Research Article

Knowledge, attitude, and practice survey on temporization following tooth preparation among Indian dental practitioners

Sivanagini Yalavarthi, V. Ashok, Ashish R. Jain*

ABSTRACT

Back ground: Temporization following tooth preparation is mandatory to ensure tooth stability and therefore to prevent tooth movement and additional treatment. It enables to maintain proper occlusal and proximal contacts to promote patient comfort and maintain their tooth position. The interim covering for a tooth after its preparation is mandatory to maintain tooth vitality. This provides security and comfort for the patients during the fabrication of the final restorations. **Aim:** The aim of the survey is to evaluate the knowledge, attitude, and practice (KAP) of temporization followed by tooth preparation among the Indian dental practitioners. **Study Design:** The study was conducted in April 2019. It was conducted among the Indian dental practitioners to evaluate their KAP of preferring temporary crowns after tooth preparation in their general dental practice. A questionnaire survey was formed and sent to general dental practitioners all over India. All the questions are close-ended, which takes 3–5 min to fill up. We got back 85 responses from dentists. All the data collected were subjected to elicit in the form of detailed pie charts. **Results:** Almost all the doctors felt that temporization is an important step in the process of fixed prosthesis. All of them would prefer to fabricate in an indirect method. Dentists would like to give the crowns for a week before the permanent cementation, and many of them are capable of fabricating in 1 h and rest in 1/2 day. **Conclusion:** All fields of human activity have been affected by great advances of technological developments. As a matter of fact, when a patient looks for a dentist, it is to improve specifically esthetics because in a highly competitive and modern society a young, beautiful and natural appearance is very important for success.

KEY WORDS: Dental practice, Dentistry, Temporization, Tissue health, Tooth preparation

INTRODUCTION

Provisional restoration is the establishment for the time being, pending a permanent restoration.[1] It is also called as interim/transitional/temporary/treatment restorations. It is a fixed or removable prosthesis designed to protect, enhance esthetics stabilization or function for a limited period, after which it is to be replaced by a definitive prosthesis.[2]

History (since 1930s)

1. 1937 – Heat cure acrylic resins[3]
2. 1947 – Auto-polymerizing acrylic resin[4]
3. 1952 – Prefabricated aluminum or cellulose crown form by Brotman
4. 1959 – Thin flexible metal wire for internal reinforcement by Amsterdam *et al*.
5. 1960 – Vinyl poly ethyl methacrylate (snap and trim)
6. 1969 – Ethyl imine derivatives (Suctan)
7. 1972 – Shell type temporary acrylic resin by Gerald
8. 1973 – Polycarbonate resin[5]
9. 1980 – Composite
10. 1983 – Silicone putty impression material technique[6]
11. 1984 – Light cured micro-filled composite resin by Morton *et al*.
12. 1986 – Acrylic resin denture teeth by Kinsel
13. 1987 onward – Concept of provisionalization implemented to implant dentistry.[7]

Tooth preparation involves trimming of tooth structure with a dental rotary handpiece and dental burs. This is to create space for the insertion of restorative materials or permanent crowns.[8] In

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Website: jprsolutions.info | ISSN: 0975-7619

Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

***Corresponding author:** Dr. Ashish R. Jain, Department of Prosthodontics, Saveetha Dental College and Hospital, Saveetha University, Poonamalle High Road, Chennai - 600 127, Tamil Nadu, India. Phone: +91-9884233423. E-mail: dr.ashishjain_r@yahoo.com

Received on: 14-02-2019; Revised on: 26-03-2019; Accepted on: 29-04-2019

cases, if the permanent crowns cannot be restored immediately, the prepared tooth should be covered with a temporary crown to avoid supra-eruption, gingival recession, and migration of tooth. An interim restoration should have good marginal fit, smooth surface finish, and proper contour.[9] The properly contoured interim restoration, which is smoothly continuous with the external surface of the tooth is mandatory to avoid food lodgment. Over-contouring, irregular transition from the restoration, to the root surface and inadequate marginal adaptation leads to plaque accumulation and unhealthy periodontium.[10] The time involvement necessary for the fabrication of adequate interim tooth coverage is underestimated by the majority of dentists. A provisional may be used to provide a coronal build-up for isolation purpose during endodontic treatment.[11,12]

