientific foundations and limitations, which must be considered when evaluating forensic evidence.

SCIENTIFIC RELIABILITY OF FORENSIC ODONTOLOGY

Scientific reliability refers to the extent to which a method can produce dependable results when it is properly used. In forensic investigations, this is important because an expert's conclusion may influence the investigation and the outcome of a criminal trial. The reliability of forensic odontology must be examined according to the particular technique used. Dental identification, dental age estimation and bite mark analysis involve different scientific processes and should not automatically be treated as equally reliable.

A significant concern arises when an expert expresses a conclusion more strongly than the underlying scientific evidence permits. In its 2023 report, NIST Scientific Foundation Review, the National Institute of Standards and Technology examined the scientific foundations of bite mark analysis, particularly the limitations affecting the attribution of a bite mark to a specific individual. This highlights the need to distinguish scientifically supported findings from conclusions that remain uncertain.

In criminal proceedings, courts should examine the method applied, the reasoning supporting the expert's opinion and the limitations disclosed in the report. Forensic findings should be considered alongside the other evidence rather than automatically treated as proof of guilt. The objective is to ensure that scientific evidence assists judicial decision-making without giving uncertain conclusions greater evidentiary weight than they deserve.

LEGAL FRAMEWORK GOVERNING FORENSIC ODONTOLOGY IN INDIA

In India, the use of forensic odontology in criminal cases is governed by the law of evidence, which explains how expert opinions can be presented and evaluated in court. Forensic odontologists may help courts understand dental evidence relating to a person's identity, age or other matters requiring specialised knowledge. However, the value of their opinions depends on the evidence supporting them and the court's assessment.

Section 39 of the Bharatiya Sakshya Adhiniyam, 2023 (BSA), deals with expert opinions. It allows courts to consider the opinions of people who have special knowledge or skills in a particular field. Therefore, a qualified forensic odontologist can explain dental findings and

provide an opinion on matters within their expertise. However, this provision does not mean that every forensic technique is scientifically reliable or that an expert's opinion must automatically be accepted as correct.

Section 40 of the BSA deals with facts that support or contradict an expert's opinion. This means that courts must consider other relevant evidence when deciding how much importance to give an expert's conclusion. For example, if the findings in a forensic dental report conflict with other evidence, the court must examine those differences before reaching a decision.

Section 45 of the BSA concerns the reasons and supporting material behind an expert's opinion. A forensic report should explain how the expert reached the conclusion and what evidence supports it. The expert should also disclose any important limitations. This helps the court understand the basis of the opinion instead of relying only on the final conclusion.

In State of Himachal Pradesh v. Jai Lal, (1999) 7 SCC 280, the Supreme Court explained that expert opinions assist the court but do not replace its own judgment. The court must examine the reasons and supporting material provided by the expert before deciding whether to accept the opinion. Although this case concerned Section 45 of the Indian Evidence Act, 1872, its general principles remain useful when understanding how courts evaluate expert evidence.

Under the former Indian Evidence Act, 1872, Section 45 dealt with expert opinions, while Section 51 dealt with the grounds supporting those opinions. Under the BSA, these matters are addressed by Sections 39 and 45, respectively. Therefore, when discussing earlier judgments, it is important to identify the law that applied to the case and not suggest that a judgment under the former Act directly interpreted the BSA.

Thus, Indian evidence law allows forensic odontologists to assist courts with specialised dental questions while leaving the ultimate evaluation of the evidence to the judiciary. The relevance of an expert's opinion does not, by itself, establish the scientific validity of the method used or prove the conclusion beyond dispute. Its evidentiary value must be assessed by examining the supporting material, the reasoning provided and its consistency with the other evidence in the case.

