


Denture identification using individual national identification number of Saudi Arabia: An innovative inclusion method of casted metal

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Introduction

Use of denture marking or labeling has played a major role in forensic dental identification in the past. All

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Abstract

Context: Forensic odontology is one of the branches of dentistry, which played a very important role in identification of individuals in accident, natural and mass disaster, and civil unrest and in genocide crimes. In the absence of natural teeth, marking or labeling of denture plays a vital role in the personal identification. **Background:** Various types of marking or labeling methods are reported. However, many are not according to the criteria put forth by American Dental Association or other professional association. Majority of these techniques may be time consuming and expensive, may not be standardized, long lasting and do not permit the incorporation of a large amount of information. **Aim:** The aim of this study is to find out a denture identification technique that should be easy, less expensive, long lasting, and standardized. **Materials and Methods:** This article illustrates an inclusion denture casted metal technique of the individual national identification number printed in the patient's residence number or iquama or national identity card issued by the ministry of interior, Kingdom of Saudi Arabia is used as a denture marker in the lingual surface of mandibular denture. **Results:** The label in this method is durable and can withstand high temperature, less chances of deterioration, visible radiographically, and provide all important information about individual that is standardized, reliable, and also accessible from any remote location. **Conclusion:** Hence, the proposed technique is an easy, less expensive, long lasting, radiographically visible, and standardized method of identification.

Key words: Denture marking, forensic dentistry, forensic identification, national identification number

possible means must be applied to achieve a scientific identification, which is sometimes extremely difficult, particularly in mass disaster situations or in matters of

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genocide crimes.^[1,2] At times, the only identifiable remains may be the victim's removable dentures.^[3] Many forensic and dental authorities have also recommended that all the prostheses to be marked with an identification system; therefore, several techniques have been used in private and commercial laboratories to identify dentures.^[4] The American Dental Association (ADA) has specified certain criteria for denture marking,^[5] but the majority of these techniques are not following those criteria, and many of the methods are time consuming, unaesthetic, expensive, not internationally applicable and do not permit the incorporation of a large amount of information. This article proposes a new method that is easy, long lasting, inexpensive, esthetically acceptable, and standardized identification method.

Materials and Methods

Technique

- In this method of the denture identification, we have used patient's individual national identification number (ININ) printed in the patient's iqama card or national identity card (ID) issued by the ministry of interior, Kingdom of Saudi Arabia (KSA) [Figure 1]. The ININ carries all the information about the patients which are collected and centrally maintained by the ministry of interior, a government regulatory body of KSA. Hence, the accuracy of the data will be reliable and also accessible from anywhere and therefore no need to collect the patient's information and store it in the denture-embedded electronic storing device
- Postfabrication of the denture duplicates the final cast as a refractory cast and make wax pattern of the 10-digit ININ in the lingual flange area of the refractory cast [Figure 2]
- Investing the wax pattern with refractory cast and convert into metal (nickel-chromium). Finishing and polishing of casting of 10-digit individual identification number is done [Figure 3]. Now, the ININ label is ready for denture identification technique
- Draw the line in the lingual flange of the denture according to the size of 10-digit cast metal ININ. Remove the acrylic from the lingual flange of the mandibular denture and place cast metal 10-digit ININ in that. After proper placement in the lingual flange area cover that area by clear acrylic and finish and polish it properly. So that, it will not irritate to the patient's oral mucosa
- In this technique, a slot of 1 mm deep is prepared on the finished surface of denture base, which was slightly wider than the size of the cast metal 10-digit individual identification number. One drop of cyanoacrylate adhesive (Super Glue, ALTECO, Saudi Arabia) is placed in slot to properly position the numbers
- Clear autopolymerizing acrylic resin (Vertex self curing acrylic, The Netherlands) is mixed and placed in small amount over the numbers. The acrylic resin was trimmed and finished in the usual manner [Figure 4]

- The added advantage of using cast metal ININ is that it will be visible in radiographic evaluation also [Figure 5].

