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## RESEARCH ARTICLE

### SURVEY ON IMPRESSION TECHNIQUES FOLLOWED IN COMPLETE DENTURE FABRICATION BY PROSTHODONTISTS, GENERAL PRACTITIONERS AND OTHER DENTAL SPECIALISTS

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#### ABSTRACT

**Introduction:** Edentulism is a common problem in geriatric patients. In order to restore function and esthetic of an edentulous patient, complete dentures are provided. One of the most important step in fabricating a complete denture is Impression making. **Aim:** The aim of this study was to evaluate common clinical practice concerning choice of impression materials and impression techniques used for complete denture fabrication by prosthodontists, general dental practitioners and other Dental specialists in Chennai. This survey is intended to know how the prosthodontists differ from general Practitioners and other specialists on the basis of material selection and impression techniques undertaken while recording complete denture impressions. **Materials and methods:** This cross-sectional study was conducted between December 2017 and June 2018 through self-administered surveys. The survey was sent to a random sample of 200 dentists residing in Chennai. **Results:** The results indicated that Prosthodontists when compared to other specialists and general Practitioners adhering to conventional impression protocols. **Conclusion:** Most of the prosthodontists follow the conventional protocols and deliver the complete dentures in 6 visits along with Post insertion follow up. Skipping of the conventional protocols may lead to inaccurate prosthesis.

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## INTRODUCTION

Edentulism is commonly seen in patients above 65 years old. Complete dentures are provided to restore function and esthetics of these patients (Schwindling *et al.*, 2014). One of the most essential important steps in fabricating conventional complete denture is Impression making (Kakatkar, 2013). Impression technique, type of the impression materials, and patient situation are the most essential factors for making successful impression to deliver the best complete denture. There are numerous impression techniques which were widely used for making conventional tissue supported complete denture. Proper technique selection was completely dependent on the clinical condition of the patient, materials availability, dentist's knowledge and experience (Basker and Tomlin, 1976 Fenn and MacGregor, 1989). Across-sectional survey was carried out to know the type of impression material used by prosthodontists, general practitioners and specialist of other dental departments to make complete denture impressions and their impression technique being followed. Feedback was evaluated.

**Purpose of the study:** To identify the materials and methods used by prosthodontists, other dental specialists and general dental practitioners for recording impressions for complete dentures in Chennai.

## MATERIAL AND METHODS

This cross-sectional study was executed from December 2017 to June 2018 through self-administered survey Questionnaires. The survey was sent to 200 dentists randomly were in the age group of 23–50 years with ten questions. (Includes Prosthodontists, General Dental Practitioners, Other Dental Specialists) from Chennai. A self-administered questionnaire survey with Demographic questions which included age, sex, qualification, specialty, experience and practicing area. The another part of the survey collected the information regarding conventional complete denture impression materials and techniques like tray for complete denture primary impression making, primary impression materials, materials used for border molding, type of tray used for precise final impression making, use of custom tray, use of spacer and stopper for custom tray, type of final impression materials, placement of relief holes, final impression techniques, and number of visits required for delivering conventional complete denture.

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1. What type of tray do you use for primary impression?
  - (a) Stock metal tray
  - (b) Stock plastic tray
  - (c) Any other (please specify)
2. Which material do you use to make primary impression?
  - (a) Impression compound
  - (b) Alginate
  - (c) Putty
  - (d) Any other (please specify)
3. Do you precede border moulding immediately after the primary impression?
  - (a) Yes
  - (b) No

If yes,

  - (i) What material do you use for border moulding?
  - (ii) Do you place relief holes prior to making final impression?
  - (iii) Which material do you use for making final impression?
  - (iv) Which technique do you use for the final impression?
4. Do you make a custom tray for final impression?
  - (a) Yes
  - (b) No

If yes, what material is used to fabricate the custom tray?

  - (a) Base plate
  - (b) Cold cure resin
  - (c) Any other (please specify)
5. Do you use spacer in the custom tray?
  - (a) Yes
  - (b) No

If yes, what design of the spacer do you use?