Indian Journal of Contemporary Legal and Social Issues

JUDICIAL DECISIONS RELEVANT TO FORENSIC ODONTOLOGY

Mukesh v. State (NCT of Delhi), (2017) 6 SCC 1

In Mukesh v. State (NCT of Delhi), the Supreme Court discussed bite mark evidence presented by the prosecution in the 2012 Delhi gang rape and murder case. The judgment records that photographs of bite marks found on the victim were compared with dental models of the accused persons. The report of the forensic odontologist attributed certain bite marks to the accused persons, expressing different degrees of certainty in relation to the comparisons. This case provides a direct example of forensic odontology being used as evidence in an Indian criminal prosecution. However, the consideration of bite mark evidence in a particular case should not be interpreted as establishing that the technique can reliably identify an individual in every case. Its evidentiary value must be assessed with reference to the method used, the material examined and the scientific limitations of the conclusions.

State of Himachal Pradesh v. Jai Lal, (1999) 7 SCC 280

In State of Himachal Pradesh v. Jai Lal, the Supreme Court explained the principles governing expert evidence under Section 45 of the Indian Evidence Act, 1872. The case concerned the assessment of apple-orchard productivity rather than forensic odontology. The Court emphasised that an expert must possess specialised knowledge and that the credibility of an expert opinion depends on the reasons and supporting data and materials provided. An expert's opinion does not automatically establish a fact; the court must evaluate its basis and reliability. These principles are relevant when assessing forensic dental opinions because the court should consider the expert's qualifications, examination methods and reasoning before determining the weight to be given to the evidence.

Indian Journal of Contemporary Legal and Social Issues

Ramesh Chandra Agrawal v. Regency Hospital Ltd., (2009) 9 SCC 709

In Ramesh Chandra Agrawal v. Regency Hospital Ltd., the Supreme Court discussed the role of expert evidence in a medical negligence dispute. The Court explained that expert opinion can assist the court when a matter requires specialised scientific or medical knowledge. It also emphasised the importance of the expert's qualifications and the reliability of the principles and material supporting the opinion. The expert's role is to assist the court, while the ultimate assessment remains with the court. Although this case did not concern forensic odontology, these principles are relevant when evaluating forensic dental evidence. A court should examine the

basis of an odontologist's opinion and assess it alongside the other evidence rather than accepting the conclusion solely because it comes from an expert.

EVIDENTIARY VALUE OF FORENSIC ODONTOLOGY IN CRIMINAL INVESTIGATIONS

The evidentiary value of forensic odontology depends on the purpose for which dental evidence is used, the scientific validity of the method employed and the quality of the material examined. Dental evidence may assist in identifying deceased persons, estimating age, examining injuries involving teeth and oral structures, and investigating bite marks. However, these applications do not carry the same level of scientific support. For example, comparing ante-mortem dental records with post-mortem findings is an established method of human identification, whereas identifying a particular person from a bite mark on skin presents substantial scientific difficulties. In India, expert opinion is relevant under Section 39 of the Bharatiya Sakshya Adhiniyam, 2023, which recognises opinions given by persons specially skilled in scientific and other specialised fields. Section 40 addresses facts that support or conflict with expert opinions. These provisions allow courts to consider relevant expert evidence, but they do not mean that every forensic technique is automatically reliable or that an expert's conclusion must be accepted without scrutiny. The court must assess the evidence in the context of the particular case.

Dental Identification of Deceased Persons

One of the important applications of forensic odontology is the identification of deceased persons through the comparison of dental records made during life with dental findings recorded after death. This method is particularly useful when a body has undergone severe decomposition, burning, fragmentation or other damage that makes visual recognition difficult. Teeth and certain dental restorations may survive conditions that damage other parts of the body, allowing dental characteristics to be examined even when ordinary identification methods are less useful. INTERPOL recognises dental examination as one of the principal methods used in disaster victim identification, alongside fingerprint examination and DNA profiling. Ante-mortem records may include dental charts, radiographs, photographs, treatment records, crowns, bridges and information about missing or restored teeth. Post-mortem examination involves documenting the available teeth and oral structures and recording features such as tooth position, restorations, missing teeth and other observable characteristics. The forensic odontologist then compares the

Indian Journal of Contemporary Legal and Social Issues

two sets of information to determine whether the findings are consistent with the proposed identity. Radiographs can be particularly valuable because they may reveal features not clearly recorded in a written dental chart. Research on dental identification also highlights the importance of obtaining good-quality ante-mortem records and having the comparison performed by appropriately trained professionals.

