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Forensic odontology in pediatric dentistry: a detailed exploration*

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Abstract

Forensic odontology is a specialized area in forensic sciences which aid in identification of unknown individuals. It also helps in investigating crimes which is also beneficial in certain cases of pediatric dentistry. With an emphasis on age estimation, bite mark analysis, and child identification using dental data, this area applies dental expertise to legal issues. Because children's teeth and facial characteristics develop so quickly, pediatric dentistry presents special issues that need specialized forensic procedures. This investigation looks at how forensic odontology is utilized in pediatric dentistry, highlighting how important it is for locating missing or mistreated children as well as figuring out how old youngsters are in court proceedings. This article also explores the role of bite marks along with various eruption patterns of both primary and permanent teeth in forensic investigations. Additionally, it draws attention to the ethical issues, constraints, and developments in the field of forensic odontology. Dental practitioners may improve child protection initiatives worldwide and make a substantial contribution to the legal and judicial systems by comprehending how these professions connect. This rationale behind this article to highlight the critical role forensic odontologists plays in pediatric dentistry for precise age estimate, child identification, and the identification of abuse using dental evidence that has been scientifically confirmed.

Keywords: forensic sciences; dental evidence; pediatric forensics; bite marks; child abuse

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Introduction

However, because of the special difficulties presented by children's teeth and their fast craniofacial growth, its function in pediatric dentistry has drawn more attention recently (1). Forensic odontology can play a critical role in post-mortem identification in cases of accidents, natural disasters, or other tragic occurrences, as well as in identifying children who have been the victims of abuse, neglect, or kidnapping. Given the importance of dental records in these situations, being able to correctly identify a child is critical to supplying legal authorities with vital evidence (2,3).

A number of characteristics set juvenile forensic odontology apart from the conventional adult forensic methodology. One important factor is that a child's dentition changes quickly as they grow, with permanent teeth ultimately replacing primary teeth. Although the pattern and timing of tooth eruption vary greatly from person to person, there are recognized developmental milestones that may be utilized to identify a child (4,5). With a high degree of accuracy, forensic odontologists may determine a child's age by examining their dental records and analyzing eruption patterns, tooth development, and dental abnormalities. In catastrophe situations or mass fatalities, this information can be crucial for identifying missing kids as well as figuring out the age of a deceased youngster (6).

In situations when abuse or neglect is suspected, the forensic odontologist's duties may include evaluating dental injuries. Injuries like fractures, cuts, or bruises to the teeth or soft tissues of the mouth may be signs of physical abuse or neglect. In these situations, forensic odontologists can assist in determining if the trauma aligns with the caregivers' history or the specifics of the child's injuries (7). This can play a significant role in court cases when protecting children is of the utmost importance. However, because children's dental records and oral injuries need a complex understanding of developmental phases and growth patterns, the evaluation and management of pediatric dental evidence must be done with extreme caution (8).

Another crucial component of forensic odontology in pediatric dentistry is ethical issues. Pediatric dental records must be handled and preserved with the highest discretion and tact, particularly where there is suspicion of abuse.

Additionally, forensic odontologists need to consider how their conclusions can affect the family of the child (9). Understanding the intricacies of juvenile dentistry science is essential as forensic odontology develops to guarantee that dental practitioners preserve the welfare of youngsters while making ethical and productive contributions to legal investigations (10,11).

Role of Forensic Odontology in Pediatric Dentistry

Forensic odontology plays a critical role in several areas related to pediatric cases:

Identification of Children

Finding missing or deceased children is one of the main uses of forensic odontology in pediatric dentistry, especially in situations where other identification techniques might not be practical.

Teeth are the most reliable means of identification in cases of burns, decomposition, etc. (12). Dental structures, in contrast to other tissues, are resistant to disintegration, heat, and stress (13). Forensic odontologists are essential in identifying victims based on their dental characteristics in situations involving mass catastrophes, accidents, or even natural disasters when the level of destruction may make typical identification techniques like fingerprinting or DNA analysis ineffective. These can include crowns, fillings, patterns of tooth eruption, and any special traits or abnormalities that may hinder it (14).

Comparing the dental features of an unidentified body with the dental records of children who have gone missing which may include X-rays or photos is a common step in the identification process. By analyzing a child's growing teeth and the ways in which primary and permanent teeth emerge, forensic odontologists can determine the child's age (15) This is named as Nolla’s staging. It is feasible to narrow down the children identity based on these characteristics because these patterns are frequently highly distinctive to a given age group. When dental restorations or fillings are present, they might act as distinctive identifiers since each person may have a different kind, size, and substance of dental work. Furthermore, unique hints that set one person apart from another might be provided by dental fractures or prior traumas (16).

Forensic odontology offers a vital tool for rapidly and precisely identifying fatalities in mass catastrophe situations, which may be a critical step in providing families with closure and guaranteeing appropriate documentation for legal or medical needs (17). When the physical body is in a state that makes optical or fingerprint identification impossible, the ability to match

dental traits to dental data also lowers the margin of error that may arise with other approaches. In addition to offering assistance during extremely delicate situations, this specialty area highlights the critical role that forensic odontology plays in pediatric dentistry, especially following traumatic incidents involving children (18).

Age Estimation

Determining a child's age based on tooth growth is one of the main responsibilities of forensic odontologists in pediatric dentistry. Children's teeth offer a trustworthy way to determine age because of their consistent eruption pattern, especially when the child's birthdate is uncertain or contested. Age may be estimated using the well-established timing and order of the eruption of primary and permanent teeth (19). Depending on the developmental stage, forensic odontologists can estimate a child's age within a specified range of months or years by using known eruption charts, which show when particular teeth generally erupt in a child's mouth (20).

Another important factor in determining a child's age is the study of their dental pulp and root development. During tooth development, forensic odontologists can monitor changes in the dental pulp, which is home to nerves and blood vessels. For instance, the pulp is comparatively big in younger children, but as they become older, the pulp chamber gets smaller and the root structure gets more distinct (21). Another crucial metric that forensic odontologists use to determine age is the degree of root production, including whether the roots are completely developed or still in an early embryonic stage. This gives a better understanding of the child's general developmental stage and is particularly helpful in situations when tooth eruption has been accelerated or delayed (22,23).

Forensic odontologists employ dental radiographs (X-rays) to help estimate age in addition to eruption patterns and root development (24). Insight into the condition of both erupted and unerupted teeth may be gained from these radiographs, which clearly show tooth growth beneath the gum line. Forensic odontologists can determine the child's age by examining the X-rays to evaluate the calcification and mineralization of the teeth (15,16). In both forensic investigations and legal proceedings where age verification is essential, such as in cases of child abuse or neglect or when determining the appropriate legal status of a minor, forensic odontologists can estimate a child's age with a high degree of accuracy thanks to their combination of clinical observation and radiographic analysis (1).

