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RESEARCH ARTICLE

ESTIMATION OF AGE FROM ATTRITION OF TEETH IN DECOMPOSED DEAD BODIES- A RETROSPECTIVE STUDY

Dr. Nidhi Chaudhary[1], Dr. Vinod Kumar[2], Dr. Kuldeep Kumar[2], Dr. Priti Singh[3], Dr. Ashish Tyagi[3] and Dr. Ruchi Tanwar[4]

1. Dental Surgeon, Health Department, Haryana, India.
2. Associte Professor, Department of Forensic Medicine, Pt. B. D. Sharma, PGIMS Rohtak, Haryana India.
3. Resident, Department of Forensic Medicine, Pt. B. D. Sharma, PGIMS Rohtak, Haryana India.
4. Medical Officer, Health Department, Haryana, India.

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Abstract

Objective: Age estimation is important in forensic medicine and odontology for identification of deceased victims and also for crimes and accidents. Various methods have been constructed and tested to estimate the age of young individuals. Among them are the physical examinations using anthropometric measurements, skeletal maturation, dental age estimation, a combination of dental development and anthropometric measurements and a combination of skeletal and tooth eruption. In cases of unknown and unclaimed decomposed bodies, age estimation from attrition of teeth is one of the important parameters.
Material and Methods: In the present study, we retrospectively studied 80 cases of decomposed dead bodies centered on the attrition effect over the occlusal surface of molar teeth with the advancing age.
Result and Conclusion: The attrition of teeth was mild in the young adult, moderate in middle aged and severe in old age. In this study, we concluded that the grade of attrition of teeth as per Gustafson's Method commensurate with the advancement of age of the person.

Introduction:-

Forensic odontology is a significant outgrowth of forensic medicinal sciences and, in the felicity of justice, pacts with the apt examination, handling and demonstration of dental evidence in the court of law [1]. Age can be assessed from the teeth by several techniques like the eruption of teeth, which is acknowledged as a good indicator of the age of the person. Other changes, which are noticeable with increasing age, are attrition, periodontal disease, secondary dentine formation, and root translucency, resorption of roots, root roughness, apposition of cementum, color change in the crown and the roots [2]. Age estimation is an important step in constructing a biological profile from human skeletal remains. The goal of the forensic anthropologist is to assist medico legal officials with identification by presenting a probable age range of the deceased. In adults, this is typically done by examining various skeletal traits which have been shown to degenerate with age in a predictable manner.

Corresponding Author:- Dr. Priti Singh
Address**:-** Resident, Deptt. of Forensic Medicine, Pt. B. D. Sharma, PGIMS Rohtak Haryana, India.

Material And Method:-

The present retrospective study was carried out in the Department of Forensic Medicine, Pt. B. D. Sharma PGIMS, Rohtak on retrospectively collected data of 80 cases of decomposed dead bodies which were brought to the mortuary of PGIMS Rohtak for post-mortem examination during the time period of 1st January 2012 to 31st December 2012. Deeply charred body, dead bodies of age less 18 years and edentulous dead bodies were excluded from the study. The details of the all 80 cases namely; age, sex and attrition of teeth was recordedand all the data was collected from the record of post mortem reports of investigator and then studied for making results and conclusions.80 cases were evaluated and attrition scores were noted as per Gustafson scoring criteria (Table. 1).

Table 1:- Scoring criteria as per Gustafson's method [3].

A0	No Attrition	No grinding
A1	Attrition limited to enamel level	Mild grinding
A2	Attrition limited to dentine level	Moderate grinding
A3	Attrition up to pulp cavity.	Severe grinding

Observation:-

Total 80 cases were studied in present study in respect of attrition of teeth with respect to age.

Table 2:- Out of 80 cases 54 (67%) were males and 26 (33%) were females. 19 males and 9 females were known and their age was accurately known and rest were unknown dead bodies.

Sex	Known	Unknown	Total
Male	19	35	54
Female	9	17	26
Total	28	52	80

Table 3:- Out of 80 cases 60% were of young age, 32% were of middle age and 8% were of old age.

Age	Male	Female	Percent
Young >18-40 yrs	35	13	60
Middle 40-60yrs	17	9	32
Old >60yrs	4	2	8

Table 4:-No to mild attrition were noted in young age. Moderate attrition was noted in middle age and severe attrition of tooth was noted in old age.

Age	Attrition
Young	No to mild attrition
Middle	Moderate attrition
Old	Severe attrition

Discussion:-

Teeth attrition is indeed a multifactorial process and includes gender, age, food habits, diseases of teeth, bruxism, number of teeth, location of teeth etc. In our study, attrition is directly related to the age. As age advances, the attrition rate of teeth is also increases.

Similar results were obtained by the Bajpai et al [4] in 2013 in Jaipur, showed attrition increases with age. They also suggest that attrition could be used for age estimation but only with the adjunct of other measures, attrition alone can't be considered as a reliable marker of age.

Constandse-Westermann [5] conducted a study in Netherlands in 1997 on age estimation by dental attrition. They concluded that by analyzing the degree of dental attrition in individuals, taking into account the average rate of attrition in the total sample/population, a high percentage of correct age classifications into four age classes with only a slight overlap can be obtained. Because in most skeletal samples the teeth are among the best-preserved parts, the method can usually be applied to a relatively high percentage of individuals.

Singh A and Gorea R [6] conducted a study in 2004 in Patiala Punjab, on age estimation from physiological changes in teeth. In their study mean age difference of the calculated age from actual age was found to ± 2.16 years. Regression line obtained can be used to estimate the age of unknown cadaver by first calculating the score and then finding the age using this regression line.

In the study conducted by Lewis et al [7] in 2021 in Karnataka on Estimation of Age by Evaluating the Occlusal Tooth Wear in Molars showed that evaluation of tooth wear by the Average Stage of Attrition (ASA) method can be used as a non-invasive means to aid in the determination of age.

In the study conducted by Singh et al [8] over 70 patients and a linear regression formula was obtained. They concluded that Gustafson's method is a reliable method for age estimation with some proposed modifications.

Conclusion:-

Teeth plays an important part in identification of the person in dead bodies as it decays at slower rate in comparison to other body organs and bones. Tooth attrition is directly related to the age of the person and plays an important role in age estimation of the individual along with the other skeletal features.

Compliance with Ethical Standards
Conflict of Interest:
None.

As this a data based retrospective study and all the data has been collected from the post mortem examination reports of the authors from January 2012 to December 2012. Therefore, there is no need to take ethical clearance as the post mortem examination record is confidential in nature and in custody of the said authors.

Author's contributions:
All the authors contributed significantly in this research study.

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