The evidentiary strength of dental identification depends on the quality, completeness and consistency of the records. Several corresponding features may support an identification, but discrepancies must be examined rather than ignored. Some differences may be explained by dental treatment performed after the original records were created, changes in the condition of the teeth or incomplete documentation. Other discrepancies may raise genuine doubts about the proposed identity. The expert should document the comparisons, explain significant similarities and differences, and state any limitations affecting the conclusion. Dental identification is therefore valuable when supported by adequate records and a systematic comparison. Nevertheless, the result should be reported according to the strength of the available findings, rather than assuming that every dental comparison necessarily establishes identity. Where necessary, the findings may be considered alongside fingerprints, DNA evidence and other relevant identification information.

Forensic Dental Age Estimation

Forensic odontology can assist in estimating a person's age by examining dental development and other age-related characteristics of the teeth. This may be relevant when the age of a person is unknown or disputed during a criminal investigation or legal proceeding. Dental examination may also help investigators narrow the possible age range of unidentified human remains. Different methods are used depending on the person's developmental stage, the teeth available for examination and whether radiographic images or direct examination can be used. Dental age estimation commonly examines the stages of tooth development, including the formation of the crown and roots and the progress of tooth eruption. In appropriate cases, the expert may assess dental radiographs and compare the observed development with a recognised estimation method. Methods such as Demirjian's method and other published approaches have been studied for different populations. However, the suitability and accuracy of a method may vary according to the age group, the population in which it is applied and the quality of the available material.

Indian Journal of Contemporary Legal and Social Issues

Age estimation must also be distinguished from the determination of exact chronological age. Dental development provides an estimate of biological maturity; it does not ordinarily reveal a person's precise date of birth. An expert should identify the method used, explain the findings and limitations, and report the estimate in an appropriate form, including an age range or uncertainty where justified by the method. Where age has legal consequences, the court or competent authority must consider the report together with other relevant evidence and the legal standards applicable to the particular proceeding. A dental estimate should not automatically be treated as conclusive proof that a person has reached a legally significant age.

Scientific Reliability and Limitations of Bite Mark Evidence

Bite mark evidence has historically been used in criminal investigations where an injury appears consistent with a human bite. In such cases, an examiner may document the injury, photograph the affected area and examine its characteristics. Investigators may also compare the recorded mark with information about a suspected person's dentition. The purpose may be to assess whether the observed features are consistent or inconsistent with a proposed explanation. However, an apparent resemblance between a bite mark and a person's teeth does not, by itself, establish that the person caused the injury.

A central scientific concern is whether the characteristics of an individual's teeth are transferred to skin in a sufficiently stable and distinctive way to permit reliable identification. Skin is a deformable surface, and the appearance of a mark can be affected by factors such as the location and condition of the skin, movement, pressure and changes in the injury over time. Consequently, the visible mark may not accurately reproduce the shape or arrangement of the teeth that allegedly caused it. Interpretation may also vary between examiners, creating further difficulties when the evidence is used to attribute a mark to a specific individual.

Indian Journal of Contemporary Legal and Social Issues

The Indian Supreme Court discussed bite mark evidence in Mukesh v. State (NCT of Delhi), (2017) 6 SCC 1. The judgment records the presentation of bite mark comparisons during the prosecution of the 2012 Delhi gang rape and murder case. This provides a direct example of bite mark evidence being presented in an Indian criminal prosecution. However, the use or consideration of such evidence in a particular case should not be understood as establishing the general scientific validity of bite mark analysis in every case. Judicial consideration of evidence and scientific validation of the method are distinct questions.

