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Labelled Dentures a Key to Forensic Dentistry-A Review of Labelling Techniques

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ABSTRACT

Background: Since teeth and dental restorations are the most durable components of the human body, dental identity becomes crucial in the event of any significant calamity. Dentures with labels can be useful for identifying their owners in the event of an accident, memory loss, unconsciousness, unintentional misplacing upon hospital admission, or for identifying the deceased in a disaster.

Discussion: This article explains various methods of denture labelling. Numerous denture marking techniques have been documented in the literature. Denture marking can be done in two primary ways, through the inclusion approach and the surface method. While inclusion methods take longer and need more skill than surface procedures, they are more permanent. Marking dentures has been considered an important part of forensic dentistry, although no standardized method is followed. Several labeling systems are available. Each of the commonly described techniques is assessed concerning its strengths and weaknesses.

Conclusion: All dentists should be encouraged to emphasize the value of denture marking, and to make it a standard dental operation everywhere. Denture marking has advantages that the patient should always be made aware of and encouraged by the dentist. If the patient objects, the denture marking might not be put in place.

KEYWORDS: Denture labelling, Forensic dentistry, Inclusionmethods, Surfacemethods, Denture marking.

I. INTRODUCTION

Denture marking or individualization of dentures or designer dentures is always been a novelty.Such individualized dentures or custom-made dentures for specific persons help in investigative procedures in forensic odontology in recognition of individuals in cases of crime, natural disasters, accidents, identification of unclaimed bodies, etc

Forensic odontology deals with investigation procedures related to the involvement of the oral and dental features in the act of crime. The contribution of Prosthodontics in such investigation is highly significant as mainly related identification of victims by initial evaluation of the dental restorations or prosthesis. Dental prosthesis having incorporated identification devices can be of greater importance in identifying the victims during or after the episode of mishaps, especially in cases of loss of unconsciousness, being inadvertently misplaced on admission to a hospital, surviving or dead victims in all those calamities [1].Apart from the identification of deceased victims, establishing ownership of dentures in geriatric and mental institutions is also important to prevent any mix-up during cleaning procedures by attendants of these institutions [2].

A natural calamity such as one that happened in Kerala On 16 August 2018, severe floods affected the south Indian state of Kerala, due to unusually high rainfall during the monsoon season[3].It was the worst flood in Kerala in nearly a century[4]. Over 483 people died, and 15 were missing[5]. During such an event, religious and cultural factors such as the performance of last rites in association with the disposal of bodies are of societal concern. A delay in the identification of a deceased person results in tremendous suffering for relatives and dependents.

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II. METHODS OF DENTURE MARKING[1,7,8,9]

Denture labelling can be broadly classified into either

1. Surface marking method
2. Inclusion method

1.Surface Methods

Scribing or Engraving the Denture:[8,11]

Two letters, that is initial letter of the name and the cognomen, can be engraved with a small round dental bur on the fitting surface of the maxillary complete denture, which resulted in countersunk letters. The most typical area is the distobuccal flange of the maxillary and mandibular denture.

Advantages: It is the simplest way of marking dentures.

Disadvantages: Initials of names do not provide much information and may be confusing.

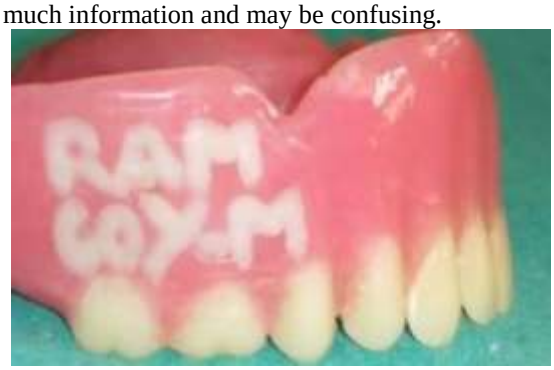

FIGURE 1: Scribed denture filled with tooth-colored acrylic resin [11]

2. Inclusion Method

A] Metal Identification Bands:

Dentures have been marked in Sweden with a stainless-steel metal band incorporated into the acrylic, containing the personal ID of the patient, and incorporated into dental plate post or prefabrication. The Swedish ID-Band is currently the international customary among ID bands.

Advantages: It is resistant to very high temperatures, up to 1100°C.

