A STUDY OF DENTAL I.D- A COMPLETE ANTE-MORTEM DATA

Dental Science

Shetty Akhil Sadashiva	Assistant Professor, Department of Dentistry, Kanachur Institute of Medical Sciences, Mangalore
Shrivya Saloni Mahaveeran*	Senior Lecturer, Department of Pedodontics, Yenepoya Dental College, Mangalore *Corresponding Author
Shetty Mukul Sadashiva	Assistant Professor, Department of Orthodontics, Subbaiah Institute of Dental Sciences, Shimoga
Anjali Kiran	Tutor, Department of Dentistry, Kanachur Institute of Medical Sciences, Mangalore
Samir Ahmed	Reader, Department of Oral Pathology, KMCT Dental College, Mannassery, Calicut.

ABSTRACT

Identity of a person is every individual's primary right, either when they are alive or dead. Always, importance is given for identification, which is done by comparative data analysis, i.e. post and ante mortem comparison; but no where do we get complete dental details or records in a single place which can make the identification process genuine and easier. Data kept by some of the dentists is sketchy and when it comes to being used for identification, it lacks uniformity and comprehensiveness. Hence it is advisable to include patients intra oral and extra oral photographs, lip prints, palatal rugae patterns, radiographs so that in disasters, more the points of verification, the better the chance of identification. This study addresses the gap in collection, classification, compilation, storage and retrieval when asked to provide dental data for identification, for disaster related deaths. So the need of the hour is to have every individual's detailed dental records with essential photographs and x-rays and to have all the details stored safely, which could be used any time in the future by the patients or their family members, after producing a legal official request letter.

KEYWORDS

Dental ID, Identity, Rugae, Lip-print, photographs.

INTRODUCTION:
Millions of lives are lost every year by natural (earthquake, drought, and tsunami) or man-made disasters (terrorism/homicides/suicide bombing). Traumatic experiences such as these can result in a large number of unidentified victims; this is when the tools available to forensic science come into play to identify such victims. Most common practices are physical identification of bodies/corpses, fingerprinting, dental comparison, and Deoxyribonucleic acid analysis[1].

When physical identification and fingerprints cannot be used, dental identification remains one of the most reliable and frequently applied methods of identification, predominantly by comparisons of ante-mortem and post-mortem records. The science of dealing with evidence from dental and oral structures – Forensic Odontology, is a specialty unto itself[2].

Forensic odontology has established itself as an important and often indispensable science in medico-legal matters, and in particular, in identification of the dead. Much of its expertise is drawn from clinical experience, basic research, and advances in knowledge in dentistry in general. In the last half-century, forensic odontology has made great strides and has developed as a separate specialty. It relies on the sound knowledge of the teeth and jaws possessed by dentists, and incorporate dental anatomy, histology, radiography, pathology, dental materials, and developmental anomalies[3].

Dental records are one of the most reliable methods of victim identification after disasters. After the Asian tsunami (2004), the identification of missing persons with dental records was significantly higher than among those without records. Teeth and dental restorations are to some extent resistant to fire, and identity was established through dental evidence Radiographs was also used for identifications, bitewing radiographs which are the most frequent radiographs taken in general dental practice.

Radiographic identification is based on the recognition of characteristic patterns when comparing the ante mortem (AM) and post-mortem (PM) images, and dental work facilitates the matching. Recent improvements in dental health status, leading to more individuals without dental restorations, may interfere with the discrimination potential wherein merely anatomic features such as the shape of crowns, pulp chambers and roots, the pattern of alveolar bone trabeculae and crest of the alveolar bone can be used[4].

Aims and Objectives:
*   To record every willing patient's intra and extra oral photograph, dental findings, palatal rugae pattern, lip prints and full mouth x-ray (orthopantomogram).
*   To systematically compile all the records in a detailed manner.
*   To store the records and details safely and maintain confidentiality until any future need of emergency or disaster.

STUDY DESIGN
SAMPLE SELECTION:
Every patient reporting to the dental outpatient department or clinic, who is willing to participate in the study.
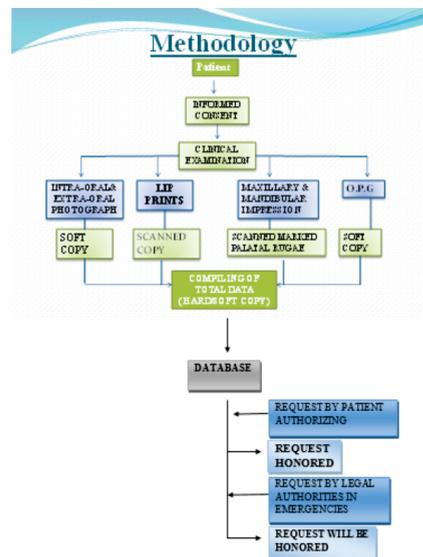
METHODOLOGY
All willing patients informed consent were taken prior to the data collection. All the information were told to the patient regarding the data collection and itz importance before collecting the data. Ethical clearance for the study was obtained from Yenepoya University Ethics Committee.