The requirements of temporization include:

1. The pulp of tooth should be insulated from all forms of adverse stimuli
2. To prevent supra-eruption of tooth
3. To maintain the arch form by preventing the migration of tooth
4. To maintain tissue health to get an accurate impression
5. Temporary restorations should not impinge the gingival tissues causing inflammation and tissue recession[13]
6. It should appear reasonably esthetic in the anterior region
7. Temporary restorations should be able to establish occlusal function by the establishment of maxilla-mandibular relation
8. It should possess inherent strength to bear occlusal forces
9. The patient should be able to keep the area clean and serve as a healing matrix to the surrounding tissues of a prepared tooth[14]
10. Temporary crowns should be cemented in such a way that they should be easily removed from tooth with minimal damage.

MATERIALS AND METHODS

The study was conducted in April 2019. It was conducted among the Indian dental practitioners to evaluate their knowledge, attitude, and practice of preferring temporary crowns after tooth preparation in their general dental practice. A questionnaire survey was formed and sent to general dental practitioners all over India. All the questions are closed-ended which takes 3–5 min to fill up. We got back 85 responses from dentists. All the data collected were subjected to elicit in the form of detailed pie charts. The following questions are been framed to extract the data from dentists.

1. What cases do you prefer for temporization in your general practice?
   i. All fixed prosthesis cases
   ii. Only FPD cases
   iii. Only FMR cases
   iv. None
2. How much time will you take to deliver temporary crowns?
   i. 1 h
   ii. 1/2 day
   iii. 1 day
   iv. 1 week
3. How long will you give temporary crowns before permanent crown cementation?
   i. 1 week
   ii. 1 day
   iii. 1 month
   iv. 6 months
4. How do you feel temporization is important?
   i. To maintain tissue health
   ii. To avoid supra-eruption
   iii. To maintain tooth health
   iv. All the above
5. What changes will you observe without temporization?
   i. Supra-eruption
   ii. Gingival recession
   iii. Migration of tooth
   iv. All the above
6. What materials would you prefer to fabricate temporary crowns?
   i. Acrylic resin
   ii. Composites
   iii. Aluminum crowns
   iv. Others
7. Which method would you prefer to fabricate?
   i. Direct
   ii. Indirect
8. What are the patient complaints with temporary crowns?
   i. Discoloration
   ii. Bad odor
   iii. Food impaction
   iv. Esthetics
   v. All the above

DISCUSSION

There are various types of materials used for fabrication such as metallic (precious and non-precious) and non-metallic materials.[15] Initially, nickel-chromium crowns are used for primary teeth which are extensively damaged. These are very hard and may or may not be secondary teeth.[16] The aluminum shell crowns are restricted to premolar and molar regions. Possess a consistency that contains a definitive strength for proximal occlusion but lacks rigidity for marginal strength and proximal contacts.[17] Preformed metal crowns are also available in the market. They are

employed primarily for the posterior teeth. Excessive irritation or recession can be prevented by the contouring of the margins.[18] The major advantage for this kind of crowns was that its time-saving aspect for the doctors. The other one is cellulose acetate crown form, which consists of thin, soft, and transparent material. The sizes and shapes can be selected from a mold guide.[19] The crown form is trimmed and festooned to fit the preparation without impingement of soft tissues. Another type of temporary crown is preformed polycarbonate anterior. These crowns are more tolerable, selected to establish contact areas.[20] Polycarbonate crown remains on the prepared tooth, whereas the cellulose crown matrix is removed prior to cementation. Heat cure resins for bridges are also used for temporary crowns when multiple preparations are involved.[21] These are prepared on the second set of diagnostic casts and wax build up should be done. After the buildup, the wax is washed off, and heat cure resin crowns were prepared. They are adjusted for the occlusion on a mounted set of casts.[22] Hence, they can easily adjusted in the patient's mouth. The commonly used technique was cold cure alginate impression technique. The alginate impression was taken on the day of preparation but before the reduction of teeth.[23] After the preparation resin mixture is placed on the impression corresponding to the crown preparation. Then, alginate impression with the resin mixture is placed inside the mouth and impression is removed just prior to the set of the material. The other method is a template technique in which both the upper and lower die stone models were poured, and the crowns were prepared with the plastic sheets using thermal vacuum machines.[24] The plastic sheet is trimmed around, and the tooth is prepared. Postcrown technique is used by few doctors where a wire or non-precious metal post is adapted to the canal; the selected crown form is then filled with an acrylic resin and placed over the post, including a portion of the radicular surface of the tooth.[25] After sufficient polymerization has taken place, the crown is removed along with the temporary post, which is set with in the resin.[26]