1. It is cheap
2. Requires no special instrumentation.
3. Radio-opaque
4. Esthetically acceptable.

Disadvantages: Metal insert will cause weakening of the dental plate at the point of insertion

B] Computer-printed Denture Micro labelling System:

Berry et al (1995) suggested a post-fabrication technique for the identification of prosthetic devices. The identification label bearing the patient's details was computer generated and placed in a slot in the denture followed by saturated clear organic polymer applied to seal it & cured in an exceedingly pressure pot.

Similarly, Ling (1998) suggested a computer-printed denture micro labelling system in which Patient details were computer written& then photocopied onto a transparency sheet in 50% reduced size. Once treated with cyanoacrylate acid esters adhesive solution, the micro-label was then incorporated into the denture during the packing stage.

Advantages: Can be done after fabrication of denture.

Disadvantages: esthetically not very suitable.

C]Writing on the Denture:

In this technique, the patient's identification details are written on the tissue-fitting surface of the finished dental plate with a fiber-tip pen. The mark is best protected against abrasion by a minimum of two layers of varnish.

Advantages: Easy to work with.

Disadvantages: It does not provide much information

D]Lead Paper Label and Radiograph:

Mona Sayed et al (2009) explained employing a lead foil paper found within the intra-oral photographic film to type the patient's information with any manual ribbon typewriter.

Advantages: This technique can be used during fabrication or after fabrication.

1. Lead foil is radio-opaque when it is subjected to another IOPA, details are projected on IOPA film.
2. It helps to locate an aspirated temporary partial denture.

Disadvantages: It is more complicated than previous techniques. A radiograph is required as reading directly from lead foil is not easy.

E] Denture Bar Code/quick Review Code (QRC):

Rajendran et al in 2012 devised a relatively simple 2-D bar-code technique with patient's details such as name, and social security number employing a code generator. In this technique with the assistance of bar code generating software which is available free of cost, a patient-specific bar code with all patient details is fabricated and printed. This is often then covered with transparent adhesive tape or a transparent sheet and inserted into a denture and covered with clear acrylic and finished, polished. To decipher it, holds a code decoder-enabled mobile camera, and is translated into text on the mobile phone display easily.

Advantages: It is the latest and most advanced method.

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1. It is easy and cheap to generate.
2. Full patient information can be uploaded.

Disadvantages: If not fabricated properly, scanning is not possible

F] Photographic Method:

The patient's photograph is embedded within the dental plate with the help of clear acrylic resin

Advantages:

1. Useful in illiterate persons where a photograph is the easiest way of identification.
2. It is also helpful in countries with diverse scripts.

Disadvantages:

1. There is fading of certain identification marks like photographs, and barcodes.
2. Can affect the strength of the denture base.
3. More follow-up appointments are required.
4. The seepage of excess monomer in case of self-cure resin.
5. Development of air voids in the resin placed over the photograph.

Figure 2:Photograph incorporated in denture

G] Lenticular System:

Lenticular printing was introduced by Colvenkar in 2010, in which a convexo-convex lens is employed to provide pictures with an illusion of depth, morph, or the power to alter or move as the image is viewed from different angles. Lenticular technology permits pictures to be written on the rear of synthetic paper and laminated on the lens.

Advantages:

1. It is an easy, low cost and fast technique.
2. It doesn't need a special glass or device to browse the information, like a computer or handheld reader.

Disadvantages: Information can never be modified, and may not withstand a fire.

H] RFID –TAGS (Radio-frequency Identification): The RFID system consists of an information carrier, usually remarked as a tag or transponder, and an electronic handheld reader. The information is kept within the chip itself, and therefore the hand-held reader can obtain all information from the chip.

Advantages: They are popular because of their small size (8.5×2.2 mm).

1. An unlimited amount of dental plate user data can be stored in them.

Disadvantages: High price of manufacture. It isn't fireproof.

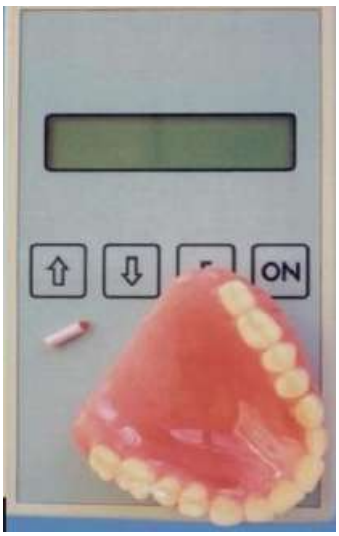

Figure 3: RFIDtag [8]

I]Aadhar Number:

This method is particularly useful in India since the government has connected Aadharnumbers digitally. In this technique, with the help of Aadhar number of patient details can be obtained.