Detection of Child Abuse

Since damage to the teeth and related tissues is frequently one of the earliest outward manifestations of abuse, forensic odontology is essential to the identification and recording of dental trauma that may point to child abuse. Identifying unexplained dental injuries, such as fractures, avulsed (knocked-out) teeth, lacerations, or damage to the oral mucosa, is the responsibility of forensic odontologists in situations of suspected abuse (25). These injuries can be warning signs of physical abuse, especially if they occur in certain patterns or places. A comprehensive dental examination is necessary to identify these covert indicators since, in many cases, dental trauma may not be immediately apparent or identifiable to parents or caregivers (26).

Differentiating between damage brought on by deliberate maltreatment and unintentional oral trauma is one of the difficulties faced by forensic odontologists. Children are more likely to have oral injuries as a result of falls or sports-related mishaps because of their immature motor skills and busy lives. Intentional injury may be suspected, though, if oral injuries seem to be frequent or follow a pattern that deviates from normal childhood mishaps. The complex distinctions between accidental and non-accidental injuries are recognized by forensic odontologists via training (27). Multiple injuries at varying stages of healing or injuries that don't match the caregiver's story might be signs of purposeful violence in abuse situations (Figure 1).

When evaluating cases of child abuse, forensic odontology also takes the pattern of dental damage into account. Investigators can learn vital information from the type of trauma, the direction of force used during the injury, and the frequency of injuries. A single, isolated injury, for instance, could indicate an accident, but several injuries especially those on the lips, gums, or within the mouth might indicate a more widespread problem of carelessness or deliberate damage (28). Furthermore, certain injury types, such dental fractures or avulsed teeth, might occasionally point to the application of a specific tool or force, like a punch or strike from an instrument. Forensic odontologists contribute vital evidence in the investigation of suspected child abuse by recording the trauma pattern, which offers

important insights into the type of damage and its possible source (29).

Bite Mark Analysis

In forensic odontology, bite marks are one of the most controversial topics, especially when it comes to pediatric instances. Analysis of bite marks can be crucial in establishing a suspect's involvement in a crime, such as in situations of physical or sexual abuse. A link between the perpetrator and the crime can be established by comparing the bite mark on a child's skin or clothes to the teeth imprints of a suspect (30). Forensic investigators can get important evidence by matching the distinctive elements of a suspect's dental structure with the distinctive features of a bite mark, such as the size, shape, and alignment of the teeth. In certain instances, bite marks on a child's body may reveal the type of crime committed as well as the seriousness and purpose of the conduct (31–33).

Nonetheless, there is still much discussion and controversy around bite mark analysis in the field of forensic research. Given the differences in human teeth, the flexibility of skin, and the distortion that may happen when a bite mark is made, some contend that bite mark comparisons are not always precise or dependable. Bite mark analysis is mostly dependent on subjective interpretation, in contrast to other types of forensic evidence like fingerprints or DNA. Additionally, there is worry that bite mark evidence may result in incorrect identifications or convictions if it is misconstrued (32). While some forensic odontologists contend that bite marks can provide useful evidence when examined by qualified experts, others warn that bite mark evidence is sometimes intrinsically unreliable due to a lack of established procedures and scientific validation (31,33).

The smaller size and quicker developmental changes of children's teeth make bite mark analysis more difficult in pediatric dentistry. Children's teeth, particularly primary teeth, erupt in a unique pattern that rapidly changes as they grow and are significantly smaller than adult teeth. It might be challenging to establish a clear connection between a bite mark and a particular kid or period of time because of these quick changes, which include the emergence of new teeth and the loss of primary teeth (34). Furthermore, children's skin and tissue are frequently more elastic than adults', which might cause the bite mark to deform and make examination even more difficult. Because of these considerations, bite mark analysis in pediatric cases is a complicated and sometimes controversial field of forensic odontology that needs specialist training and thorough thought in order to evaluate the reliability of the evidence (35).

Methods Used in Forensic Odontology for Pediatric Cases

Forensic odontologists employ a variety of methods and tools to carry out their work in pediatric cases:

Dental Records

Many people believe that comparing dental records is one of the most trustworthy ways to identify a kid, especially when other types of identification, like fingerprints or DNA, might not be accessible. For every kid in their care, pediatric dentists must keep complete and detailed records. These records frequently contain radiographs (X-rays), photos, and detailed notes on the child's oral health and any treatments they have had (36). Because they may be used to verify a kid's identification by matching their dental traits to post-mortem results, these records are an invaluable resource in the event of a missing child. This technique works quite well because, like fingerprints, each person's dental characteristics are distinct and often stay very constant (37).

Finding dental oddities, which can act as unique identifiers, is one of the most important aspects of a child's dental records. Congenitally missing teeth, additional teeth, or developmental problems that change the size, shape, or location of teeth are examples of these anomalies. Forensic odontologists can quickly spot these anomalies since they are quite unique to each person. Restorative procedures like crowns, root canals, and fillings can also make a big difference in how one child is different from another (38). Post-mortem discoveries can be compared to dental records that document the materials used for restorations, the size of the treatment, and the particular tooth treated. During the identification process, these restorative characteristics that are mentioned in a kid's dental history might be very important in connecting the child to their dental records (39).

Another important piece of data in pediatric dental records is tooth eruption patterns, which offer important information about a child's age and tooth growth (40). Although there is a general pattern to the timing and order of tooth eruption, individual differences may be modest. These patterns may be used by forensic odontologists

to determine a child's age, which is frequently helpful in locating missing or deceased youngsters. oral records may also contain details on any broken or discolored teeth, which may be the consequence of oral illness or trauma. These distinctive features can also aid in the identification procedure by helping to distinguish a child's dental profile from others (41). The ability of forensic odontologists to match these distinguishing characteristics from dental records to post-mortem dental results enables a precise and trustworthy method of verifying identity in situations of missing children or post-mortem identification (39).

Radiographic Imaging

In pediatric forensic odontology, radiographs, often known as dental X-rays, are indispensable instruments that are essential for determining tooth developing stages and estimating age. X-rays of younger children offer comprehensive information about the development and eruption of primary (baby) teeth, which is crucial for establishing the age of the kid. These X-rays give forensic odontologists a chronology of tooth development by allowing them to see how teeth below the gum line develop before they erupt (15). When other methods of age verification may not be available, such as in cases of unregistered children or post-mortem identification, odontologists can determine the child's age with a high degree of accuracy by assessing the mineralization and calcification of these teeth.

