



Oral and Dental Aspects of Child Abuse and Neglect

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Abstract: *In all 50 states, health care providers (including dentists) are mandated to report suspected cases of abuse and neglect to social service or law enforcement agencies. The purpose of this report is to review the oral and dental aspects of physical and sexual abuse and dental neglect in children and the role of pediatric care providers and dental providers in evaluating such conditions. This report addresses the evaluation of bite marks as well as perioral and intraoral injuries, infections, and diseases that may raise suspicion for child abuse or neglect. Oral health issues can also be associated with bullying and are commonly seen in human trafficking victims. Some medical providers may receive less education pertaining to oral health and dental injury and disease and may not detect the mouth and gum findings that are related to abuse or neglect as readily as they detect those involving other areas of the body. Therefore, pediatric care providers and dental providers are encouraged to collaborate to increase the prevention, detection, and treatment of these conditions in children. (Pediatr Dent 2017;39(4):278-83)*

KEYWORDS: BITE MARKS, SEXUAL ABUSE, PHYSICAL ABUSE, DENTAL NEGLIGENCE, BULLYING, HUMAN TRAFFICKING

Children may be exposed to multiple kinds of maltreatment that manifest in the mouth, so health care professionals (including dental providers) need to be aware of how to evaluate and address these concerns. Maltreatment includes physical and sexual abuse and can include evidence of bite marks and dental neglect. Bullying and the human trafficking of children also occur and can have serious long-term effects. These issues may be the presenting problem, noticed during a physical examination, or children or adolescents may disclose information about experiencing abuse or neglect. It is important for all health care providers (including dental providers) to be alert to and knowledgeable about signs and symptoms of child abuse and neglect and to know how to respond. Because different communities have different resources, not all providers of a certain job specification may be available everywhere, and thus, job roles may sometimes overlap.

Physical Abuse

Craniofacial, head, face, and neck injuries occur in more than half of child abuse cases.¹⁻⁶ All suspected victims of abuse or

neglect, including children in state custody or foster care, should be examined carefully by the appropriate provider at some point during the course of the evaluation for signs of oral trauma, caries, gingivitis, and other oral health problems, which are more prevalent in maltreated children than in the general pediatric population.⁷

Some authorities believe that the oral cavity may be a central focus for physical abuse because of its significance in communication and nutrition.⁸ Oral injuries may be inflicted with instruments such as eating utensils or a bottle during forced feedings, hands, fingers, scalding liquids, or caustic substances. This form of abuse may result in contusions; burns or lacerations of the tongue, lips, buccal mucosa, palate (soft and hard), gingiva, alveolar mucosa, or frenum; fractured, displaced, or avulsed teeth; or facial bone and jaw fractures. Naidoo⁹ cited the lips as the most common site for inflicted oral injuries (54%) followed by the oral mucosa, teeth, gingiva, and tongue. Lacerations to the oral frena in premobile infants are often the result of physical abuse and are frequently associated with other findings of serious physical abuse.¹⁰ Trauma to the teeth may result in pulpal necrosis, leaving the teeth gray and discolored.^{11,12} Gags applied to the mouth may result in bruises, lichenification, or scarring at the corners of the mouth.¹³ Some serious injuries of the oral cavity, including posterior pharyngeal injuries and retropharyngeal abscesses, may be inflicted by caregivers who fabricate illness in a child¹⁴ to simulate hemoptysis or other symptoms requiring medical care. All findings in cases in which there is reasonable suspicion of abuse or neglect, regardless of mechanism, should be reported for further investigation. Unintentional or accidental injuries to the mouth are common and can be distinguished from abuse by judging whether the history (including the timing and

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ABBREVIATIONS

AAP: American Academy of Pediatrics. **ABFO:** American Board of Forensic Odontology.

mechanism of the injury) is consistent with the characteristics of the injury and the child's developmental capabilities. Multiple injuries, injuries in different stages of healing, or a discrepant history should arouse suspicion for abuse. Consultation with or referral to a knowledgeable dentist or child abuse pediatrician may be helpful. The clinical report from the American Academy of Pediatrics (AAP) entitled "The Evaluation of Suspected Child Physical Abuse" provides additional guidance.¹⁵

Sexual Abuse

Although the oral cavity is a frequent site of sexual abuse in children,¹⁶ visible oral injuries or infections are rare. When oral-genital contact is suspected, referral to specialized clinical settings equipped to conduct comprehensive examinations is recommended. The AAP clinical report entitled "The Evaluation of Children in the Primary Care Setting When Sexual Abuse Is Suspected"¹⁷ provides information regarding these examinations as does the "Updated Guidelines for the Medical Assessment and Care of Children Who May Have Been Sexually Abused."¹⁸