Apart from the various uses of it, there are also many limitations with the temporary crowns such as

1. Detectable odor emission
2. Arduous cement removal
3. Color instability
4. Inadequate bonding response
5. Poor tissue response to irritation
6. Poor marginal adaptation
7. Lack of inherent strength
8. Poor wear properties
9. Potential tissue trauma
10. Poor marginal fit.

RESULTS

Figure 1 shows that all the dentists would prefer to give temporary crowns in their general practice. Figure 2 reveals that most of the doctors are capable of delivering temporary crowns within 1 h, and the rest would be able to deliver in 1/2 day duration. Figure 3 shows that all the doctors would prefer to give the temporary crowns for 1 week before cementing with permanent crowns. Figure 4 speaks that all the doctors would believe that temporary crowns would help to maintain tissue health, can avoid supra-eruption and also helps to maintain tooth health. Figure 5 says most of the doctors observe supra-eruption, gingival recession and tooth migration without temporary crowns, and few observed only supra-

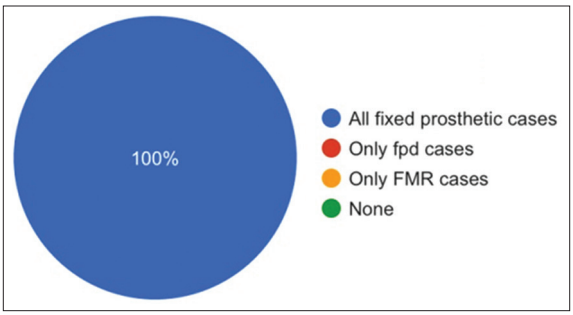

Figure 1: What cases do you prefer for temporization in your general practice?

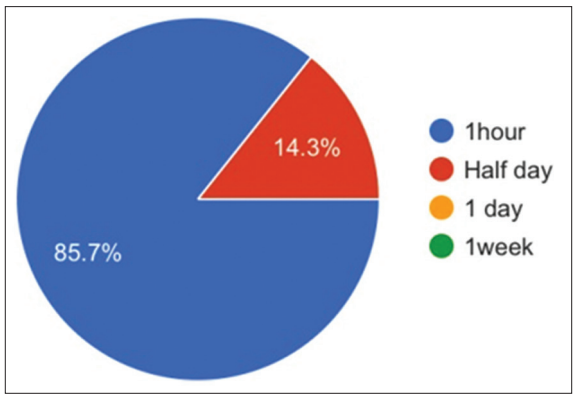

Figure 2: How much time will you take to deliver temporary crowns?

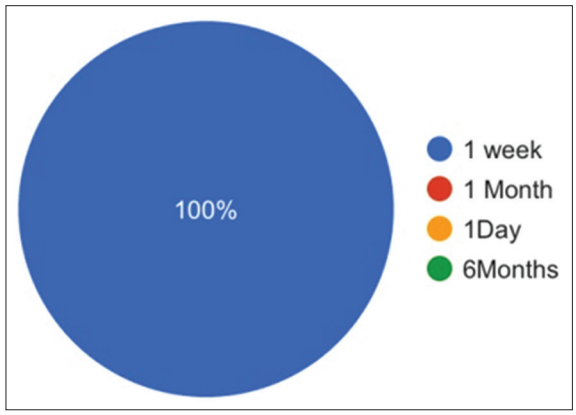

Figure 3: How long will you give temporary crowns before permanent crown cementation?

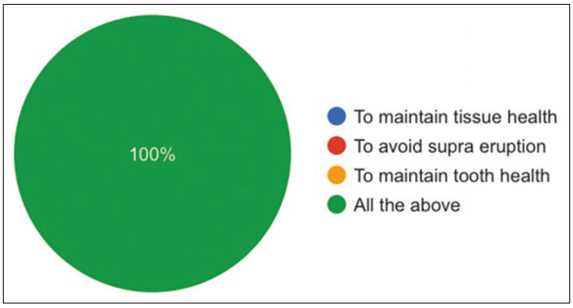

Figure 4: Why do you feel temporization is important?