As kids become older, radiographs are even more important for determining when permanent teeth may erupt and determining how well the roots are developing. Dental X-rays may be used to see the clear pattern of the transition from primary to permanent teeth (16). This pattern is used by forensic odontologists to determine the degree of root growth and the eruption of permanent teeth. Since tooth roots gradually elongate and solidify over time, their growth in particular offers crucial clues regarding a child's age. When dental age estimation is required for legal reasons or in mass casualty incidents, X-rays are a crucial component of forensic examination since the maturity of these roots is one of the most accurate markers of chronological age (22).

The phases of tooth eruption and root growth are methodically defined in juvenile forensic odontology, offering a framework for determining chronological age. These recognized developmental milestones are used by forensic odontologists to assess the level of dental maturity and compare it to defined age ranges for each stage. While the eruption and root completeness of permanent teeth become important markers in later children, the presence of particular primary teeth at specific ages in younger children can provide a reasonable approximation (15,16). Forensic odontologists can offer a reliable estimate of a child's age by looking for these markers on radiographs. This information can be crucial in determining the age of a missing or deceased child as well as in evaluating suspected cases of abuse or neglect, when age-related evidence is crucial.

Bite Mark Comparison

Despite being very contentious, bite mark analysis is crucial to forensic odontology, especially when trying to connect a suspect to a crime. The procedure entails contrasting dental molds or imprints of the suspect's teeth with bite marks found on a victim's skin, clothes, or other surfaces. These bite marks are carefully inspected by forensic odontologists, who search for distinctive patterns in the tooth's alignment, shape, and spacing as well as any unusual dental features like missing teeth, dental restorations, or anomalies in the enamel (33). To check for a match, the bite mark is then superimposed with the suspect's tooth cast. Despite doubts regarding its validity, bite mark evidence occasionally yields important forensic data, particularly in situations when DNA or fingerprint evidence is unclear or unavailable (31).

However, because children's teeth are smaller and their dental development changes more quickly, bite mark analysis poses special difficulties in pediatric instances. The primary teeth of children are significantly smaller than those of adults, and the study is made more difficult by the eruption of additional teeth as the kid grows. When comparing a bite mark to a child's dental imprint, forensic odontologists must take these size variations into consideration (32). To guarantee an accurate comparison, they must carefully measure and examine the mark's dimensions. Furthermore, bite marks may not stay constant due to the frequent changes in children's teeth, thus odontologists must assess the child's dentition's developmental stage and any variations in the primary or developing permanent tooth's eruption pattern (42).

An important consideration in identifying whether a bite mark is that of a kid or a possible attacker is the distinctiveness of the child's bite pattern, which is created by the particular alignment, shape, and wear patterns of their teeth. The

child's teeth are positioned and shaped by forensic odontologists, who search for minute irregularities that might help differentiate their bite from others (42). The bite pattern can also be determined by looking for tooth wear characteristics like chips, grooves, or odd abrasions. In order to link the pattern of the child's growing teeth to the damage, forensic odontologists compare these unique traits to the bite mark left on the victim. Furthermore, bite marks on children's skin could stretch or deform differently than on adults', necessitating further changes to the study. The combination of precise dimensions, tooth form, and wear characteristics can assist forensic odontologists in determining the probability that a particular bite mark belongs to the kid or the claimed attacker, notwithstanding the difficulties and complexities of bite mark analysis in pediatric instances (17,18).

DNA Analysis

DNA analysis can be a vital supplementary tool in the identification process, particularly when dealing with skeletal or decayed remains, even though forensic odontologists are usually linked to the examination of dental traits. Teeth and tooth pulp, which are both far more resistant to disintegration than other bodily tissues, can both provide DNA (43). A tooth's inner chamber, the dental pulp, is home to a wealth of DNA that is resistant to the effects of time and environmental elements like moisture and heat. When other biological samples, such skin or blood, are no longer viable for testing, tooth tissues are a perfect source for DNA analysis. Teeth DNA can offer the genetic profile required for a conclusive identification in circumstances when a kid is missing or dead (44).

In order to fully and accurately identify a kid, cooperation between forensic pathologists, forensic odontologists, and DNA specialists is frequently necessary. DNA analysis adds an extra degree of assurance, even if forensic odontologists concentrate on detecting distinctive dental traits such tooth growth patterns, abnormalities, or restorations. To demonstrate a biological relationship, DNA extracted from teeth can be compared to established databases or to genetic samples from family members (45). Particularly in difficult situations when conventional techniques like fingerprinting are unavailable, the combination of dental and genetic evidence enables a more thorough approach to identification. In order to create a comprehensive identification profile, forensic odontologists frequently depend on DNA experts to evaluate and interpret genetic data. They also use their knowledge to link the results with dental characteristics (46).

When it comes to skeletal remains, where soft tissue preservation may be restricted, DNA analysis is also quite helpful. Even after the rest of the remains have degraded, teeth can still yield adequate material for DNA extraction because of their rich mineral structure, making them frequently one of the best-preserved body parts. Forensic odontologists, who frequently collaborate with pathologists who do the autopsy and inspect skeletal remains, may be entrusted with finding teeth appropriate for DNA analysis and getting them ready for extraction (47). When visual identification is not feasible, the ability to extract DNA from teeth improves identification accuracy and serves as a crucial tool. Even in the most difficult forensic situations, including mass catastrophes, accidents, or other incidents when remains are seriously damaged or decomposed, forensic specialists may guarantee that a child's identification is definitively determined by combining dental examination with DNA testing (48).

Applications of Forensic Odontology in Pediatric Dentistry

Mass Casualty Incidents

Forensic odontologists are essential in identifying fatalities following mass casualty events like fires, natural disasters, or major accidents, especially when conventional identification techniques like fingerprinting or DNA analysis are not practical. In these kinds of incidents, victims' remains can be badly burnt, deformed, or decayed, making conventional methods of identification useless (14). However, forensic odontological examination and dental records provide a trustworthy and frequently the most efficient way to identify victims, even youngsters. Teeth are especially helpful for post-mortem identification since they are among the toughest parts of the human body and are extremely resistant to environmental degradation and decay. To connect individuals to their prior dental records in these unfortunate situations, forensic odontologists use dental characteristics such tooth structure, restorations, and distinctive anomalies (1).

Because children's teeth develop in different and predictable phases, which can give key identification evidence, forensic odontologists are particularly crucial for identifying children in mass casualty scenarios. Each step of dental development leaves a distinct signature that can

be seen in radiographs and dental records, and the eruption of primary teeth and the following emergence of permanent teeth follow a set timeframe. In order to assist in reducing the number of possible victims, forensic odontologists look at these dental characteristics to ascertain the age of the kid at the time of death (39). Furthermore, traits like tooth abnormalities, the existence of crowns or fillings, or any noticeable wear patterns might help connect the kid to a collection of dental data from their physician or dentist. Even in cases where the body is otherwise unidentifiable, these particular characteristics serve as crucial identifying indicators (49).