When oral-genital contact is confirmed by history or examination findings, universal testing for sexually transmitted infections within the oral cavity is controversial; the clinician may consider risk factors (eg, chronic abuse or a perpetrator with a known sexually transmitted infection) and the child's clinical presentation when deciding whether to conduct such testing. Accuracy to diagnose sexually transmitted infections of the oral cavity is increased if evidence is collected within 24 hours of exposure in prepubertal children¹⁹ and within 72 hours in adolescents. Evidence collection should be repeated as clinically indicated. Oral and perioral gonorrhea in prepubertal children (which is diagnosed with appropriate culture techniques and confirmatory testing) is pathognomonic of sexual abuse but is rare.^{20,21} Rates are higher in sexually abused adolescents (12% with gonorrhea; 14% with *Chlamydia*).²² Pharyngeal gonorrhea frequently is asymptomatic.²³ Although culture has been considered the gold standard, nucleic acid amplification tests are more commonly used now²⁴ because they are more sensitive, less invasive, and less expensive.²⁵ Although they have not been approved by the US Food and Drug Administration for the prepubertal age group or for rectal or oropharyngeal swab specimens, the Centers for Disease Control and Prevention does cite nucleic acid amplification tests on vaginal swab specimens or urine as an alternative to cultures in girls. However, culture remains the preferred method for testing urethral swab specimens or urine for boys and for extragenital swab specimens (pharynx and rectum) for all children.^{26,27} Although human papillomavirus infection may result in oral or perioral warts, the mode of transmission remains uncertain. Human papillomavirus infections may be transmitted sexually through oral-genital contact, vertically from mother to infant during birth, or horizontally through nonsexual contact from a child or caregiver's hand to the genitals or mouth.^{28,29}

Unexplained injury or petechiae of the palate, particularly at the junction of the hard and soft palate, may result from forced oral sex.³⁰ As with all suspected child abuse or neglect, when sexual abuse is suspected or diagnosed in a child, the case must be reported to child protective services and/or law enforcement agencies for investigation.³¹⁻³⁴ A multidisciplinary child abuse evaluation for the child and family is preferred when available.

Children who present acutely with a recent history of sexual abuse may require specialized forensic testing for semen and other foreign materials resulting from assault. Specialized hospitals and child protection clinics equipped with protocols and experienced personnel are best suited for collecting such specimens and maintaining a chain of evidence necessary for investigations. If a victim provides a history for oral-penile contact, the buccal mucosa and tongue can be swabbed with a sterile, cotton-tipped applicator; the swab can be air dried and packaged appropriately for laboratory analysis.

Bite Marks

Acute or healed bite marks may indicate abuse. Dentists trained as forensic odontologists can assist health care providers in the detection and evaluation of bite marks related to physical and sexual abuse.³⁵ Bite marks should be suspected when ecchymoses, abrasions, or lacerations are found in an elliptical, horse-shoeshaped, or ovoid pattern.³⁶ Bite marks may have a central area of ecchymoses (contusions) caused by the following 2 possible phenomena: (1) positive pressure from the closing of the teeth with disruption of small vessels or (2) negative pressure caused by suction and tongue thrusting. Bites produced by dogs and other carnivorous animals tend to tear flesh, whereas human bites compress flesh and can cause abrasions, contusions, and lacerations but rarely avulsions of tissue. An intercanine distance (ie, the linear distance between the central point of the cuspid tips) measuring more than 3.0 cm is suspicious for an adult human bite.³⁷

Bite marks found on human skin are challenging to interpret because of the distortion presented and the time elapsed between the injury and the analysis.³⁶ Recent investigations have led to questions about the scientific validity of forensic patterned evidence (bite mark analysis in particular) and its role in legal proceedings.³⁸ The pattern, size, contour, and color of a bite mark ideally can be evaluated by a forensic odontologist; a forensic pathologist can be consulted if a forensic odontologist is not available. If neither specialist is available, a medical provider or dental provider experienced in identifying the patterns of child abuse injuries may examine and document the bite mark characteristics photographically with an identification tag and scale marker (eg, ruler) in the photograph. The photograph should be taken such that the angle of the camera lens is directly over the bite and in the same plane of the bite to avoid distortion.³⁹ A special photographic scale was developed by the American Board of Forensic Odontology (ABFO) for this purpose as well as for documenting other patterned injuries (ABFO No. 2 Reference Scale). ABFO-certified odontologists and the ABFO bite mark analysis flow sheet can be found on the ABFO Web site (www.abfo.org). In addition to photographic evidence, every bite mark that shows indentations ideally will have a polyvinyl siloxane impression made immediately after swabbing the bite mark for secretions containing DNA. This impression will help provide a three-dimensional model of the bite mark. Written observations and photographs should be repeated at intervals to best document the evolution of the bite.³⁹ Because each person has a characteristic bite pattern, a forensic odontologist may be able to match dental models (casts) of a suspected abuser's teeth with impressions or photographs of the bite. (This is the responsibility of the police and not the health care provider.)