The patients were made to sit comfortably on the dental chair and patient information was collected, followed by clinical examination with universal precautions. The patients were asked to rinse their mouth thoroughly after taking informed consent for extra oral photograph. Patients were made to stand near a light coloured wall and using a digital camera, the lateral and the front view of the patient's face was photographed both in smiling position and at rest position. For an intra oral photograph, patients were made to sit erect on the dental chair. A sterile intra-oral mirror was placed on the mandibular arch and the palatal reflection was photographed. The mandibular arch and the dentition were photographed by direct vision. A cheek retractor was placed and the teeth were photographed both at occlusion and at rest.

After taking the extra oral and intraoral photographs, a maxillary impression tray was selected based on the size and shape of the dental arch. Alginate impression material was mixed to a uniform consistency using the flexible rubber bowl and curved spatula in 2:1 ratio of powder: liquid. The mix was loaded onto the impression tray. Impression of the maxillary arch was then made using the selected impression tray.

Dental stone (Type III) was mixed to the required consistency using the straight spatula and poured into the impressions and allowed to set. The set casts were taken out of the impression, finished and labelled.

For recording lip prints, the lips of the individuals were cleaned and sufficient dark-shaded non-glossy lipstick for the upper lip was taken on one end of the ear bud and was applied in a single stroke. Similarly, for the lower lip, the other end of the ear bud was used and discarded thereafter, thus maintaining the decorum of asepsis. The participants were asked to close the mouth, and lip prints were obtained in relaxed position. A strip of cellophane tape slightly more than the breadth of subject's lips was taken. The strip of tape was uniformly pressed from the left end to the right end of the lip, taking care that the lips of the subject should be closed and relaxed. The tape was taken out in a single jerk motion and was pasted on the A-4 size paper.

For orthopantomogram patients were asked to remove any earrings, jewellery, hair pins, glasses, dentures or orthodontic appliances. Patients were asked to stay absolutely still during the exposure and were asked to bite on a plastic spatula so that all the teeth, especially the crowns, could be viewed individually.

The dental casts, lip print on A4 size paper are then scanned using a scanner and image was saved in the desktop in .jpg format. Soft copy of patient's intra and extra oral photograph, and radiographs will be saved along with patients details. Similarly all the hard copy will be compiled and filed in a systematic manner.

OBSERVATIONS/RESULTS
A detailed case history format act as an very important source of ante - mortem data in any point in   future at the time of disaster or any emergency situation as and when need arises. So it is very crucial to have every patient's complete detail recorded and stored safely. This modified case history contains patients frontal and lateral facial photographs, intra oral photographs, lip prints, patients palatal rugae patterns and a complete upper and lower dentition along with maxillary and mandibular radiograph.

Extra oral photographs will help in recording patients profile and there facial features which is one of the most important point of identification. Intra-oral photograph's gives the detail of the arch form, type of occlusion or any specific pattern of dentition if any.

Lip prints are very specific and representative to every individual with numerous patterns on them, recording lip prints will help in any future cross matching to attain match for identification.

Palatal rugea are the firm elevated structures seen on the anterior part of hard palate just behind the incisive papilla. These are firm and are arranged indifferent pattern and sizes. These pattern are characteristic to every individual. These patterns are seen and traced on the cast obtained after taking the impression. This help in cross matching for identification.

Orthopantomogram is a radiograph which help in visualizing maxilla

and mandible along with its complete dentition. This gives us an in detail radiographic image of the complete dentition along with maxilla and mandible which help in identification and matching in the time of need.

CASE HISTORY FORMAT[5]
Name: Op. No:
Age: Sex:
Address: Contact number:

Occupation:
Chief complaint:
Past dental history:
Medical history:
Drug allergy:
Examination:
General examination:
Extra oral examination:
Intraoral examination:

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

Provisional diagnosis:
Investigation:
Final diagnosis:

ADVICED ADDITIONAL FORMATE
Extra-oral photograph:

A] Frontal profile:
1)   **Closed lip:**

2)   **Smile:**

B] Lateral profile:

Intra-oral photograph:
1)   **Upper:**

2)   **Lower:**

3) Occlusion:

Lip prints:

Rugea pattern:

Radiograph:
1) O.p.g

DISCUSSION

The identification of unidentified human remains is believed to be very important for legal and social reasons and therefore various methods of identification have been employed with variable degree of certainty. The validation of data obtained by several reliable methods would successfully appear to elevate the probability of identification[6]. One of the most reliable methods, which have been used for many years and in numerous incidents all over the world, is the comparison between ante-mortem dental records and post-mortem findings[7]. Whittaker (1994) claimed that 60% to 70% of all individuals could be identified entirely or partly through dental evidence methods. This leads to the belief that a single ante-mortem dental radio-graph compared to a post-mortem record would need matches in seven comparative points[8]. However, in the law of courts, Keiser-Nielson (1977)[6]. .