Children's dental development frequently plays a decisive role in the resolution of instances involving unidentified victims in mass casualty disasters. Forensic odontologists can establish a positive identification by comparing pre-mortem dental imagery, such as X-rays and pictures, with post-mortem results since pediatric dentists keep careful dental records. When a kid goes missing and their identification cannot be verified via DNA or other forensic techniques, this procedure is extremely important (50). Forensic odontologists frequently give vital evidence that aids in victim identification by concentrating on dental traits such teeth eruption patterns, dental work, and developmental abnormalities. Forensic odontologists play a crucial role in mass casualty occurrences by making sure that all victims including children are appropriately and correctly identified, giving families closure, and supporting the investigation and resolution of the tragedy as a whole.

Cases of Missing or Abducted Children

Forensic odontology is essential in child abduction cases because it helps identify the kid once they are found. Ensuring the safe return of a kidnapped child and verifying their identity depend heavily on the speed and accuracy of the identification procedure. In these situations, dental records which are frequently meticulously preserved by pediatric dentists provide a trustworthy method of confirmation (51). These documents include comprehensive details regarding the child's teeth, including particular dental traits like cavities, restorations, abnormalities, and eruption patterns. Even in situations when other identifying characteristics may be less obvious, forensic odontologists may verify the identification of a missing kid with a high degree of accuracy by matching the child's dental records to the dental characteristics seen upon their recovery (14).

To help identify a kid who has been missing for a long time, forensic odontologists frequently utilize additional forensic methods, such as face reconstruction, in addition to dental information. Forensic odontologists and forensic artists may work together to rebuild a kid's face characteristics using their skeletal structure and dental profile when their remains are found or when it is difficult to identify the child from an image or fragmentary remains (3). This can offer further hints that aid in confirming the identification of the child, especially if a considerable amount of time has passed between the kidnapping and the rescue. When dental data and face reconstruction techniques are combined, the identification process becomes more accurate overall, giving investigators and law enforcement the essential resources, they need to solve abduction cases (52).

Comparing dental records can offer prompt and trustworthy proof of a missing child's identification when they are found, frequently before other techniques like DNA analysis are finished. Because of this, dental identification is a particularly crucial tool in abduction situations where the child's safety and wellbeing are of the highest importance and time is of the essence. When a kid has been gone for a while, their physical appearance may have changed, making it more difficult to identify them using conventional methods (53). Dental records continue to be a reliable and accurate means of confirming the child's identification in these circumstances, providing comfort to families and law authorities. Through their knowledge and cooperation with other forensic specialists, forensic odontologists help to resolve these heartbreaking instances by ensuring that the identification procedure is as quick and accurate as possible (54).

Child Abuse Investigations

When there is a suspicion of child abuse, forensic odontologists are crucial in working with law enforcement and child protective organizations. Dental injuries may be a crucial sign when there are worries about the potential for abuse. Signs of dental trauma that do not correspond with a child's age, developmental stage, or stated accident history are recognized by forensic odontologists (55). Avulsed (knocked-out) teeth, unexplained fractures, or injury to the soft tissues of the mouth may indicate physical abuse,

particularly if they manifest in ways that deviate from normal childhood behaviors. Forensic odontologists assist investigators in distinguishing between unintentional and deliberate injury by closely examining these injuries, offering crucial information that might direct more research and actions (26).

For the kid's immediate safety as well as the safety of other possible victims, it is imperative that oral injuries linked to child abuse be promptly identified. In order to determine if the injuries were produced by blunt force, sharp objects, or recurrent trauma, all of which may be signs of abuse forensic odontologists can evaluate the extent and kind of the injuries (25). Dental injuries are frequently not readily apparent and may go unnoticed during standard medical exams. Forensic odontologists, on the other hand, are adept at seeing minute hints that others would overlook, such as the existence of both recent and ancient injuries or injury patterns that point to intentional harm. Forensic odontologists may assist in making sure that the kid receives the proper medical attention and those preventative measures, such putting the child in a safe setting, are implemented as soon as possible by spotting and recording these injuries early on (8).

Documenting and analyzing dental injuries can not only stop more damage but also be important evidence in court. Dental trauma offers strong forensic evidence that may be used in court when it is discovered and connected to abuse. Regarding the type of injuries, whether they are consistent with the history that has been given, and if they were likely caused on purpose, forensic odontologists can provide expert testimony (10). Legal proceedings may benefit greatly from this information, which might result in the abusers' conviction and protect the child's wellbeing. Additionally, forensic odontologists' professional analysis frequently supports child protection organizations' arguments and provides more evidence for treatments meant to stop future abuse. Because of their specific expertise, forensic odontologists play a vital role in the battle against child abuse by assisting with victim identification, assisting with investigations, and offering vital evidence in the fight for justice (25).

Challenges in Forensic Odontology in Pediatric Dentistry

Rapid Changes in Pediatric Dentition

One of the primary challenges forensic odontologists face when working with children is the rapid pace of dental development that occurs during childhood. Children’s teeth undergo significant changes in a short period of time, which can complicate the process of identifying and comparing dental features over the years. The eruption of primary teeth, typically begins around six months of age and continues until about three years old (56). This stage is followed by the shedding, or exfoliation, of these primary teeth and the eruption of permanent teeth, which generally occurs between the ages of six and twelve. Given that this transition from primary to permanent dentition takes place over a relatively short period, a child’s dental features can change dramatically from year to year, creating a challenge for forensic odontologists who are tasked with tracking and identifying these evolving characteristics (57).

The substantial changes in a child's dentition can make it difficult to rely on dental records for consistent long-term identification. As primary teeth are replaced by permanent teeth, the size, shape, and arrangement of the teeth change, and these changes may not be predictable for every child. Additionally, developmental anomalies such as congenital missing teeth or extra teeth can further complicate the identification process.(50) The time-sensitive nature of these changes means that dental characteristics that are useful for identification at one point in a child's life may no longer be as relevant a few years later. Forensic odontologists must account for these rapid changes and be cautious when using dental features for comparison, especially if there is a significant gap between the last recorded dental examination and the current identification attempt. This makes maintaining up-to-date dental records for children particularly important (1).

Furthermore, the timing of dental development can vary from child to child, making it harder to establish a universal standard for identification based solely on dental features. While there are general timelines for when certain teeth should erupt or fall out, individual variation can lead to discrepancies. Forensic odontologists must carefully assess these variations when evaluating dental characteristics, particularly in cases where a child’s age or identity is in question (58). Additionally, when working with a child who has undergone trauma or has a history of dental treatments, factors like dental restorations or previous injuries can further complicate the analysis. This combination of rapid, unpredictable dental changes and individual variations makes it challenging for forensic odontologists to rely solely on dental characteristics for long-term identification,

necessitating the use of other tools such as DNA analysis or radiographic imaging to provide a more accurate and comprehensive identification (49).