DNA is present in oral epithelial cells and may be deposited in bites. Even if saliva and cells have dried, they can be collected by using the double-swab technique. First, a sterile

cotton swab moistened with distilled water is used to wipe the area in question, then dried and placed in a specimen tube. A second control sample is collected by swabbing the victim's buccal mucosa to distinguish his or her DNA from that of the perpetrator.³⁹ All evidence should be collected, documented, and labeled according to standards with a clear chain of custody and submitted for forensic analysis.³⁹ Questions regarding the evidentiary procedure should be directed to a law enforcement agency.

Bullying

Thirty percent of children in the sixth to 10th grades report having been bullied and/or having bullied others.⁴⁰ Children with orofacial or dental abnormalities (including malocclusion) are frequently subjected to bullying^{41,42} and, as a result, may suffer serious psychological consequences, including depression and suicidal ideation.⁴³⁻⁴⁵ Children who reported physical abuse, intimate partner violence, forced sex, and bullying were found to also report poor oral health.⁴⁶ Also of great concern are the more subtle psychosocial consequences that can be associated with bullying behavior. Health care providers (including dental providers) can ask patients about bullying and advocate for antibullying prevention programs in schools and other community settings.⁴⁴ Health care providers can become familiar with "Connected Kids: Safe, Strong, Secure," the primary care violence prevention protocol from the AAP that offers preventive education, screening for risk, and linkages to community-based counseling and treatment resources (<https://patiented.solutions.aap.org/Handout-Collection.aspx?categoryid=32034>).⁴⁷

Human Trafficking

Human trafficking is a serious child health issue involving medical and dental ramifications, among others, but it is just beginning to be addressed in the United States. The US Department of State defines human trafficking as "[T]he recruitment, harboring, transportation, provision, or obtaining of a person for labor or services through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery" ([22 USC §7102(9)]).⁴⁸ Of these, children most commonly experience sex trafficking, "in which a commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such act has not attained 18 years of age" ([22 USC §7102(9)]). Sex trafficking is considered "commercial sexual exploitation of children" as are pornography and survival sex (defined as the exchange of sexual activity for basic necessities such as shelter, food, or money).^{49,50}

Precise numbers of children experiencing human or sex trafficking are difficult to obtain because of the complicated nature of these definitions and underreporting. However, it is estimated that >100,000 children are victims of prostitution each year in the United States⁵¹; see the AAP Clinical Report entitled "Child Sex Trafficking and Commercial Sexual Exploitation: Health Care Needs of Victims" for more information on identifying and serving these patients.⁵⁰ The average age of children who are exploited for sex is 12 years old, and children as young as 6 years old are targeted.^{46,51} Children who are or have been in foster care,⁴⁹ are homeless,⁵² are runaways,⁵⁰ or are incarcerated in juvenile detention facilities⁵⁰ are more likely to be victims of human trafficking (particularly if they are experiencing survival sex); this can include international ab-

duction, although geographical dislocation is not required in the definition of trafficking.⁵²

Although children who are victims of human trafficking are often disenfranchised from most of society, more than one-quarter of them still will see a health care professional while in captivity.⁵³ Victims of trafficking have complex psychosocial and physical challenges that affect how they perceive and respond to a given situation. Rescued victims often have complex health needs, including infectious diseases, reproductive health problems, substance abuse, and mental health problems. Dental problems also rank high in this list: for trafficked women and adolescents in Europe, 58% reported tooth pain.⁵⁴ In the United States, more than half (54.3%) of women and adolescents reported dental problems, most commonly tooth loss (42.9%).⁵⁵ Child trafficking victims have twice the risk for dental problems because they "often suffer from inadequate nutrition leading to retarded growth and poorly formed teeth, as well as dental caries, infections and tooth loss."⁵⁶ For older children, dental problems may trace back to their situation of origin, with limited access to or poor quality of care. Dental problems may also come from being in the trafficking situation, during which time children may have had unattended problems in addition to forgone preventive care or, even worse, physical abuse or torture to the head.^{54,57}

Human trafficking is not a problem exclusive to girls and women. As many as 50% of victims may be boys or men,⁵⁸ although they are not discussed as much in the literature. For both sexes, a commonality is a history of child abuse.