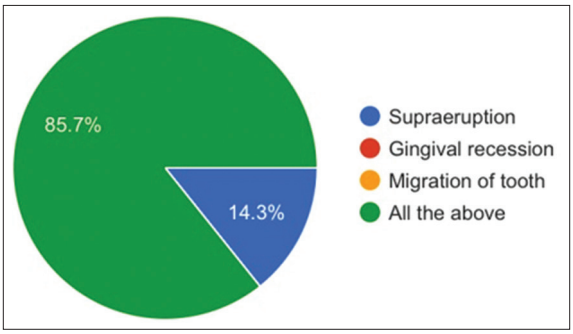

Figure 5: What changes will you observe without temporization?

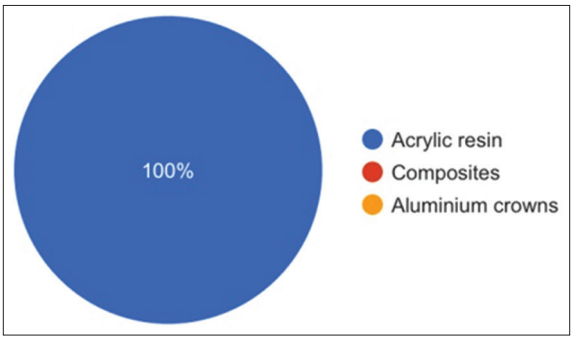

Figure 6: What material would you prefer to fabricate temporary crowns?

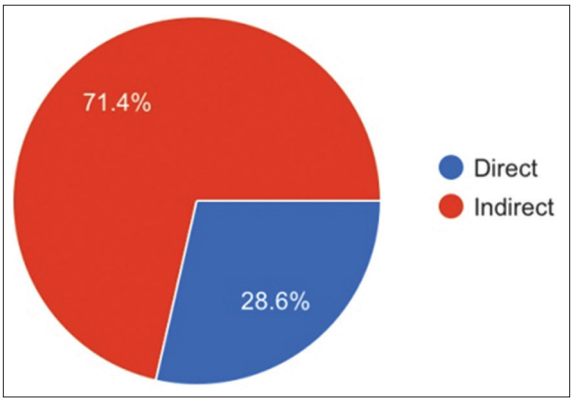

Figure 7: Which method would you prefer to fabricate?

eruption without temporization. Figure 6 shows that all the doctors would like to fabricate the crowns with acrylic resins. Figure 7 says that most of them would like to fabricate in indirect method where few prefers to do it in direct method. Figure 8 shows that many doctors receive all the complaints from patients with temporary crowns. The rest heard of fewer complaints.

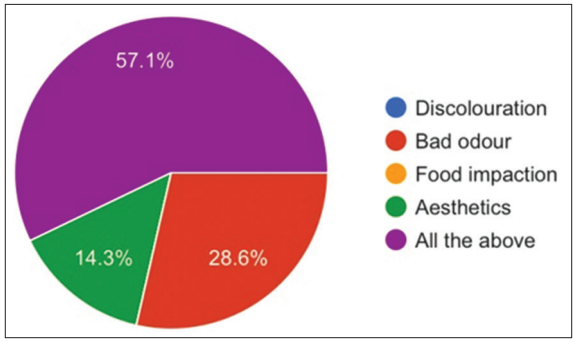

Figure 8: What are the patient complaints with temporary crowns?

CONCLUSION

All fields of human activity have been affected by great advances in technological developments. As so has dentistry benefited from these advances. The temporary restoration is placed immediately after the tooth preparation to induce correct morphological tissue maturation. The shape and size of the restoration should mimic those of the contralateral tooth; as a result, the provisional restoration directly affects the healing, maturation, and stability of gingiva. Unintentional displacement of a provisional restoration is frequently because of non-retentive tooth preparation. As a matter of fact, when a patient looks for a dentist, it is to improve specifically esthetics because in a highly competitive and modern society a young, beautiful, and natural appearance is very important for success.

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Source of support: Nil; Conflict of interest: None Declared