Lack of Standardization in Bite Mark Analysis

Bite mark analysis remains one of the most contentious and controversial areas within forensic odontology, particularly when it comes to cases involving children. The process involves comparing the pattern left by a bite on a victim's skin, clothing, or other surfaces to dental impressions of a suspect's teeth. However, the reliability of bite mark comparisons has been questioned due to numerous factors that can distort the appearance of bite marks, especially when the victim is a child (33). One of the key issues is the variability in the size and shape of children's teeth, which can change dramatically as they grow (42). This presents a challenge for forensic odontologists, as the dental patterns of a child may shift significantly over a short period due to the eruption of permanent teeth or the shedding of primary teeth. Therefore, what may appear to be a unique bite pattern at one stage of dental development can quickly change, making it difficult to make reliable comparisons over time (31).

In addition to the natural changes in a child's dentition, other factors complicate the analysis of bite marks on children's skin or other surfaces. Skin elasticity is one such factor, as the victim's skin may distort the appearance of the bite mark due to pressure, swelling, or stretching, which is common in children who have more delicate and pliable skin (59,60). This variability in the way the skin responds to the bite force can significantly alter the size and shape of the mark, making it less reliable for forensic comparison. Swelling or bruising from the trauma could further distort the bite pattern, obscuring key features that might otherwise help to match the bite to a suspect's teeth (61). Forensic odontologists must account for these factors when analyzing bite marks, but despite their expertise, the ability to achieve a precise match can be limited by the inherent unpredictability of the skin's response to trauma.

The rapid growth of a child's dental structure further exacerbates the challenges associated with bite mark analysis in pediatric cases. As children's teeth change in size and shape, their bite patterns also evolve, making it more difficult to obtain consistent bite marks for comparison (11). The eruption of permanent teeth, along with the exfoliation of primary teeth, means that a child's dentition is constantly in flux, which can alter the appearance of a bite mark over time. Furthermore, children's smaller teeth and bite force can create bite marks that are less distinct and harder to analyze than those of adults. While forensic odontologists can make efforts to analyze these marks by considering the age, tooth development, and the specific characteristics of the child's dentition, the rapid changes in the child's dental structure make it even more challenging to rely on bite mark evidence alone (6). These complexities underscore the need for caution when using bite mark evidence, as its accuracy in identifying perpetrators in cases involving children remains a matter of significant debate and ongoing research within the forensic community.

Ethical and Legal Considerations

Forensic odontologists are held to high ethical standards, especially when dealing with pediatric cases, where the sensitivity of the situation requires careful consideration of the child's well-being. One of the core responsibilities of forensic odontologists is to ensure that dental records are maintained confidentially and securely (62). Children's dental records contain personal and potentially identifying information, which must be protected from unauthorized access. These records should be used only for legitimate forensic purposes, such as identifying a child or investigating abuse, and must be handled with the utmost professionalism and discretion (63). Ensuring the confidentiality of these records is vital not only for protecting the privacy of the child and their family but also for maintaining the integrity of the forensic process. Any breach of confidentiality could compromise the case and violate the trust placed in dental professionals (64).

In cases of suspected child abuse, forensic odontologists face a unique challenge of balancing the need for a thorough investigation with the potential psychological and emotional impact on the child. When investigating dental injuries that may be indicative of abuse, odontologists must carefully consider the trauma that could result from an examination (55). A child who has already experienced physical harm may feel additional distress during a dental examination, especially if they are subjected to probing or uncomfortable procedures. Forensic odontologists must work with sensitivity, ensuring that the child's comfort and emotional state are considered throughout the process. This includes communicating with the child in an age-appropriate manner, using gentle techniques,

and ensuring that any examination is conducted in a way that minimizes additional harm. At all times, the child's physical and psychological safety should be a priority (65).

The ethical responsibility of forensic odontologists also extends to the potential legal and familial consequences of their findings. A thorough investigation is necessary to ensure that suspected abuse is properly documented, but odontologists must be mindful of the emotional toll that this process may take on both the child and their family. In cases where abuse is confirmed, the forensic odontologist's role includes working closely with child protection agencies to ensure that the child is placed in a safe environment, and the abuser is held accountable (66). However, odontologists must also be cautious about jumping to conclusions or overstepping their role in the investigation. They must present their findings in a way that is both accurate and respectful, without assuming guilt, and recognize that their involvement can have profound implications for the child's family and future (67). By maintaining a strong ethical framework, forensic odontologists can navigate the complexities of pediatric cases and ensure that their work serves the best interests of the child while upholding the integrity of the legal process. The interrelated responsibilities of many stakeholders are shown in this graphic, which depicts the interdisciplinary network involved in handling child abuse situations. The victim, abuser, police, social workers, legal experts, and NGOs are all coordinated by the court in the center. The information, accountability, and support flow between various entities is represented by each line. Justice is served, victims are safeguarded and rehabilitated, and preventative measures are reinforced via teamwork when these functions are integrated (Figure 2).

Conclusion

In conclusion, forensic odontology in pediatric dentistry is critical and always evolving for the protection and identification of children. Using dental records, radiographic imaging, bite mark analysis, and age estimate, forensic odontologists provide vital support in cases of missing children, mass casualty incidents, and child abuse investigations. Forensic odontology continues to be an essential part of forensic science, despite the challenges brought on by a child's teeth changing so fast and the ongoing debates on bite mark analysis. As techniques and technology advance, the field will only get more precise and reliable, enhancing its capacity to safeguard children and assist with legal and investigative processes.

Author contribution statement

SAM conceptualized and designed the study as well a coordinated the overall workflow of the article, followed by preparing the initial draft of the manuscript. LNM and Amit Patil contributed to the literature search, data acquisition, and critical analysis of the relevant evidence. SN assisted in data interpretation along with manuscript drafting. SDB contributed to methodological inputs and revised the manuscript for intellectual content. SRK performed final critical revisions. All authors reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Statement on the use of artificial intelligence in manuscript preparation

Artificial intelligence was not used in the preparation of this manuscript.