  - (a) Full spacer with tissue stops
  - (b) Full spacer without tissue stops
  - (c) Any other (please specify)
6. Which material do you use to carry out border moulding?
  - (a) Green stick [low fusing compound]
  - (b) Putty
  - (c) Any other (please specify)
7. Do you place relief holes prior to making final impression?
  - (a) Yes
  - (b) No
8. Which material do you use for making final impression?
  - (a) Zinc oxide eugenol
  - (b) Light body
  - (c) Any other (please specify)
9. Which technique do you use for the final impression?
  - (a) Selective pressure
  - (b) Mucocompressive
  - (c) Mucostatic
10. How many sittings do you take to deliver the complete denture?
  - (a) 6 (1.Primary, 2.Secondary, 3.Jaw relation, 4.Try in verification, 5.Insertion, 6.Review)
  - (b) 5 (1.Primary, 2.Secondary, 3.Jaw relation, 4.Try in verification, 5.Insertion)

- (c) 4 (1.Primary + Secondary = single impression, 2.Jaw relation, 3.Try in verification, 4.Insertion)

The SPSS (Statistical Package for the Social Sciences) data analysis software package version 18.0 was used to conclude the statistical analysis and a P-value of less than 0.05 was considered significantly different.

## RESULTS

- 10.0% of prosthodontists proceeded with border moulding immediately after the primary impression was taken whereas 17.4% of general practitioners and 35.7% of other specialists proceeded with border moulding immediately after the primary impression was taken, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.025$ )
- All the prosthodontists 100.0% were found to be using putty for the immediate border moulding whereas 75.0% of general practitioners and 100% of other specialists preferred putty for immediate border moulding, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.039$ )
- All the prosthodontists 100.0% were found to be using selective pressure for the final impression whereas 78.6% of general practitioners and 79.7% of other specialists were found to be using selective pressure for the final impression, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.001$ )
- 89.3% of prosthodontists delivered complete denture in 6 visits whereas 58.5% of general practitioners and 66.8% of other specialists also delivered Complete dentures in 6 visits, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.008$ )
- 81.6% of prosthodontists with less than 10 years of experiences were found to be using selective pressure compared to General practitioners and Other specialists, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.012$ )
- 45.7% of MDS doctors (all speciality ) proceeded with border moulding immediately after the primary impression whereas 17.4% of BDS doctors proceeded with border moulding immediately after the primary impression, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.049$ )
- Those MDS doctors who preferred single stage primary impression and border moulding used only putty for border moulding compared to BDS doctors, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.011$ )
- 77.3% of MDS doctors used self-cure for special tray compared to 51.4% of BDS doctors, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.006$ )
- 82% of MDS used selective pressure and 18.0% of MDS used Mucostatic, 89.2% of BDS used selective pressure and 10.8% of BDS used Mucocompressive technique for final impression, this difference was statistically significant ( $p < 0.05$ ,  $p = 0.010$ )
- 89.3% of prosthodontists, 58.5% of general practitioner and 66.8% of other specialists would deliver complete dentures in 6 visits and most of the prosthodontists were doing post – insertion follow up.
- Only 7.7% of prosthodontists, 16.4% of general practitioner and 27.9% of other specialists would

deliver complete denture in 4 visits without doing post-insertion review.