Discussion

According to the American Board of Forensic Odontology Guidelines, most dental identifications are based on restorations, caries, missing teeth, and/or prosthetic devices. In case of natural disaster, accidents, and aviation



Figure 1: Resident permit/iqama card or individual national identification number of Saudi Arabia



Figure 2: Wax pattern of individual national identification number on the refractory cast



Figure 3: Finished and polished cast metal individual national identification number



Figure 4: Mandibular denture showing inclusion of cast metal individual national identification number



Figure 5: Radiographic evaluation of mandibular denture with individual national identification number

disasters, the identification of edentulous patients is difficult because no consistent features are available for comparison of antemortem and postmortem radiographs.^[6-9] Therefore, a denture that is marked is the best chance for easy identification.

Denture marking is regulated by law in Sweden and Iceland. In 1986, the “National Board of Health and Welfare” of Sweden, which is the supervising authority on the health sector in Sweden, legislated and made it mandatory for all dentists to comply with the following requirements: “The patient shall always be offered the opportunity to have his/her dentures marked with a personal number.” In addition to the above, the dentist should always inform clearly and motivate the patient about the benefits of the denture marking.^[10,11]

The ADA has specified few criteria for denture marking.^[5] The identification should be specific, the mark should be cosmetically acceptable, the technique should be simple, the denture should not be weakened, and the mark should be fire and solvent resistant.

Over the years, various methods of denture marking have been reported in the literature.^[3,4,12-16] These include surface marking and inclusion techniques using metal or nonmetal materials, micro labels, and electronic chips. Automatic identification using barcodes incorporated into dentures has been developed.^[17]

During fabrication of dentures with identification marking, dentist should be aware of the details about the preferred site for placing denture marker or labeling and also the medicolegal significance of denture marking.

The most appropriate sites for the location of denture marker are lingual flange of mandibular denture, posterior buccal surface of maxillary denture because these areas are

accessible to reader. There is often sufficient thickness of resin to incorporate without any technical difficulty as well as it is not affecting the esthetics of the denture. Other sites of placement are within the palate or buccal to tuberosity regions.^[16,18,19]

The prepared label can be inserted into denture by prefabrication and postfabrication methods. In prefabrication method, the label is inserted on the intaglio surface after trial closure of denture flasks.^[4]

In postfabrication method, the label is inserted in a prepared site, which is located in the flattest portion on the cameo surfaces of the lingual flange of the mandibular denture and/or palate of the maxillary denture.^[3] Advantage of this method of identification is that the label appears on the denture polished surface covered by a thick layer of clear acrylic resin which resists surface loss.^[20]

However, the majority of these techniques may be time consuming, may not be esthetic, and do not permit the incorporation of a large amount of information. In this technique, patient’s ININ in the form of metal is used for denture identification. The ININ or residence permit/iqama number carries all the information about the patient, which are collected and centrally maintained by a government regulatory body, so the accuracy of the data is high and also accessible from anywhere.^[21] Residence permit/iqama number or Saudi ID card number is a 10-digital ININ issued by the ministry of interior, KSA. Each residence permit/iqama number or Saudi ID card number will be unique to an individual, need to renewal periodically.

Some of the important criteria for any denture identification system are the protection from the monomer of the denture base resin, the high temperatures of denture processing, finishing and polishing of dentures, and wear and tear of the dentures, unaffected in mass disaster situations or in

matters of genocide crimes.^[4] In the suggested technique, the identification number is made by metal (nickel–chromium) and it is easy and clear for reading, less chances of abrasion, less chances of any effect by heat, mass disaster situations, or genocide crimes.

Result

Hence, this technique is a less expensive, simple to use, long lasting, and standardized identification method.

Conclusion

This article explains a less expensive, simple, and easy method that is fulfilling requirements of ADA specification for denture marking. The label in this method is durable and can withstand high temperature, less chances of deterioration visible radiographically, and provide all important information about individual that is standardized, reliable, and also accessible from any remote location.

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Conflicts of interest

There are no conflicts of interest.

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