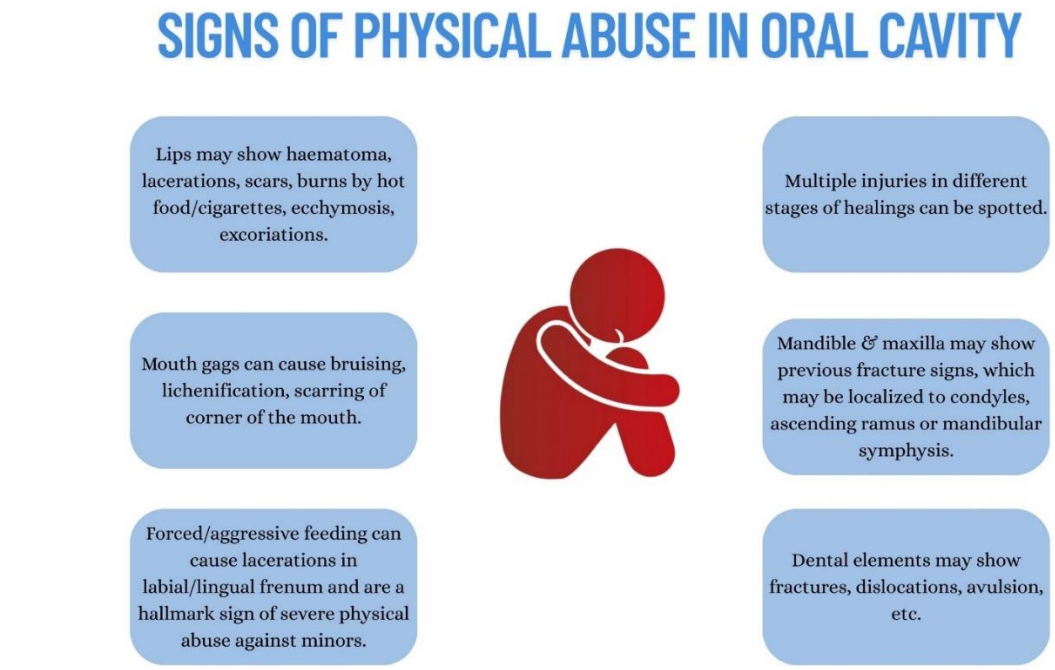

Figure 1. Signs of physical abuse in oral cavity.

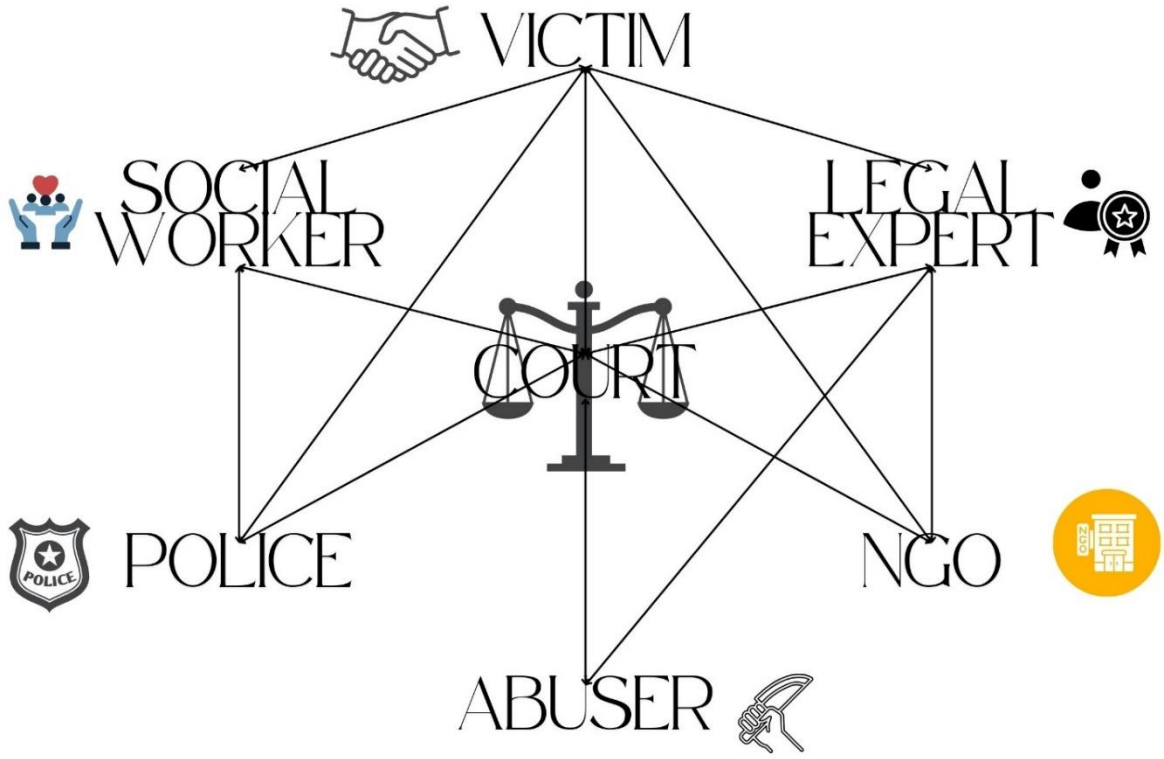

Figure 2. Workflow of who the victims and abuser can approach for help.

