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Denture marking as an aid to forensic identification using Aadhaar ID: A new approach

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Abstract

Personal identification in natural and manmade disasters can be made by using methods like DNA analysis, finger prints, carbon 14 enamel dating, rugoscopy, cheiloscopy, skull shape and size, dental structure chart and various denture labelling methods. Denture labelling systems have great significance in identifying people who have lost their memory or in state of unconsciousness or in identifying the human remains in natural calamity, disasters, accidents etc. A number of labelling systems are available and are broadly classified into either surface marking methods or inclusion methods. This article describes a unique method of labelling dentures using lead foil, linked with Aadhaar ID card (Unique Identification Number).

Keywords: Aadhar card, labelling, surface marking, lead foil, denture identification

Introduction

The importance in identification of dentures was brought into focus by Dr. Robert H. Griffiths during his tenure as a President of American Dental Association [1]. Personal Identification is an essential issue in all medico legal investigation because a wrong identity may pose a problem in delivering justice [2]. Personal identification can be done from traces of their DNA extracted from skin, hair, blood, saliva, and semen using DNA fingerprinting, finger prints, ear prints, teeth or bite marks using forensic odontology. Other methods of identification are facial recognition systems, gait analysis, voice analysis, handwriting analysis, and biometric techniques and denture identification [3].

Identification through labelled dentures plays a key role in forensic scenario [1]. A wide range of approaches including forensic dentistry utilizing teeth, and orofacial tissues has been traditionally used since decades with denture labelling being one among them [3]. Majority of the surface marking and inclusion methods of denture markings are time consuming, unesthetic, too expensive and do not permit to incorporate large amounts of information. This case report describes the unique, quick, least expensive denture labelling method using aadhar number. Aadhar card is issued by the government of India to every Indian citizen. It has a 12 digit unique identification number. As the possession of Aadhar card has been made mandatory for all the Indian nationals, it can easily be used as an identification method in forensic odontology for the Indian natives [3].

The Standard Requirements For Denture Labeling Are As Follows [4].

1. They should be biologically inert when incorporated into the denture
2. Inexpensive
3. Easy and quick application
4. Easy retrievability after an accident
5. Resistant to chemicals
6. Durable without jeopardizing the strength of the prosthesis
7. Permanent marking
8. Resistant to everyday cleansing and disinfecting agents.

Technique

This method describes a radiographic technique in which a lead foil marked with patient details is sandwiched between two layers of resin during processing of the denture [5].

1. Following try-in, wax-up of the trial dentures, flasking, and dewaxing should be done (Fig 1).
2. Apply Separating medium on the maxillary and mandibular part of the flask.
3. Take a used IOPA radiographic film and cut a piece of lead foil and write the patient details (aadhar card no.) with a ballpoint pen (Fig 2).
4. Mix a small amount of heat-cure acrylic resin and place it in the posterolateral region of the palate (in maxilla), in the lingual flange (in mandible).
5. Place the lead foil (marked with patient aadhar no.) in the specified areas and again cover it with mixed acrylic. The idea is to sandwich the lead foil in layers of acrylic (Fig 3).
6. Measured polymer/monomer mixture should be packed into the mould in the dough stage.
7. Do the trial closures till no flash appears.
8. Bench cure/polymerize the dentures.
9. Deflask, trim, and polish the dentures to a good finish (Fig 4).
10. An IOPA radiograph is exposed in the area where the lead foil is placed. The radiograph will reveal the aadhar no. of the patient. (Fig 5).

Discussion

Numerous methods have been reported for denture labelling in the literature till date, and are classified into surface marking and inclusion methods but none fulfills all the prescribed ADA specifications [6]. The surface marking method includes engraving the cast, scribbling on dentures/writing on the denture surface, while the inclusion method involves incorporation of microchips, lenticular cards and radio-based tagging transponders into the dentures. The surface markers (spirit pens, various sealants) were rapidly removed by one or more abrasive, denture cleansers, antiseptic/mouthwash agents. Inclusion methods like lenticular cards, transponders, and plastic chips are expensive, time consuming and complicated [7]. Inclusion methods can be divided into two broad categories: Prefabrication techniques and Post fabrication techniques. In the post fabrication technique, the strength of the denture may be compromised due to the slot prepared for inclusion of the identification label. In contrast, the prefabrication technique used by us has no effect on strength of the denture [3]. The Swedish identification band was found to be of international standard accepted by FDI, researchers have shown that the metal band is not resistant to very high temperatures. Moreover, these methods are easy and inexpensive, fulfilling all the required ADA specifications for denture markings [8]. The technique described in this article requires no additional armamentarium, apart from the one that is readily available in a dental laboratory. An additional benefit is the incorporation of a radiographic substance to help locate an aspirated temporary partial denture [9].

Besides the existence of numerous identification systems (voter card, ration cards, Permanent Account Number/PAN cards, passports, and driving license) in Indian subcontinent, none of them covers the entire population of India. The Unique Identification Authority of India (UIDAI) is an agency that issues a 12-digit number, which is unique for every citizen. This Aadhaar number can be used to identify

the residents anywhere in the country in order to access certain benefits and services [3]. Kruger-Monson suggested certain requirements for denture labeling: the strength of the prosthesis must not be jeopardized; the system should be efficient, simple and cost effective; the identification mark must be able to withstand fire and humidity apart from being durable and visible [10]. The above-mentioned criteria are met in the denture marking system explained in this article. The labels are placed on cameo surfaces (posterolateral part of palate and lingual flange); thus, the markers are easily accessible for reading, do not interfere with esthetics, and are retained even after the routine adjustments or relining procedures [3].



Fig 1: Wax up denture



Fig 2: Aadhar no. written in lead foil



Fig 3: Sandwiching the lead foil in layers of heat cure resin



Fig 4: Labelled denture



Fig 5: Exposed IOPA radiograph showing patients aadhar. no.

Conclusion

An easy and inexpensive method fulfilling all the required ADA specifications for denture marking has been proposed in this article. The label with lead foil used here is durable and can withstand high temperature also. The label shows no sign of deterioration/ fading cosmetically appealing and can satisfy all the forensic requirements of a suitable prosthesis. The routine marking of all dentures by this method is advocated. This technique can be used for both complete and removable partial dentures.

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