

Denture labelling – Shift towards latest methodology

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Abstract

Denture marking is now a universally undertaken means for identifying dentures and persons in geriatric institutions, during war, crimes, civil unrest, natural & mass catastrophe, autopsy and medico-legal enquiry. Prosthodontists can play 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 main objective of this article is to

discuss the various methods available for denture marking along with a case report.

Keyword: Geriatric Institutions, During War, Crimes, Civil Unrest, Natural

Introduction

Denture labelling is important procedure for several reasons. Complete denture users comprise a population segment that is statistically associated to an older age group. In geriatric patients and in nursing homes, the need of labelling dentures increases, wherever accidental

exchange or loss of dentures is quite feasible. It is now a universally undertaken means for identifying dentures during war, crimes, and civil unrest, natural and mass catastrophe, autopsy and medico-legal enquiry. Due to scarcity of fingerprint information, dental identification is growing as an important part of investigation. A number of labelling systems are available and can be broadly separated into either surface marking methods or inclusion systems.²

Requirements of denture labelling

Process of denture labelling should fulfil the following criteria.

- The strength of the prosthesis must not be jeopardised.
- It must be easy and inexpensive to apply.
- The identification system must be efficient.
- The marking must be visible and durable.
- The identification must withstand humidity and fire.
- The identification mark should be cosmetically acceptable.
- The identification mark should be biologically inert (when incorporated into the denture)

Denture labelling methods

Denture labelling methods can be broadly classified into two types:

- A) Surface marking method
- B) Method of inclusion.

A) Surface Marking Method

Identity marks are written on to the surface of the denture using a spirit-based pen or pencil before covering them with a clear acrylic denture base resin material. The marks are located on one of the denture's surfaces and can be done by "scribing or engraving" the denture itself. In this technique, letters or numbers are

engraved with a small round dental bur on the fitting surface of the maxillary complete denture.

Disadvantage: This engraving can cause detrimental effects such as food debris getting lodged leading to bacterial infection. Another surface marking technique, "embossing" comprises initials of the name and the surname of the patient that are scratched with a dental bur on the master cast and has been associated with malignancy possibly due to continued tissue irritation.⁵



Figure 1

A) Inclusion Method

Identity marks or materials are embedded or incorporated within the denture base material. These are more permanent as opposed to the relatively simple surface marking methods. The marks are made by using metallic or non-metallic materials, microchips and micro labels which are enclosed in the denture at the packing stage.



Figure 2

Disadvantage: Problems of dislocation, wrinkling or tear can be faced sometimes with this technique.⁴

ID-Band

Dentures may be marked with a stainless-steel metal band. This is one of the most commonly used fire-resistant materials are titanium foil and Ho Matrix Band containing an identifiable coding system represents patient details. Stainless steel has the advantage of being a good biocompatibility and high corrosion resistance in oral environment and does not cause any allergies.⁵

Paper strips

This method is a less expensive alternative utilizing a piece of “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 or pink polymethyl methacrylate (PMMA) is then placed over the paper before final closure of the denture flask.

T-Bar

A T-shaped clear PMMA resin bar is constructed by cutting baseplate wax which is then flaked, packed, processed, and finished in clear PMMA. An identification printed label (reduced in size, print-face inward) against the flat section of the bar is fixed. It is then surface polished to produce a clear label.

Laser etching

Specially equipped laboratories can provide a copper vapor laser (CVL) that can etch a patient's identification into the metal surface of a partial denture. A CVL can label the cobalt-chromium components of dentures easily, legibly and reduce the font size of the data. This method is expensive as well as technique oriented.

Electron microchips

The patient's information can be etched onto a chip measuring 5×5×0.6 mm. Tests conducted on chips embedded in acrylic resin performed well under high temperatures (600°C), had excellent acid resistance, was radio-opaque and bonded well with acrylic resin.

RFID –tags

The inclusion of radio-frequency identification (RFID)-tags within dentures is a cosmetic, effective labeling method permitting rapid and reliable identification of the wearer. they are small in size and accommodates large amount of data. No special training is required to set the tag in the denture. The RFID tags are resistant to disinfectants and solutions of 1% hypochlorite, 4% chlorhexidine, and 4% sodium perborate.¹



Figure 3

Lenticular system

Lenticular technology allows images to be printed on the back of a synthetic paper and laminated on the lens. The lenticular card shows no signs of degradation when placed in water for up to a four-month period.

Denture barcoding and QR codes

A bar code applicable to dentures consists of a machine-readable code of a series of bars and spaces printed in defined ratios. A tedious technique described denture bar coding to printing a number code on paper, photographing the paper, making and transferring the negative to a piece of silk. The barcode can then read

with a reader, and incorporated on to the denture, sealed with acrylic resin and could be used for crowns also.



Figure 4

Photograph

A new denture marker has been suggested which makes use of the patient's photograph embedded in clear acrylic denture base mostly used in low literacy rate countries.

Case report

An 60 year-female patient reported to the Department of Prosthodontics of Desh Bhagat Dental college with a complaint of missing teeth in the upper and lower arches since 2 years and difficulty in eating and speaking due to loss of teeth .So, it was decided to fabricate a maxillary and mandibular complete denture by labelling it .Photograph of the patient was incorporated into the palatal part of maxilla whereas patient name was engraved on lead foil which was then embedded into lingual flange of mandibular denture .

Method used

1. Up to the trial denture stage conventional method was followed and denture bases were sealed to master cast
2. Take the patient's photograph. An overhead transparency sheet was placed over it. The sheet was cut into adequate size. Cyanoacrylate adhesive (Fevi Kwik, India) was placed over the printed photograph. Care was taken not to rub the adhesive over the printed portion. By doing this the printer toner was placed away from the monomer of denture base resin. Now the photo for

identification denture was ready for prefabrication denture identification technique.

3. Also, on lead foil (from used x-ray film) patient's name was engraved with the help of sharp
4. Pencil.



Figure 5

Flasking of the mandibular denture was carried out in conventional manner up to trial closure.

Flask was reopened and trough was created of same dimensions as of photograph in the palatal region. The transparent heat cure acrylic was placed in the area and then photo was placed such that it was not in contact of monomer and again covered with transparent material .The denture was cured according to the manufacturer instructions.



Figure 6

Trough was also created in distolingual part of the flange according to dimensions of lead foil and same procedure was followed for embedding it as used in maxilla.

Deflasking, trimming and polishing was done to complete the procedure.



Figure 7

Discussion

An embedded photograph and lead foil in the denture base resin material serves as a simple procedure for insertion of an undegradable denture identification mark which makes it possible to identify the nationality of the denture wearer. There is an increased use of prosthetic appliances with this labelling procedure. These kinds of dentures are really helpful in saving time, preventing anxiety and confusion associated with misplaced dentures.

References

1. Raymond R, Pretty IA. The use of radio-frequency identification tags for labeling dentures—scanning properties. *J Forensic Sci.* 2009; 54 :664 –8.
2. Seals RR, Jr, Dianna JS. Hospital dentistry: The importance of denture identification. *Spec Care Dentist.* 1985; 5:164–8
3. 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.
4. Rees on M. A simple inclusion technique for denture identification. *J Prosthet Dent* 2001; 86:441-42.
5. Datta P, Sood S. The various methods and benefits of denture labeling. *J Forensic Dent Sci.* 2010 Jul;2(2):53-8. doi: 10.4103/0975-1475.81281. PMID: 21731340; PMCID: PMC3125953.