

## Forensic odontology & Bite marks

Forensic odontology is a branch of dentistry which in the interest of justice, deals with the proper handling and examination of dental evidence, with proper evaluation and presentation of dental findings. Forensic odontology is a vital and integral part of forensic medicine that is most widely utilized for the identification of living and deceased persons. In recent times, forensic odontology is developing immensely in assisting forensic medicine. The probable reason for this expanded interest is that a vast number of forensic and legal professional, law enforcement personals and insurance companies rely on the dental evidence for their operations. Forensic odontology is of immense help in identification of deceased in mass disaster situations like earthquakes, Tsunamis, air crash etc, and in the identification of decomposed and disfigured bodies like that of drowned persons, fire victims, and victims of motor vehicle accidents. The various methods employed include cheiloscopy, bite mark analysis, rugoscopy, radiographic, photographic study, and molecular methods.

The role of a dentist is extremely important when he is able to supply antemortem dental records so as to aid in human identification as a part of forensic dentistry. Forensic dentists are frequently called upon to identify the remains of individuals who cannot be identified visually such as in cases of burnt, grossly decomposed or mutilated remains. The patient's record is the complete story of the history, physical examination, diagnosis, treatment and care of a patient. The record may consist of several different elements; common ones include written notes, radiographs, study models, referral letters, consultants' reports, and clinical photographs, results of special investigations, drug prescriptions, laboratory prescriptions, patient identification information and comprehensive medical history. The palatal rugae have also been foFactors for Dental Identification

### 6.1 Number of teeth

The assessment of teeth in the mouth should include those that are present and missing. The number of possibilities that exist for the combination of teeth missing or present may well be enough to obtain a positive identification. It is important to establish whether the teeth

were lost ante-mortem or post-mortem or around the time of death (peri-mortem). This will help establish the pattern of treatment undertaken with regard to any exodontia, and closer examination of any tooth sockets may give an indication as to the time lapsed since this treatment.

**6.2 Tooth loss** It is important to determine the period when the teeth were lost from the arch. In the post mortem loss, the bone surrounding the socket margins would be unresorbed and have a sharp profile whereas in ante-mortem loss, due to the evidence of the healing process taking place within the socket; varying degrees of bone remodelling around the rim and complete fill-in of the socket with secondary bone formation is seen.

**6.3 Restorations** A tooth is restored when there is loss of tooth substance due to dental caries, fracture of tooth, any abnormal wearing away of teeth or for an aesthetic reason. Restorations frequently involve multiple surfaces of the teeth. A full description of the restoration must be included in the post-mortem records and this must include the material used and the surfaces restored. Restorations on the anterior teeth involves 4 surfaces (mesial, distal, labial, lingual/palatal) and posterior teeth involve 5 surface (buccal, lingual, mesial, distal and occlusal). and useful to identify young individuals with no dental restorations in many cases

**Bite marks evidences** Bite-mark pattern may be deposited within foodstuffs, other objects, or upon the victim of an assault or homicide. Bite mark analysis, can reveal the kind of violence and the time passed between its infliction and the examination. Bite-mark evidence inflicted by a deceased victim may also be seen on a living assailant. For children, in cases other than those of domestic violence, or physical or sexual abuse, biting can represent a form of expression that occurs when verbal communication fails. Bite mark is, in general are circular, ovoid or horse-shoe shape patches. Human adult dentition comprises of 32 teeth and each one of them has its own characteristic size, shape and features. The action of the dental arch on the skin may produce many kinds of lesions, as the dental elements act as incisive instruments. The evidence of a bite mark is usually crucial to establish that two subjects have been involved in a violent contact in a crime scene. The greatest challenge in Forensic Dentistry are bite marks found on human skin, because of the distortion presented and the time elapsed between

the production and the analysis. 4. Types of Bite marks Bite marks are frequently encountered in cases involving sexual assault, brutal murder, and child abuse etc. These marks can play a substantial role in leading to a conviction. Biting is often regarded as a sign of the perpetrator seeking to humiliate the victim while also achieving complete domination. Bite marks can be seen on any part of the body, chiefly on soft and, fleshy tissue such as the arms or buttocks which are easy to target. It should always be remembered that at the crime scene one can also find bite marks on the objects present. Additionally they are also commonly found on the suspect.

**Basis of Bite marks investigation** Often the differences in size and shape of teeth are very obvious to even a layman, for instance when someone has teeth missing or very prominent teeth. A representative human bite mark is described as an elliptical or circular injury that records the specific characteristics of the teeth. The size, shape and pattern of the biting edges of the anterior teeth that are arranged in the upper and lower jaw are specific to that individual. This is mainly caused by the sequence of eruption of anterior and posterior teeth. Bite marks with high evidentiary value which can be used in comparisons with the suspects' teeth include marks from specific teeth having distinctive traits. It is possible to identify specific types of teeth by their class characteristics. In case a victim makes an attempt to defend himself.