References

1. Mohammed F, Fairozekhan AT, Bhat S, Menezes RG. Forensic Odontology. Florida: StatPearls [Internet]; 2025.
2. Verma A, Kumar S, Rathore S, Pandey A. Role of dental expert in forensic odontology. Nat J Maxillofac Surg. 2014;5(1):2. doi: 10.4103/0975-5950.140147
3. Emam aNM. Role of Forensic Odontology in Identification of Persons: A Review Article. Cureus. 2024;e56570. doi: 10.7759/cureus.56570
4. Divakar KP. Forensic Odontology: The New Dimension in Dental Analysis. Int J Biomed Sci. 2017;13(1):1–5. Available from: www.ijbs.org
5. Vila-Blanco N, Varas-Quintana P, Tomás I, Carreira MJ. A systematic overview of dental methods for age assessment in living individuals: from traditional to artificial intelligence-based approaches. Vol. 137, Int J Leg Med. Springer Science and Business Media Deutschland GmbH; 2023. p. 1117–46. doi: 10.1007/s00414-023-02960-z
6. Dongre P, Patil R, Patil S. Applications of forensic odontology in pediatric dentistry: A brief communication. J Dent Allied Sci. 2017;6(1):17. doi: 10.4103/2277-4696.205443
7. Darwin D, Sakthivel S, Castelino RL, Babu GS, Asan MF, Sarkar AS. Oral Cavity: A Forensic Kaleidoscope. J Health Allied Sci NU. 2022;12(01):7–12. doi: 10.1055/s-0041-1731117
8. Mele F, Introna F, Santoro V. Child abuse and neglect: oral and dental signs and the role of the dentist. J Forensic Odontostomatol. 2023;41(2):21–9.
9. Sebastian S, Franco A, Mânica S. Intersection of forensic odontology and psychology. J Forensic Odontostomatol. 2023;41(1):2–18.
10. Sinha PK, Gorea RK, Bavle RM. The role of dentist and forensic odontologist in oral and dental aspects of child abuse and neglect. Int J Ethic Trauma Victimol. 2017;3(01):34–9. doi: 10.18099/ijetv.v3i1.8795
11. Gupta S, Devi K. Forensic Odontology in Pediatric Dentistry. Int J Innovat Sci Res Technol. 2022;7(2):748–51. Available from: www.ijisrt.com748
12. Chopra LB, Sorout R, Batra O. Replicas in forensic dentistry for human identification. Indian J Forensic Community Med. 2021;8(1):4–10. doi: 10.18231/j.ijfcm.2021.002
13. Shekhawat K, Chauhan A. Analysis of dental hard tissues exposed to high temperatures for forensic applications: An in vitro study. J Forensic Dent Sci. 2016;8(2):90. doi: 10.4103/0975-1475.186366
14. Sharma G, Yadav M, Singh H, Aggarwal A, Sandhu R. Forensic Odontology: Role in Mass Disasters. J Indian Acad Forensic Med. 2006;(2):28.
15. Reddy B, Swetha P, Manyam R, Supriya AN. Importance of Dental Radiography in Forensic Odontology: A Review. Oral Maxillofac Pathol J. 2022;13(2):124–7.
16. Chiam S-L. A note on digital dental radiography in forensic odontology. J Forensic Dent Sci. 2014;6(3):197–201. Available from: www.jfds.org
17. Chandrakar M. Forensic odontology: A dental detective's perspective from central India. J Orofac Health Sci. 2024;11(2):68–76. doi: 10.18231/j.johs.2024.016
18. Kaul B, Vaid V, Gupta S, Kaul S. Forensic odontological parameters as biometric tool: A review. Int J Clin Pediatr Dent. 2021;14(3):416–9. doi: 10.5005/jp-journals-10005-1967
19. Manjunatha BS, Soni NishitK. Estimation of age from development and eruption of teeth. J Forensic Dent Sci. 2014;6(2):73. doi: 10.4103/0975-1475.132526
20. Martrille L, Papadodima S, Venegoni C, Molinari N, Gibelli D, Baccino E, et al. Age Estimation in 0–8-Year-Old Children in France: Comparison of One Skeletal and Five Dental Methods. Diagnostics (Basel). 2023;13(6). doi: 10.3390/diagnostics13061042
21. Baker A, Karpagaselvi K, Kumaraswamy J, Ranjini M, Gowher J. Role of dental pulp in age estimation:A quantitative and morphometric study. J Forensic Dent Sci. 2019;11(2):95. doi: 10.4103/jfo.jfds_57_19
22. Bedia AS, Bedia S V, Mulla SA, Patil A. Comparative Evaluation of Dental Age vs. Chronological Age in Healthy and Underweight Children Aged 8-16 Years: A Cross-Sectional Study. Cureus. 2025;17(2). Available from: https://www.cureus.com/articles/329635-comparative-evaluation-of-dental-age-vs-chronological-age-in-healthy-and-underweight-children-aged-8-16-years-a-cross-sectional-study
23. Kurniawan A, Chusida A, Atika N, Gianosa TK, Solikhin MD, Margaretha MS, et al. The Applicable Dental Age Estimation Methods for Children and Adolescents in Indonesia. Int J Dent. 2022;2022. doi: 10.1155/2022/6761476
24. Manjrekar S, Deshpande S, Katge F, Jain R, Ghorpade T. Age Estimation in Children by the Measurement of Open Apices in Teeth: A Study in the Western Indian Population. Int J Dent. 2022;2022. doi: 10.1155/2022/9513501
25. Becker DB, Needleman HL, Kotelchuck M. Child abuse and dentistry: orofacial trauma and its recognition by dentists. J Am Dent Assoc. 1978;97(1):24–8. doi: 10.14219/jada.archive.1978.0447