In the practice of forensic dentistry, the identification procedure is based on a strong presumption of identity when ante-mortem and post-mortem radio-graphs or records successfully verify the supposition [9]. On the other hand, identification of unidentified person with no priori presumption of identification enforces gathering of detailed description of the dentition and the surrounding structure for the comparison with data of different missing person's[10]. Identification by dental records has been one of the most helpful tool among all the other methods of identification. This is strongly supported by W.H.O in the report on tsunami victim identification, were 111 cases were identified using dental records out of 2070 cases[4].

Today forensic odontology is considered to be a specialized and reliable method of identification of the deceased, particularly in multiple fatality incidents.

Therefore, success can be achieved totally only if the dental specialist

and the dental institutions maintain ante-mortem records of their own patients with information like name, age, sex, number of teeth present, filled teeth, dentures and other restorations, morphological variations of teeth and mucosa with photographs and radiographs, lip prints, rugae patterns. This ante-mortem record will help to identify deceased persons and criminals by comparing with the post-mortem records prepared by examining deceased persons during investigations, in homicide and mass disasters[11].

In recent times, forensic odontology has evolved as a new ray of hope in assisting forensic medicine. This is relatively a young science of dentistry and still in its infancy state in India where as in other developed countries it has acquired a recognized branch of dentistry in medical forensicology[12].

Hence, identification of an individual is a prerequisite for certification of death and for personal, social and legal reasons. Human identification is a mainstay of civilization, whether in living or dead, and the identification of unknown individual has always been of paramount importance to our society[13]. Hence, one of the main focuses of forensic odontology is identification of an individual. Dental identification can be used as the sole method of identifying a deceased person. Dental identification is based on the comparison of ante-mortem and postmortem records. The records collected to identify a decedent should be accurate and totally inclusive of objective finding[14].

CONCLUSIONS:

A few simple addition in the data collections could save a lot of time for the professionals working during emergency or disaster time to attain identification and also a lot of anguish for the families of the missing individuals.

REFERENCE:

1. Caldas IM, Magalhães T, Afonso A. Establishing identity using cheiloscopy and palatoscopy. Forensic Sci Int. 2007;165:1–9.
2. Saxena S, Sharma P, Gupta N. Experimental studies of forensic odontology to aid in the identification process. J Forensic Dent Sci. 2010;2:69–76.
3. Rajendran R, Sivapathasundharam B. 6th ed. India: Elsevier; 2009. Shafer's Textbook of Oral Pathology; p. 871.
4. Pongruk Sribanditmongko, Pongpanitanont. Forensic aspect of disaster casualty management Tsunami Victim Identification in Thailand. W.H.O April 2005; 1-8
5. Anil Govindrao Ghom, 2nd edition;2008. textbook of oral medicine.
6. Keiser-Nielsen S. Dental identification: Certainty vs. probability. Forensic Sci 1977; 9:87-97.
7. Whittaker DK. Introduction to forensic dentistry. Quintes-sence Int 1994; 25: 723-730.
8. Keiser-Nielson S. Person identification by means of the teeth. Bristol: John Wright and Sons, 1980.
9. MacLean DF, Kogon SL, Stitt LW. Validation of dental radiographs for human identification. J Forensic Sci 1994; 39: 1195-1200.
10. Buchner A. The identification of human remains. Int Dent J 1985; 35: 707-311.
11. Gnanasundaram N. Tooth for truth (The glory of forensic dentistry) J Forensic Dent Sci. 2010;2:51–2.
12. Chandra Shekar BR, Reddy CV. Role of dentist in person identification. Indian J Dent Res. 2009;20:356–60.
13. Shetty M, Premalatha K. Study of palatal rugae pattern among the student population in Mangalore. J Indian Acad Forensic Med. 2011;33:112–5.
14. Staurt LS, Leonard G. Missouri: The Forsenic Examiner Spring; 2005. Forsenic application of palatal rugae in dental identification; pp. 44–7.
15. Ajay Kumar, Dasari Harish. Review Research Paper Unknown Dead Bodies: Problems and Solutions. J Indian Acad Forensic Med. January-March 2014, Vol. 36, No. 1 ISSN 0971-0973