REVIEW ARTICLE

Forensic Odontology & Dental Specialities: A Parallel Bond

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ABSTRACT

A quantum leap in the discipline of science and technology is crucial in tackling the difficult task of the recognition of the human body remains, especially in the cases of crime or catastrophe. Considering the ease of technique and accuracy of the results, odontology in human identification has become a vital part of the forensic medicine. The emergence of the discipline of forensic odontology has led to varied approaches for processing and assessment of the dental evidence which could be linked to a particular human being. The article focuses on imparting an insight into the science of forensic odontology.

KEYWORDS: Foresenic; Medicine; Dental Sciences; Odontology

INTRODUCTION

Forensic odontology, also popularly known as forensic dentistry, has been elucidated as a sub-discipline of forensic medicine that focuses on the adequate conduct and scrutiny of the dental findings.[1] The first ever evidence of the use of forensic odontology to identify a dead subject was done in the late 60's AD when King Nero recognized the lady through her peculiar teeth setting.[2] In the last era, around the late 1980s, the dead bodies of the German leader Hitler and his wife were recognized using dental findings.[3] A wide scale use of forensic odontology was made in order to recognize the victims during the World Trade Center incident in the United States. Since the last couple of decades, the discipline and expertise have been utilized in the civil as well as criminal cases.[4]

Forensic odontology has been designated as a crucial part of forensic science owing to the fact that the peculiarities of the dental tissues are unthawed even when exposed to extreme temperatures or situations. They have a longer span of endurance in the atmosphere as well in water and shown no changes on exposure to dirt or fire. Forensic Odontology is an amalgamation of all disciplines of dental specialties and hence it is extremely arduous to quarantine it from other specialties.

MULTIDISCIPLINARY APPROACH OF FORENSIC ODONTOLOGY

A review of the importance of each discipline of dental science with forensic odontology has been explained as follows:

Forensic Odontology And Endodontics: Endodontics is a branch primarily dealing with the health of the pulp tissue. It involves a sequential treatment plan which entails removal of pulpal pathology followed by the task of cleaning and shaping, ultimately contemplated by irrigation and obturation.[5] People who have undergone numerous endodontic procedures or restorations are naive to distinguish when compared to people without any such treatment. Moreover, varied restorative materials have diverse color and property which make them easy to discern. In addition, the materials have a distinguished way to react to excess heat which is beneficial in case of burn victims.[6] However, a considerable disadvantage is that a former dental record of the subject is mandatory for confirmation of the findings.

Forensic Odontology And Oral Medicine-Oral Radiology: Oral medicine deals with the treatment of the patient with a convoluted medical pathology which has oral manifestations whereas the oral radiology is concerned with imaging of the head & neck region which would aid in the diagnosis of the oral pathologies. Both the disciplines play a vital role in forensic odontology, majorly for patient recognition. Utilization of premortem and postmortem is necessary to compare and come to a conclusion.[7]A possible convict or suspect with a peculiar dental radiograph which includes a fractured tooth or a uniquely shaped tooth can be recorded and used to contrast with the radiography after the death, as a part of confirmation. One more advantage with oral radiology is that it aids in ascertaining the victim's age from radiographic corroboration of tooth eruption or cranial development.

Forensic Odontology And Oral Surgery: Oral Surgery, as a salient part of dental medicine, is a discipline which deals with the meticulous evaluation of diagnosis and

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accurate therapeutic plans in the oral-facial regions. It involves surgical treatment of fractures in the head and neck region as well as procedures like enucleation and marsupialization for removal of cysts, abscesses, and tumors. If a subject has undergone fracture repair or specific surgical treatment which leaves a unique scar, it can lead to ease of recognition. As a supplement to other assessments, superimposed images of cranial and facial regions have been employed to confirm the identity of a human being considering its uniqueness. A comparison of pre-death photos with post-death images of the skull which is reconstructed using the computer technology could prove to be vital in victim identification.[8]

Forensic Odontology And Oral Pathology: A discipline of dentistry and pathology which is confined to the study and diagnosis of an oral pathology based on a histological evidence is referred to as the Oral Pathology. The cardinal boon lies in the linkage of both the specialties to determine the specific age of the subject. With the aid of pre-natal and post-natal lines as well as lines of retzius in the histological section of the victim's teeth, it is easy to estimate the age. It is also complemented by the availability of Gustafson Technique. Changes in cementum, resorption of the root structure along with attrition and dentinal abnormalities are amongst the considerable factors to estimate the age.

Forensic Odontology And Pedodontics: Pedodontia is a specialty analogous to the diagnosis and treatment of oral cavity in children. Maturation of the teeth and the quantity of the calcification are the key holes to determine the age of the child victim using the dental records.[9] A chart prepared by Schour and Mr. Massler is very widely used to determine the dental age. An unswerving collation between the radiographs and chart can help to determine the epoch of the victim's death.

Forensic Odontology And Periodontics: Supporting structures of the tooth which include gingiva, cementum, PDL, and bone are studied, diagnosed and treated under the discipline of periodontia. Length and development of root as well root calcification are studied to determine the subject's age. Resorption of bone, gingival abnormalities, as well as cemental morphology, can be used to identify the individuals.[10]

Forensic Odontology And Prosthodontics: One of the major objectives of the field of prosthodontia is to assess and rehabilitate the patient with the aid of an appropriate prosthesis. Employing appliances used in the discipline of prosthodontics for the purpose of forensics is gaining weight owing to the success ratio. One distinct method is the identification of the victim or suspect using the pattern of the rugae area in the palate.[11] The rugae pattern is exclusive to each individual and hence, could be considered as a sustainable evidence in a court case.

CONCLUSION

Forensic dentistry has always been an integral part of medical and dental sciences. Availability of better technology has prevailed to reframe our attitude towards the discipline of forensic odontology. Nevertheless, there is a scope for tremendous improvement which would enhance and revolutionize the postmortem procedures. Inter-disciplinary knowledge and understanding would be vital to the future of forensic odontology.

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