Advantages:

The patient can be located easily.

Easy and cheap to fabricate.

III. DISCUSSION

Of the techniques studied, the surface method appeared to be simple and relatively inexpensive. However, it wore off very quickly and needed to be applied again. The inclusion methods are more permanent and provide a good result. However, it tends to weaken denture structure and cause porosity. It is also more expensive and trained staff in well-equipped dental laboratories are required if any of these inclusion methods are to be selected.

In many cases, identification is required. It is clear that only labeled dentures can reveal a person's true identity when all other methods cannot. This alone is enough to justify marking dentures. The dentist should always explain the advantages of denture labeling to the patient and encourage them to do so. The patient has the right

to decline.The denture marking may not be inserted if the patient refuses. Some dental labeling procedures may be too costly for the patient.

IV. CONCLUSION:

The importance of denture marking should be promoted among all dentists, towards making it a compulsory routine dental procedure throughout the world.The main excuses for not marking dentures are expense, ignorance of the different techniques, and a sense that it is not very important. It goes without saying that when a person's positive identity is needed, labeling dentures has enormous importance. The dentist should always inform clearly and motivate the patient about the benefits of denture marking.

Therefore, dental education is required to ensure that dental technicians, dentists, and students are exposed to a variety of denture marking techniques to provide a denture marking system that is affordable, easy to use, and long-lasting.

REFERENCES:

[1]. K. Malleswara Reddy et al (2018) 'A New Method for Denture Identification: Revealing the Unrevealed –A Case Report ', International Journal of Current Advanced Research, 07(1), pp. 9125-9127. DOI: http://dx.doi.org/10.24327/ijcar.2018.9127.1495

[2]. Turner CH, Fletcher AM, Ritchie GM (1976). Denture marking and human identification. Br Dent J, 141, 114-7.

[3]. Hunt, Kieran M. R.; Menon, Arathy (1 February 2020). "The 2018 Kerala floods: aclimate change perspective". Climate Dynamics. 54 (3): 2433 2446. Bibcode:2020ClDy...54.2433H. doi:10.1007/s00382-020-05123-7. ISSN 1432-0894. S2CID 210715907.

[4]. Baynes, Chris (15 August 2018). "Worst floods in nearly a century kill 44 in India's Kerala state amid torrential monsoon rains.New report suggests that this will continue every year the rest 100 years". The Independent. Archived from the original on 15 August 2018. Retrieved 12 August 2011.

[5]. "483 dead in Kerala floods and landslides, losses more than annual plan outlay: Pinarayi Vijayan". 30 August 2018. Retrieved 2 September 2018.

[6]. Dr. Manu Rathee, Dr. KusumYadav. Denture Identification Methods: A Review IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 13, Issue 10 Ver. V (Oct. 2014), PP 58-61.

[7]. Gujjalapudi M, Anam C, Mamidi P, Saxena A, Kumar G, Rathinam J. The New ID Proof: A Case Report of Denture Labeling. J Orofac Res [Internet]. 1970 Jan. 1 [cited 2022 Oct. 23];3(1):63-5

[8]. Nagpal A, Puja, Anisha, Duvedi K, Singla A, Denture labelling: An ID proof in dentistry. IP Ann ProsthodontRestor Dent 2018;4(2):31-34

[9]. Datta, Pankaj & Sood, Sonia. (2010). The various methods and benefits of denture labeling. Journal of forensic dental sciences. 2. 53-8. 10.4103/0975-1475.81281.

[10]. Bansal PK, Sharma A, Bhanot R. Denture labeling: A new approach. Contemp Clin Dent. 2011 Apr;2(2):76-8. doi: 10.4103/0976-237X.83064. PMID: 21957379; PMCID: PMC3180836.

[11]. Sharma, N., Sewani, N., Sapat, M., Purohit, B., Jain, S., &Electricwala, F. (2016). A Simple Technique of Denture Labeling.