Editorial

Role of Radiology in Forensic Odontology

Oral and maxillofacial radiology is mainly classified as extraoral and intraoral radiology based on the region exposed and as conventional and digital radiography based on the type of radiographic image. Forensic radiology is a distinct branch of forensic odontology and updated knowledge in advanced imaging modalities is indeed essential for all budding forensic odontologists to excel in the field of forensic science.

In this modern digitalized era, from case history documentation of patient to treatment protocol can be easily saved for the future references. Radiographic investigations along with other investigations such as hematological, histopathological apart from clinical details of the patients are also well maintained by many health centers as a routine protocol. There is a paradigm shift from conventional radiography to digital radiography and both extraoral and intraoral radiographs of the patients taken at different visits can be easily saved in the database and can be retrieved for future reference if the patient's demographic details are known.

The significance of oral and maxillofacial radiology is not only as serving as evident antemortem record but also as an indicator of dental age estimation apart from personal identification. There are various radiographic methods identified by many forensic odontologists using conventional radiographs earlier, and recently, cone beam computed tomography (CBCT) is widely used to estimate the age of the individual, which is important in medicolegal cases. CBCT is an innovative invention in the field of dentistry and was first introduced in 1997 for imaging of an oral and maxillofacial region, and it provides images in three orthogonal planes (axial, sagittal and coronal). Yang *et al*. in 2006 were the first to utilize CBCT in age determination since when various studies on age estimation using various methods have been carried out utilizing CBCT. "Teeth A Test of Age" was first published by Saunders and first scientific method for age determination using teeth was given by Gustafson in 1950. Radiographic methods of age estimation are noninvasive, and hence, they gained more attention compared with other methods such as morphological, histological, and biochemical methods which are time-consuming and expensive. Various features used in the radiographic age determination includes jaw bone prenatally, appearance of tooth germs, degree of crown completion, eruption of the crown in the oral cavity, degree of root completion of erupted and unerupted teeth, degree of resorption of deciduous teeth, volume of pulp chamber and root canals/formation of physical secondary dentine, etc., Age estimation is grouped into three phases, namely, prenatal/neonatal/postnatal, children/adolescents and adults.

Method of age estimation in adults includes both volume assessment of teeth using pulp/tooth ratio method by Kvaal and coronal pulp cavity index and development of third molar using Harris and Nortje method and Van Heerden system. Volumetric analysis of the dental structures, especially pulp chambers and root canals using computed tomography and CBCT is the current research in the field of forensic odontology.

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