

## In A Quest for A Suitable Denture Marker: A Case Report on Three Different Inclusion Techniques of Denture Marking for Identifying Complete Denture Wearers

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### Abstract

*Introduction:* The significance of denture marking is immense when a positive identity of an individual is required which has been stressed by forensic odontologist internationally. In a developing country like India, an inadequate database of dental records have challenged the forensic science. Labelled dentures can be vital in identifying people who have lost their memory or in identifying the bodies of those who have died in disasters. Two methods of denture marking have been proposed, the surface marking and inclusion method. Surface marking wears off easily while inclusion methods being more permanent were used for denture labelling in this case report. *Methodology:* The three inclusion methods used includes the bar coding method, photographic method and matrix band method. These three methods were used for labelling dentures in patients. This case report presents the methodology and various benefits of the denture labelling in three completely edentulous patients. *Discussion:* An appropriate framework within dental education is required to ensure that both dentist and student dental technologists are exposed to denture marking methodologies. There is a need to offer patients an esthetically suitable denture marking system that is also inexpensive and permanent.

**Keywords:** Denture; Denture Marking.

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### Introduction

Denture marking is not a novel perception in either prosthetic or forensic dentistry and its routine practice has been insisted by forensic odontologist worldwide for many years [1,2]. Denture labeling is being endorsed by Australian Dental Association(ADA) [3]. Scandinavia and some states of USA labeling dentures is even being regulated by the legislation [4].

Purpose of denture marking is twofold. It assist in recovery and return of a lost or inadvertently transferred denture. It facilitates identification of an edentulous both living and deceased. It is often recommended for institutionalized persons to prevent confusion of ownership of dentures [5]. In forensic

context, positive identification of a person wearing full dentures has particular significance in coronial cases where release of the body of a deceased cannot be achieved until identification is satisfactorily accomplished.

Any delays are often accompanied by considerable financial costs to the investigating authorities and ultimately the community and an exacerbation of emotional stress suffered by bereaved families'. Immediate identification is possible if a small discrete identification code is embedded in denture base [6]. Various methods have been proposed for denture marking but it is important to use a method that is simple, practical, affordable and universally acceptable [7]. Over the years various denture marking systems have been reported in the literature and have been divided broadly into "surface marking" and "inclusion methods." Inclusion methods enclose the identifying marks within the denture base material. Hence rendering them relatively permanent [8]. Three inclusion methods were hence used for labelling

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dentures in three completely edentulous patients which included the bar coding method, photographic method and matrix band method. This case report presents the methodology and various benefits of the denture labelling in three completely edentulous patients.

### Outline of the Case

Three inclusion methods were selected for this case report which included the conventional matrix band method, photographic method and digital method using bar code. Some portions of the denture base, especially the posterior part of acrylic dentures and metal-based dentures, outlast because of the tongue [9,10]. The most common possible area where the markers can be placed, as recommended by some authors, is along the posterior lingual flange, under the teeth for the mandibular dentures [9,11] and posterior buccal surface to tuberosity region and palate area in a maxillary denture [12]. These areas are accessible to reader, there is often sufficient thickness of resin to incorporate without any technical difficulties without affecting the aesthetics of the denture.

Recommended area for denture marking was therefore chosen and standardized in all these methods as the posterior region of palate of the maxillary denture. Three completely edentulous patients were selected.

The matrix band technique for denture marking was done for patient named Ramanna of 65 years of age who came with a chief complaint of missing upper and lower teeth since 8 years. A stainless steel matrix band was used with specific dimension of 25×5 mm based on the amount of maxillary denture bearing area available. Name age and sex of the patient was inscribed on the matrix band using carbide bur (as seen in Figure 1). This technique was selected as it was an inexpensive and easy and the stainless steel band could withstand a temperature of up to 1050 degree Celsius making it thermal resistant. Disadvantage with the metal matrix band is that it carries less patient information.

The photographic method was done for patient named Lakshmi of 55 yrs of age from Hennur with a chief complaint of missing upper and lower teeth since 5 years. Photograph of the patient was taken at wax try in. Print of dimension 10×15 mm was obtained on a photographic paper with name age and sex of the patient mentioned at the bottom. Photograph was laminated (as seen in Figure 2). Advantages with the photographic technique was

its ease in ascertaining the identity by lay persons with unassisted eye and it was more relevant in Indian context with one third of population being illiterate. Disadvantages included its low fire resistance but since it is embedded in denture it may survive incineration as it is protected by the orofacial tissues.

For the digital denture bar coding technique patient named Gowri Shankar of age 65 yrs from Hennur with a chief complaint of missing upper and lower teeth since two years was selected. A machine readable code of series of bars and spaces in defined ratio was generated by entering the name, age sex and demographic location of the patient into bar code generating software. Bar code was printed and laminated and kept to a dimension of 10 ×15 mm (as seen in Figure 3).

Advantages with the bar code technique was that it can survive temperature greater than 600 degree Celsius and hence can survive fire, water calamities. It is not very expensive, easy to perform and carries precise information [13]. Disadvantage with this technique is that it requires special equipment's. Method of fabrication of the marked dentures was common to all techniques. Following trial packing a small area of heat cure resin corresponding to the marker size was cut in the posterior region of palate of maxillary denture. Marker was sandwiched between two layers of heat cure clear acrylic resin dough packed into area corresponding to the palatal portion of the denture. Marker faced the polished surface of the denture. Processing of the dentures was carried. Dentures were retrieved and finishing and polishing was done. Denture placement was carried out.



Fig. 1: Maxillary complete denture labelled using matrix band method.



Fig. 2: Maxillary complete denture labelled using photographic technique



Fig. 3: Labelled maxillary denture showing bar code

## Discussion

The value of denture labeling is immense when a positive identity of an individual is required. An appropriate framework within dental education is required to ensure that both dentist and student dental technologists are exposed to denture marking methodologies. There is a need to offer patients an esthetically suitable denture marking system that is also inexpensive and permanent.

Bar code technique used in this report has been found to be readable up to 33 hours after acid treatment [14]. Photograph technique can be easily interpreted and has application in day to day identification. A more recent innovation in denture marker was using radiofrequency identification (RFID). It appears encouraging in its storage capacity

but it is also associated with high cost and availability of raw material can make its use very limited. RFID tag -data cannot be read by unassisted eye.

## Conclusion

Further research is required to determine the ability for each of these methods to withstand the common peri-mortem assaults and also which are most favoured by patients and dentists. Without the acceptance of denture marking by patients the uptake of any technology will be limited. However, inclusion techniques that employ a metallic labeling system should currently be recommended as they are most likely to withstand the commonest post-mortem assaults.

*Conflict of Interest:* nil

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