

“Denture Marking” A Novel Concept in Human Identification

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Abstract: The significance of denture identification and marking has long been accredited by dental professionals. Denture labelling or marking is crucial for medico-legal investigation and social reasons like early identification of dead and injured people in the event of major disasters such as earthquakes, floods, plane crashes and accidents where visual or fingerprint identification are not available. Forensic identification based on assessment of prosthodontic appliances is assuming greater significance, as labeling of dentures and other prosthetic appliances could provide vital clues for patient identification. Moreover, loss of dentures or confusion in recognition of dentures is not uncommon especially during cleaning by paramedical staff in clinical premises. The loss is of greater consequences to the elderly patient for whom new denture is difficult to adapt. Nowadays denture labelling has been helpful for elderly patients who are suffering from dementia. A number of commercial methods for labeling of dentures are available such as surface marking, inclusion techniques, micro labels and chips. Thus, attention should be paid to offer patients an esthetically suitable denture marking system that is also inexpensive and permanent. This article describes few techniques for denture labelling.

Keywords: Forensic, denture labelling, identification.

I. Introduction

Forensic odontology is the forensic science that is concerned with dental evidence. It is a relatively new science that utilizes the dentist's knowledge to serve the judicial system. Human identification relies heavily on the quality of dental records. Forensic odontology, as a science, did not appear before 1897 when Dr. Oscar Amoedo wrote his doctoral thesis entitled "L'ArtDentaireenMedecineLegale" describing the utility of dentistry in forensic medicine with particular emphasis on identification. Dental identification plays a key role in natural and man-made disaster particularly aviation disaster. Dental structures are the hardest and most resilient tissues of the human body. Teeth on exposure to postmortem influences will survive longer than other body tissues as the materials used to restore damaged teeth are extremely resistant to physical, chemical, and biological destruction. Forensic identification based on assessment of prosthodontic appliances is assuming greater significance, as labelling of dentures and other prosthetic appliances could provide vital clues for patient identification¹. Dental identification assumes a primary role in the identification of remains when postmortem changes, traumatic tissue injury or lack of a fingerprint record invalidate the use of visual or fingerprint methods. The identification of dental remains is of primary importance when the deceased person is skeletonized, decomposed, burned or dismembered².

Harvey defined forensic dentistry as that branch of forensic medicine, which in the interest of justice, deals with the proper handling in examination of dental evidence with the proper evaluation and presentation of dental findings¹.

There were historical evidences of identification of individuals based on assessment of prosthodontic appliances. During the US Revolutionary War in 1775, Paul Revere, a young dentist, identified war casualties by bridgework. In 1835, a gold denture helped in identifying the burnt body of Countess of Salisbury. After the Second World War, 819 of the 3000 of the unidentified dead soldiers were denture wearers. But unfortunately, only nine persons of those who wore dentures could be identified. Dr. Goerge Parkman, a professor in Harvard university, was killed by Dr. J W Webster in November 1849. The body was completely burnt but identified by charred fragment of a tooth fused to gold by Dr. N C Keep, who had made a removable partial denture for Dr. Parkman. In April 1968, a badly mutilated body was found on the railway line at Mt. Kuringai near Sydney was identified by upper acrylic denture bearing a name inscribed on it. Identification of European tourists in tsunamis are done by gold inlay, crown, bridge work, and dental implants¹.

A prosthodontist can employ various methods and techniques available in literature; few were enumerated below, and can play an important role in forensic identification³.

II. Procedure For Denture Marking

Case-I (Surface Marking)

Stage-1: Name of patient was printed on photographic paper and after trial closure the flask was opened.(Fig-1)

Stage-2: The acrylic resin on the palatal surface between the ridge and the center of the palate was moistened with monomer with a small brush. The strip of typed paper was laid on this surface and the paper was also moistened with monomer (Fig-2). Dry polymer was placed over the paper. The polymer was moistened with monomer from an eye dropper just before the final closure of the flask and processing.