Accordingly, bite mark evidence should be approached with particular caution. An expert should clearly distinguish between describing the physical characteristics of an injury and claiming that it identifies a particular person. The expert's methodology, the condition of the mark, the quality of the documentation and the scientific limitations of the comparison should be disclosed. A conclusion that a person cannot be excluded as a possible source should not be presented as proof that the person caused the mark. The evidentiary weight of such material must be determined in light of its limitations and the other evidence available in the case.

Corroboration of Dental Evidence and Its Legal Evaluation

Forensic odontological findings should be evaluated alongside the other relevant evidence in a criminal investigation or trial. Their significance depends on the specific question being investigated, the method used, the quality of the material examined and the reasons supporting the expert's conclusion. Dental evidence may assist in establishing a person's identity, narrowing an age range or documenting an injury. However, its significance in one context should not automatically be transferred to another. A reliable comparison of dental records for identification, for example, does not establish that bite mark analysis can reliably identify an offender from a skin injury.

The value of corroboration depends on whether the other evidence independently supports the relevant conclusion. Dental findings may be considered with DNA profiling, fingerprints, medical evidence, witness testimony, CCTV footage or other properly obtained evidence, where those materials are relevant to the case. For example, dental records may support the identification of a deceased person, while separate evidence may be required to establish how that person died or whether a particular accused committed the offence. Identifying a deceased person and establishing an accused person's criminal responsibility are different evidentiary questions.

Indian Journal of Contemporary Legal and Social Issues

The existence of several pieces of evidence does not automatically make an unreliable scientific method reliable. If a forensic conclusion is based on a method that lacks adequate scientific support, other evidence should be assessed on its own merits rather than used to give that conclusion an appearance of greater certainty. Equally, a properly limited dental finding may provide useful supporting information without independently establishing every fact in dispute. Experts should therefore state what their findings support, what they cannot establish and what uncertainties remain.

The legal framework governing expert opinion is relevant to this assessment. Section 39 of the Bharatiya Sakshya Adhiniyam, 2023, recognises expert opinions as relevant where specialised knowledge is required, while Section 40 addresses facts that support or conflict with those opinions. These provisions provide a basis for considering expert evidence, but the weight assigned to a particular opinion depends on its foundation and relevance to the issues before the court. The expert's conclusion does not replace the court's responsibility to evaluate the complete evidence. Ultimately, the evidentiary value of forensic odontology must be determined according to the particular application and the scientific strength of the method used. Dental-record comparison may provide important identification evidence when adequate records are available; dental age estimation can assist in assessing age but involves uncertainty; and bite mark attribution requires particular caution because of the scientific limitations identified in the literature. A balanced assessment requires transparency about the method, careful interpretation of the findings and consideration of the evidence as a whole.

LEGAL AND PROCEDURAL CHALLENGES IN INDIA

Scientific Validation of Techniques

One challenge is ensuring that the technique used has an adequate scientific foundation for the conclusion being offered. Section 39 of the BSA makes relevant expert opinions on scientific questions, but it does not itself validate each forensic method. Courts and forensic institutions should distinguish between a technique that assists in identification and a technique whose ability to identify a particular individual remains scientifically disputed.

Qualifications and Training of Experts

Forensic odontology requires appropriate expertise. A report should make clear the expert's relevant qualifications and experience and explain whether the expert is competent to perform the particular examination. Specialised training is important because the techniques used for dental identification, age estimation and bite mark analysis are not interchangeable.

Collection and Preservation of Evidence

Dental records, photographs, impressions and other relevant materials must be properly documented and preserved. Records should enable investigators and courts to understand what was collected, who handled it and what material was examined. A break in the chain of custody may raise questions about the integrity or identity of the material. However, maintaining the

chain of custody does not by itself prove that the scientific method used was valid. Both issues must be considered separately.

Incomplete Reports and Limited Disclosure

An expert report that merely states a conclusion may make meaningful judicial scrutiny difficult. The report should explain the material examined, the method employed, the observations made and the reasoning supporting the conclusion. Relevant limitations and inconsistencies should be disclosed. This helps the court and the parties assess whether the conclusion is justified.