## DISCUSSION

- The most critical step in complete denture fabrication is impression making (Kakatkar, 2013). Making an impression for a prosthesis and restoring the surrounding dental structure is the main responsibility of a prosthodontists, an accurate impression is the most important step in prosthesis fabrication. Lack of accuracy in this impression step will lead to inaccurate prosthesis delivery and eventually the restoration will fail. Thus, selecting the best and most accurate dental impression material and techniques seems to be necessary for a successful treatment (Ladan Jamshidy *et al.*, 2016).
- The most significant steps in fabricating conventional complete denture is Impression making. Complete denture preliminary impressions are made with a non-perforated pre-fabricated metal tray with thermoplastic impression material (Anusavice, 2006; O'Brien, 2002). Also Irreversible alginate, hydro-colloid can be used in a perforated pre-fabricated metal tray and plastic trays (O'Brien, 2002; Felton, 1996). The study conducted in Pakistan 93% of them preferred to use thermoplastic impression material as preliminary impression material (Amjad and Muhammad, 2014).
- In Chennai 46.4% of prosthodontists and 54.7% of general practitioners and 44.8% of other specialists were using pre-fabricated stock metal tray for preliminary impression making and rest of them were using pre-fabricated plastic tray for making preliminary impression. 10.0% of prosthodontists whereas of 14.3% general practitioners and 13.8% of other specialists were using impression compound for making primary impression and 55.0% of prosthodontists and of 46.4% general practitioners and 49.4% of other specialist were using hydro-colloid impression material for making primary impression and rest of them were using putty.
- After making the primary impression 10.0% of prosthodontists and 17.4% of general practitioners and 35.7% of the other practitioner were proceeding immediately the border moulding this was statistically proven ( $p = 0.02$ ) among them all were using putty for the border moulding material ( $p=0.001$ ). In that 80% of prosthodontists and 75.0% of general practitioner and 60.0% of other specialist were placing relieving holes prior to make final impression and all the persons who proceeding the immediate border moulding were using light body for making final impression. The technique used in making final impression was selective pressure by 75% of prosthodontists, 50% of general practitioners and 20.0% of other specialists and rest of them were using Mucostatic technique.
- Among doctors who were not proceeding immediate border moulding, 88.9% of prosthodontists, 78.9% of general practitioner and 84.7% of other specialists were fabricating custom tray and rest of them were skipped. In this 75.8% of prosthodontists, 54.5% of general practitioner and 73.3% of other specialists were using self-cure resin for fabricating the custom tray and rest of them were using shellac base-plate.<sup>[15]</sup> In UK they found that 75% of general dentist use custom tray<sup>[11]</sup>.
- 84.7% of prosthodontists and 80.6% of general practitioner and 77.8% of other specialists were placing spacer in the custom tray and 87.3% of prosthodontists, 67.7% of general practitioner and 78.6% of other specialists were using the tissue stops in the spacer and rest of them were using spacer without tissue stops.
- 27.8% of prosthodontists, 36.1% of general practitioner and 45.8% of other specialists only using green stick compound for border moulding and rest of them preferred putty for the border moulding.
- After border moulding 83.3% of prosthodontists, 78.4% of general practitioner and 81.9% of other specialists were placed relieving holes prior to the final impression.
- For final impression only 22.2% of prosthodontists, 25.0% of general practitioner and 29.2% of other specialist were using Zinc Oxide Eugenol for making final impression and rest of them were using light body for making final impression. The study was conducted in India, the result obtained that 73% of dentists were using Zinc Oxide Eugenol for making secondary impression, where as 19% use elastomeric impression material, and 8% using irreversible hydrocolloid (Kakatkar, 2013). The study conducted in Pakistan 97% of dentists used ZOE as a material for making secondary impression (Amjad and Muhammad, 2014).
- All the prosthodontists and 78.6% of general practitioner and 79.7% of other specialists were following selective pressure technique and rest of them were following Mucocompressive (Levin and Sauer, 1969; Petropoulos and Rashedi, 2003).
- 89.3% of prosthodontists, 58.5% of general practitioner and 66.8% of other specialists would deliver complete dentures in 6 sittings and most of the prosthodontists were doing post – insertion follow up. Only 7.7% of prosthodontists, 16.4% of general practitioner and 27.9% of other specialists would deliver complete denture in 4 sittings without doing post-insertion review and they skipped the conventional protocols and following their own techniques of impression to reduce the multiple visits (Lang, 1994).

## Summary and Conclusion

Most of the prosthodontists follow the conventional protocols and deliver the complete dentures in 6 visits along with Post insertion follow up. Skipping of the conventional protocols may lead to inaccurate prosthesis.

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