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Denture Identification Methods: A Review

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Abstract

Denture marking is accepted as a means of identifying dentures and persons in geriatric institutions, during war, crimes, and civil unrest, natural and mass disasters, post mortem and medico-legal investigations. This review highlighted the various methods of denture marking and significance of placing identification marks on dentures.

Key words:- *Denture marking, Geriatric, Identification*

Introduction

Denture marking is accepted as a means of identifying dentures and persons in geriatric institutions, or post-mortem during war, crimes, civil unrest, natural and mass disasters. Due to the lack of a comprehensive fingerprint database, dental identification is growing as an essential part of forensic investigation. Prosthodontists are playing very important role in forensic dentistry as they are concerned with fabrication of various prostheses which can serve as an important tool for identification. The denture marking is important for the following reasons:[1]

a. It serves to identify an unknown denture wearer in cases involving amnesia or senility, loss of memory, psychiatric cases, homicide, suicide, victims of fire, explosion, floods, earthquake, plane crash, or war.

b. In cases of lost and found, the denture can be returned to the owner.

c. A rapid and accurate method other than finger printing is essential for identification of the individuals.

d. In the laboratory, the dental technicians will find it easy to identify a denture, especially at the deflasking stage, if it is marked / labeled.

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e. To ensure the correct denture delivery to the respective patient.

Medicolegal Importance of Denture Marking Systems[2]

1. Identification of the dead or deceased when all other means have failed.

2. Identification of individuals for forensic, social and legal reasons.

3. Victim identification in case of mass disasters like terrorism, bombings, earthquakes, hurricanes, typhoons, air crashes and other transportation mishaps.

4. Identification of mutilated and decomposed bodies when all other parameters like scars, tattoos, and facial features have failed.

Methods of denture identification

Various methods of denture marking have been reported in the literature. However, there are two main methods in marking dentures, namely the surface method and the inclusion method. As compared to surface methods, inclusions methods are permanent but require more skills and are time consuming.[3]

Surface Methods

Scribing or engraving method

In this method letters or numbers are engraved on the denture surface with the help of a small round dental bur.[4]

Disadvantage: Food entrapment occurs in the engraved grooves.

Embossing method

In this technique name and other particulars of the patient are scratched on the master cast. After processing it produces stamped or embossed letters on the impression surface of dentures.[5]

Disadvantage: This technique has been associated with malignancy, possibly due to continued tissue irritation.

Invisible Ink Method

Harvey described a method wherein the patient's details are written with an invisible ink that is rendered visible by ultraviolet light. This is useful on acrylic resin dentures of those patients who object to normally visible identification marks.

Disadvantage: The mark is not readily visible and examination under special conditions is required to determine its presence.[6]

Fibre Tip Pen Method

atient's details are written on the tissue-fitting surface or the polished surface of the denture with a fibre-tip pen. The patient's identification details are then covered by at least two thin coats of varnish in order to prolong the life of the marking.[7]

Disadvantage: This method resulted in an unesthetic denture.

Denture Bar Coding Method

A bar code consists of a machine-readable code of a series of bars and spaces printed in defined ratios. The technique described for denture bar coding involves printing a number code on paper, photographing the paper, making and transferring the negative to a piece of silk. An image of the bar code appeared on a prepared faience, by a machine that forced the paint through the silk, when heated to 860 degree C for 30 min in an industrial porcelain oven. The bar code is directly placed onto the denture surface and cyanoacrylate resin is painted to conceal the marking.[8]

Disadvantage: Incorporating the bar code into the curved denture flange is relatively cumbersome due to rigidity of the laminated strip.

Lenticular card method

In this technique a lenticular lens is used to produce images with an illusion of depth, morph, or the ability to change or move as the image is viewed from different angles. Lenticular printing is a multi-step process consisting of creating a lenticular image from at least two or more existing images, and combining it with a lenticular lens. Each image is sliced into strips, which are then interlaced with one or more of the other images. These are printed on the back of a synthetic paper and laminated on the lens The most common materials used for making lenticular images are polyvinyl chloride (PVC), amorphous polyethylene terephthalate (APET), acrylic, spectra, and polyethylene terephthalate glycol (PETG). The lens is incorporated in the channel cut on the denture and auto-polymerizing clear acrylic resin is added around and not on the identifier.[9]

Paper Strip method

It utilizes onion skin paper. The acrylic resin fitting surface situated adjacent palatally between the ridge and the center of the palate is moistened with monomer on a small brush. The strip of typed paper is laid on this surface and the paper is moistened with the monomer. Clear resin is then placed over the paper before final closure of the denture flask.[10]

RFID Tags

RFID stands for radio-frequency identification, which is a wireless electronic communication technology. The radio-frequency identification (RFID) system consisted of a data carrier, or tag, and an electronic handheld reader that energizes the transponder by means of an electromagnetic field emitted via the reader's antenna. It then receives the coded signal returned by the transponder and converts it into readable data.[11]

Advantages

This method is a cosmetic, effective labeling method permitting rapid and reliable identification of the wearer.

b.) They are preferred because of their small size (8.5×2.2 mm).

c.) A large amount data can be stored in them.

d.) No special training is required to set the tag in the denture.

e.) The chip is resistant to disinfectants and solutions of 1% hypochlorite, 4% chlorhexidine, and 4% sodium perborate.

Photographic method

In this technique patient's photograph is embedded in the denture with the help of clear acrylic resin.

The name, age and geographic location of the patient are written on the obverse of the photograph using a micro-tip graphite pencil. The marker is particularly useful in the countries with low literacy rate where a photograph is the easiest method of identification.[12]

Advantage:

The identity is easily ascertained by lay persons with the unassisted eye.

Incorporation of Min. I. Dent

atient's details are typed on Min. I. Dent denture identification strip and the strip is heated in an oven at 325 degree C for 30 s to 1 min. This allows shrinkage of lettering or numbers and the strip becomes a chip. The chip is trimmed to required size using carbide bur. A groove is cut into the denture and the chip is incorporated into the groove and sealed with orthodontic resin.[13]

Lead Foil

A piece of lead foil from a used IOPA radiographic film is cut and patient's details are engraved with a sharp pointed pen or instrument and is embedded in the denture with the help of clear acrylic resin.[14]

Advantage

This technique is easy to operate. b.) It is economical. c.) It is radiographically visible.

Ceramic Crown Engraving Method

After baking the opaque layer of porcelain, dentin porcelain is applied and initials of name of the patient or letters are carved with the brush. Stains are applied on carved initials followed by enamel porcelain application shaped with soft brush so that the initials are maintained. Few initials can be carved in crown and bridges due to lack of available space.[15]

Conclusion

Denture marking should be compulsorily carried out for hospitalized patients, unconscious patients and patients in geriatric institutions. There is a strong need to adopt an international policy for denture marking and international collaboration should be encouraged, with different opinions from the world-wide community of forensic odontologists discussed and with the aim of reaching some kind of consensus for the future.

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