26. Costacurta M, Benavoli D, Arcudi G, Docimo R. Oral and dental signs of child abuse and neglect. Oral Implantol (Rome). 2015;8(2–3):68–73. doi: 10.11138/orl/2015.8.2.068
27. Johnson CF. Inflicted Injury Versus Accidental Injury. Pediatr Clin North Am. 1990;37(4):791–814. doi: 10.1016/S0031-3955(16)36937-1
28. Somani R, Kushwaha V, Kumar D, Khaira J. Child abuse and its detection in the Dental Office. J Indian Acad Forensic Med. 33(4).
29. Adserias-Garriga J. A review of forensic analysis of dental and maxillofacial skeletal trauma. Forensic Sci Int. 2019;299:80–8. doi: 10.1016/j.forsciint.2019.03.027
30. Gupta S, Agnihotri A, Chandra A, Gupta OP. Contemporary practice in forensic odontology. J Oral Maxillofac Pathol. 2014;18(2):244–50. doi: 10.4103/0973-029X.140767
31. Kaur KP, Kundu S, Bagchi S, Gayen S, Pal M. Bite Mark Analysis- A Crucial Forensic Evidence. Oral Maxillofac Pathol J. 2022;13:136–40.
32. Shebah C, Sheethal A, Harshita B, Preethi P, Prasanna R. A Review on Bite Marks in Forensic Dentistry. Austin J Dent. 2022;9(1):1167. Available from: www.austinpublishinggroup.com
33. Verma AK, Kumar S, Bhattacharya S. Identification of a person with the help of bite mark analysis. J Oral Biol Craniofac Res. 2013;3(2):88–91. doi: 10.1016/j.jobcr.2013.05.002
34. Turner S, Harrison JE, Sharif FNJ, Owens D, Millett DT. Orthodontic treatment for crowded teeth in children. Cochrane Database Syst Rev. 2021;2021(12). doi: 10.1002/14651858.CD003453.pub2
35. Jovanovic N, Petrovic B, Kojic S, Sipovac M, Markovic D, Stefanovic S, et al. Primary teeth bite marks analysis on various materials: A possible tool in children health risk analysis and safety assessment. Int J Environ Res Public Health. 2019;16(13). doi: 10.3390/ijerph16132434
36. Shanbhag VK. Significance of Dental Records in Personal Identification in Forensic Sciences. J Forensic Sci Med. 2016;2(1):39–43. doi: 10.4103/2349-5014.155551
37. Sakari SL, Jimson S, Masthan KMK, Jacobina J. Role of DNA profiling in forensic odontology. J Pharm Bioallied Sci. 2015;7:S138–41. doi: 10.4103/0975-7406.155863
38. Pagare J, Garad I. The role of forensic odontology and dental anthropology: An approach to forensic issues. J Dent Spec. 2024;12(1):21–4. doi: 10.18231/j.jds.2024.005
39. Pramod JB, Marya A, Sharma V. Role of forensic odontologist in post mortem person identifi cation. Dent Res J (Isfahan). 2012;5(9):522. Available from: www.drj.ir
40. Ntani G, Day PF, Baird J, Godfrey KM, Robinson SM, Cooper C, et al. Maternal and early life factors of tooth emergence patterns and number of teeth at 1 and 2 years of age. J Dev Orig Health Dis. 2015;6(4):299–307. doi: 10.1017/S2040174415001130
41. Ogodescu E, Popa M, Isac C, Pinosanu R, Olaru D, Cismas A, et al. Eruption Timing and Sequence of Primary Teeth in a Sample of Romanian Children. Diagnostics (Basel). 2022;12(3). doi: 10.3390/diagnostics12030606
42. Klein OD, Oberoi S, Huysseune A, Hovorakova M, Peterka M, Peterkova R. Developmental disorders of the dentition: An update. Am J Med Genet C Semin Med Genet. 2013;163(4):318–32. doi: 10.1002/ajmg.c.31382
43. Higgins D, Austin JJ. Teeth as a source of DNA for forensic identification of human remains: A Review. Sci Justice. 2013;53(4):433–41. doi: 10.1016/j.scijus.2013.06.001
44. Qadri AW, Yadav S, Jain A, Shetty DC, Gulati N. Tooth as a vital source of DNA in forensic odontology: Recent perspective. J Acad Dent Educ. 2023;9:73–9. doi: 10.25259/jade_43_2023
45. Shamala S, Beeula A, Swetha Lakshmi S, Pavithra Banu T. DNA Profiling Advances in Forensic Dentistry- A Review. J Adv Med Med Res. 2023;35(8):18–22. doi: 10.9734/jammr/2023/v35i84993
46. Hussain M, Anjum R, Kaur M, Shafi S. DNA in forensic odontology: An overview. Indian J Forensic Community Med. 2022;9(1):25–8. doi: 10.18231/j.ijfcm.2022.005
47. Manjunath BC, Chandrashekar BR, Mahesh M, Vatchala Rani RM. DNA Profiling and forensic dentistry – A review of the recent concepts and trends. J Forensic Leg Med. 2011;18(5):191–7. doi: 10.1016/j.jflm.2011.02.005
48. Henrique Alves da SILVA R, Sales-peres A, Nogueira de OLIVEIRA R, Toledo de OLIVEIRA F, Helena de Carvalho SALES-PERES S. USE OF DNA TECHNOLOGY IN FORENSIC DENTISTRY. J Appl Oral Sci. 2007;15(3):156–61. Available from: www.scielo.br/jaos
49. Hussein TO, Akşit-Bıçak D. Management of Post-Traumatic Dental Care Anxiety in Pediatric Dental Practice—A Clinical Study. Children (Basel). 2022;9(8). doi: 10.3390/children9081146
50. Bjelopavlovic M, Zeigner AK, Hardt J, Petrowski K. Forensic Dental Age Estimation: Development of New Algorithm Based on the Minimal Necessary Databases. J Pers Med. 2022;12(8). doi: 10.3390/jpm12081280
51. Pendharkar SS. Forensic odontology: A new dimension in dentistry. Int Dent J Stud Res. 2024;12(1):3–6. doi: 10.18231/j.idjsr.2024.002

52. Krishan K, Kanchan T, Garg AK. Dental Evidence in Forensic Identification-An Overview, Methodology and Present Status. Open Dent J. 2015;9:250–6.
53. Zhang M. Forensic imaging: a powerful tool in modern forensic investigation. Forensic Sci Res. 2022;7(3):385–92. doi: 10.1080/20961790.2021.2008705
54. Pandey H, Chaudhary SK, Pathak H, Nuzzolese E. Forensic Odontology: An Aid in Identification of Unknown Human Remains. Med Legal Update. 2021;21(4):37.
55. Bhagya J, Cherian LM, Sathyan P, Sudharani, Rasla PC, Sanil S. Child abuse: knowledge, awareness, and experience among dentists in India. Egypt J Forensic Sci. 2023;13(1). doi: 10.1186/s41935-023-00355-0
56. Vucic S, Dhamo B, Jaddoe VWV, Wolvius EB, Ongkosuwito EM. Dental development and craniofacial morphology in school-age children. Am J Orthod Dentofacial Orthop. 2019;156(2):229-237.e4. doi: 10.1016/j.ajodo.2018.09.014
57. Wright JT. NORMAL FORMATION AND DEVELOPMENT DEFECTS OF THE HUMAN DENTITION. Pediatr Clin North Am. 2000;47(5):975–1000. doi: 10.1016/S0031-3955(05)70254-6
58. Tabakcilar D, Bundak R, Gencay K. Dental Age in Precocious and Delayed Puberty Periods. Eur J Dent. 2021;15(3):539–45. doi: 10.1055/s-0041-1726156
59. Saks MJ, Albright T, Bohan TL, Bierer BE, Bowers CM, Bush MA, et al. Forensic bitemark identification: weak foundations, exaggerated claims. J Law Biosci. 2016;3(3):538–75. doi: 10.1093/jlb/lsw045
60. Lewis C, Marroquin LA. Effects of skin elasticity on bite mark distortion. Forensic Sci Int. 2015;257:293–6. doi: 10.1016/j.forsciint.2015.07.048
61. Dama N, Forgie A, Mânica S, Revie G. Exploring the degrees of distortion in simulated human bite marks. Int J Legal Med. 2020;134(3):1043–9. doi: 10.1007/s00414-019-02163-5
62. Forrest A. Forensic odontology in DVI: current practice and recent advances. Forensic Sci Res. 2019;4(4):316–30. doi: 10.1080/20961790.2019.1678710
63. Charangowda B. Dental records: An overview. J Forensic Dent Sci. 2010;2(1):5. doi: 10.4103/0974-2948.71050
64. Baqai HS, Zaidi SJA, Baig QA, Bashir MB, Anwar M, Ansari AS. Maintenance of dental records and awareness of forensic odontology among pakistani dentists: a mixed-method study with implications for dental data repository. BMC Oral Health. 2023;23(1). doi: 10.1186/s12903-023-03500-2
65. Sebastian S, Franco A, Mânica S. Intersection of forensic odontology and psychology. J Forensic Odontostomatol. 2023;41(1):2–18.
66. Jayakrishnan JM, Reddy J, Vinod Kumar RB. Role of forensic odontology and anthropology in the identification of human remains. J Oral Maxillofac Pathol. 2021;25(3):543–7. doi: 10.4103/jomfp.jomfp_81_21
67. Morgan J. Wrongful convictions and claims of false or misleading forensic evidence. J Forensic Sci. 2023;68(3):908–61. doi: 10.1111/1556-4029.15233