Stage-3: The denture was allowed to cure in conventional manner and was finished and polished (Fig-3).

Case-II

Stage-1: A quick reading code was formulated containing the details of the patient. It was printed on photographic paper (Fig-4).

Stage-2 : The flask were opened after trial closure and acrylic was removed from palatal surface. Since the scanning of code may be difficult due to opacity of acrylic resin, the clear heat cure acrylic resin was mixed and was applied over the palatal surface over which the paper containing the quick reading code was inserted. The denture was allowed to cure in conventional manner.

Stage-2: With help of quick reading code scanner, the code was readable entailing the details of the patient(Fig-5).

Case-III

Stage-1: Details of the patient were stored in MicroSD card (Sandisk corp.) and was laminated(Fig-6).

Stage-2: Using a lacron wax carver, a depression was cut slightly wider than size of MicroSD card on the external lingual flange of the trial mandibular denture. The fitting of the card was checked (Fig-7).

Stage-3: The denture was processed together with wax sheet. The attachment was placed so that it is well-flushed with surrounding areas. The card was placed and flap was attached with autopolymerizing acrylic resin (Fig-8).

III. Discussion

Importance of denture labelling is nowadays well known and is being practiced commonly. Various techniques can be employed but they should be easy to use and cost-effective^{4,5}.

The techniques described in this article includes surface marking. It is commonly used and denture can be labeled by patient's name. It is a very simple and less-time consuming procedure⁶.

The technique using quick reading code can contain large amount of data. However few problems may be encountered in scanning of the code such as curvature of denture may cause distortion of the barcode making it unreadable. The scanning of code may be difficult due to opacity of the acrylic resin and for this reason use of clear acrylic resin is recommended⁷.

The MicroSD card is useful tool for denture marking. With help of this, data can be stored in the form of treatment photographs, treatment videos, family photos and videos. The stored data does not need sophisticated equipment for viewing, and can be viewed using mobile phones or computer. In the present technique, the card was inserted on the lingual flange of mandibular denture or can be inserted on buccal flange of maxillary denture. These sites are better resistant to fire, esthetically acceptable and not removed during adjustments or routine relining procedures⁸.

Various other techniques can be employed for denture marking such as palatal rugoscopy, radiofrequency tagging, microchips and lenticular card^{9,10}.

IV. Figures

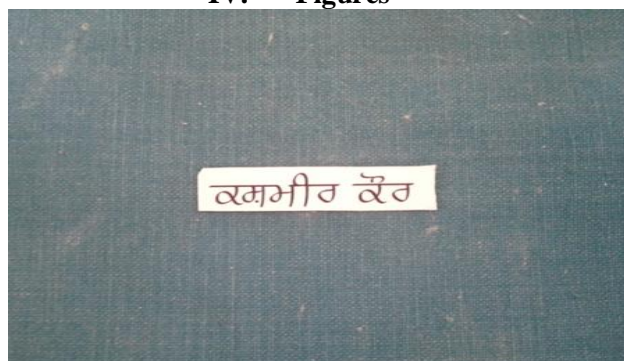


Fig-1: Name of patient printed on photographic paper



Fig-2: Paper inserted after trial closure.



Fig-3: Final image after curing.



Fig-4: Quick reading code



Fig-5: With help of quick reading code scanner, code was readable



Fig-6: Details of patient.



Fig-7: Depression cut on lingual surface.



Fig-8: MicroSD card inserted.

V. Conclusion

Each practitioner has an added responsibility to understand the forensic implications associated with the profession. Appreciation of the forensic field should give the dental clinician another reason to maintain legible and legally acceptable records, and assist legal authorities in the identification of victims and suspects². The central dogma of dental identification is that postmortem dental remains can be compared with antemortem dental records to confirm identity¹¹. For dental identification to be successful, antemortem data should be available. This relies heavily on dental professionals recording and keeping dental notes, radiographs, study models, clinical photographs, etc. Postmortem data are recovered characteristics from an unknown body¹².

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