Risk of Overstating Scientific Certainty

Forensic conclusions can appear persuasive because they are expressed in scientific language. However, the appearance of scientific precision does not guarantee that the conclusion is accurate.

The expert must distinguish between what was directly observed and what was inferred. This is especially important when the method does not reliably support individual attribution.

Fair Trial and the Rights of the Accused

Article 21 of the Constitution of India protects the right to life and personal liberty and includes the right to a fair trial. Accordingly, an accused person must have a reasonable opportunity to challenge the qualifications of a forensic expert, the scientific method used and the conclusions drawn from the evidence. The presumption of innocence requires that an accused person be treated as innocent until guilt is established through the legal process. The prosecution generally bears the burden of proving guilt beyond reasonable doubt. Therefore, forensic odontological evidence should not be treated as conclusive merely because it is presented by an expert. In State of Himachal Pradesh v. Jai Lal, (1999) 7 SCC 280, the Supreme Court emphasised the importance of the reasons and materials supporting an expert's opinion. A fair assessment protects the accused from unreliable scientific conclusions while allowing courts to consider genuinely useful forensic evidence. The court must evaluate such evidence objectively alongside the other evidence in the case.

Indian Journal of Contemporary Legal and Social Issues

CONCLUSION

Forensic odontology plays an important role in criminal investigations, particularly in identifying unknown individuals through dental records and examining dental evidence. It can assist

investigators and courts when supported by reliable scientific methods, properly maintained records, and competent expert opinions. Under the Bharatiya Sakshya Adhiniyam, 2023, expert opinions may be relevant in judicial proceedings, but their evidentiary value depends on the reliability of the methods used and the circumstances of each case.

However, forensic odontology also faces challenges, including incomplete dental records, the possibility of human error, differences in expert opinions, and concerns about the scientific reliability of certain techniques, particularly bite-mark analysis. Therefore, dental evidence should not automatically be treated as conclusive proof of guilt. Courts must assess it alongside other evidence and provide the accused with a fair opportunity to challenge the expert's findings, in accordance with Article 21 of the Constitution of India and the principle of presumption of innocence.

In conclusion, the effective use of forensic odontology in India requires improved scientific standards, specialised training, proper documentation, and careful judicial scrutiny. Its purpose should be to assist the administration of justice through reliable scientific evidence while protecting individual rights and ensuring a fair trial.

REFERENCE

Case laws

1. Mukesh v. State (NCT of Delhi), (2017) 6 SCC 1 (India).
2. State of Himachal Pradesh v. Jai Lal, (1999) 7 SCC 280 (India).
3. Ramesh Chandra Agrawal v. Regency Hospital Ltd., (2009) 9 SCC 709 (India).

Constitutional and statutory references

1. .INDIA CONST. art. 21.
2. Bharatiya Sakshya Adhiniyam, No. 47 of 2023, § 39, INDIA CODE (2023).
3. Bharatiya Sakshya Adhiniyam, No. 47 of 2023, § 40, INDIA CODE (2023).

Scientific and institutional sources

1. Nat'l Inst. Of Standards & Tech., Bitemark Analysis: A NIST Scientific Foundation Review, NISTIR 8352 (2023), https://doi.org/10.6028/NIST.IR.8352.

Indian Journal of Contemporary Legal and Social Issues

2. INTERPOL, Disaster Victim Identification (DVI), https://www.interpol.int/en/How-we-work/Forensics/Disaster-Victim-Identification-DVI (last visited Oct. 27, 2026).
3. Evidence of Age Estimation Procedures in Forensic Dentistry: Results from an Umbrella Review, 60 Medicina 42 (2024), https://pmc.ncbi.nlm.nih.gov/articles/PMC10818637/.
4. Forensic Odontology in DVI: Current Practice and Recent Advances, Forensic Sciences Research (2020), https://pmc.ncbi.nlm.nih.gov/articles/PMC6968523/.

Indian Journal of Contemporary
Legal and Social Issues