Dental Neglect

Dental neglect, as defined by the American Academy of Pediatric Dentistry, is the "willful failure of parent or guardian, despite adequate access to care, to seek and follow through with treatment necessary to ensure a level of oral health essential for adequate function and freedom from pain and infection."⁵⁹ Dental caries, periodontal diseases, and other oral conditions can lead to pain, infection, loss of function, and worse if left untreated. These undesirable outcomes can adversely affect learning, communication, nutrition, and other activities necessary for normal growth and development.^{4,60} Some children who first present for dental care have severe early childhood caries (formerly termed "infant bottle" or "nursing" caries). Caregivers with adequate knowledge and willful failure to seek care must be differentiated from caregivers without knowledge or awareness of their child's need for dental care when determining the need to report such cases to child protective services. Several factors are considered necessary for the diagnosis of neglect⁶¹:

- a child is harmed or at risk for harm because of lack of dental health care;
- the recommended dental care offers significant net benefit to the child;
- the anticipated benefit of the dental treatment is significantly greater than its morbidity, so parents would choose treatment over nontreatment;
- access to health care is available but not used; and
- the parent understands the dental advice given.

Failure to seek or obtain proper dental care may result from factors such as family isolation, lack of finances, transportation difficulty, parental ignorance, or lack of perceived value of oral health.⁶²⁻⁶⁴ The point at which to consider a parent negligent and begin intervention occurs after the parent has

been properly alerted by a health care provider about the nature and extent of the child's condition, the specific treatment needed, and the mechanism of accessing that treatment.⁶² Because many families face challenges in accessing dental care or insurance for their children, the health care provider, including the dental provider, will evaluate whether dental services are readily available and accessible to the child when considering whether negligence has occurred. A child's social, emotional, and medical ability to undergo treatment also should be considered when determining dental neglect.⁶⁴

To the best of his or her ability, the health care provider should be certain that the caregiver understands the explanation of the disease and its implications and, when barriers to the needed care exist, attempt to assist the family in finding financial aid, transportation, or public facilities for needed services. Risks and benefits of dental treatment should be explained, and parents should be told that appropriate analgesic and anesthetic procedures will be used to ensure the child's comfort during dental procedures. If, despite these efforts, the parent fails to obtain therapy, the case should be reported to the appropriate child protective services agency.⁶²

Conclusions

It is important for health care providers (including dental providers) to be aware that physical or sexual abuse may result in oral or dental injuries or conditions. Health care providers should be aware of when and how to document suspicious injuries and how to obtain laboratory evidence, photo documentation, and/or consultation with experts when appropriate. Furthermore, injuries that are inflicted by a perpetrator's mouth or teeth may leave clues regarding the timing and nature of the injury as well as his or her identity. Health care providers should be knowledgeable about such findings, their significance, and how to meticulously observe and document them. When questions arise or consultation is needed, a pediatric dentist or a dentist with formal training in forensic odontology can ensure appropriate testing, diagnosis, and treatment.

Pediatric dentists and oral and maxillofacial surgeons, whose advanced education programs include a mandated child abuse curriculum, can provide valuable information and assistance to other health care providers about oral and dental aspects of child abuse and neglect. The Prevent Abuse and Neglect through Dental Awareness⁶⁵ coalition (<http://www.healthy.arkansas.gov/programsServices/oralhealth/Pages/PANDA.aspx>), which has trained thousands of physicians, nurses, teachers, child care providers, dentists and other dental providers, is another resource for physicians seeking information on this issue. Physician members of multidisciplinary child abuse and neglect teams are encouraged to identify such dental providers in their communities to serve as consultants for these teams. In addition, medical providers with experience or expertise in child abuse and neglect can make themselves avail-

able to dentists and dental organizations as consultants and educators. Such efforts will strengthen our ability to prevent and detect child abuse and neglect and enhance our ability to care for and protect children.

Recommendations

1. Health care providers (including dental providers) are required to report injuries that are concerning for abuse or neglect to child protective services in accordance with local or state legal requirements. Abusive injuries frequently involve the face and oral cavity and, thus, may be first encountered by dental providers.
2. Similarly, sexual abuse may involve the mouth, even without overt signs, and thus, health care providers (including dental providers) should know how to collect a history to elicit this information as well as how to appropriately collect laboratory tests to support forensic investigations. The general provider is encouraged to become aware of and consult with appropriate specialists in his or her area for specialized forensic interviews and specimen collection.
3. Bite marks found on human skin are challenging to interpret because of the distortion presented and the time elapsed between the injury and the analysis. Ideally, the pattern, size, contour, and color of the bite mark should be evaluated by a forensic odontologist, when one is available.
4. Health care providers (including dental providers) are encouraged to ask their patients about bullying and advocate for antibullying prevention programs in schools and other community settings.
5. Health care providers (including dental providers) should be aware of the risk factors for human trafficking, identify these in their patients (both girls and boys), safely connect the patients to resources, and advocate for anti-trafficking efforts.
6. If parents fail to obtain therapy after barriers to care have been addressed, the case should be reported to the appropriate child protective services agency as concerning for dental neglect.
7. Providers are encouraged to work with colleagues (including psychological and educational resources) to provide support to families if any of the aforementioned maltreatment has occurred.

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