PREP Panel

The clinical evaluation of 3M Espe Protemp 4 temporary crown and bridge material by the PREP panel

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Introduction: provisional crowns

THE functions of a provisional crown are many, but can be classified into biological, mechanical and aesthetic[1]:

Biological functions of a provisional crown[1]

- Protects pulp from adverse effects of microleakage
- Maintains periodontal health by producing cleansable contours
- Prevents/minimises tooth or core fracture

Mechanical functions of a provisional crown[1]

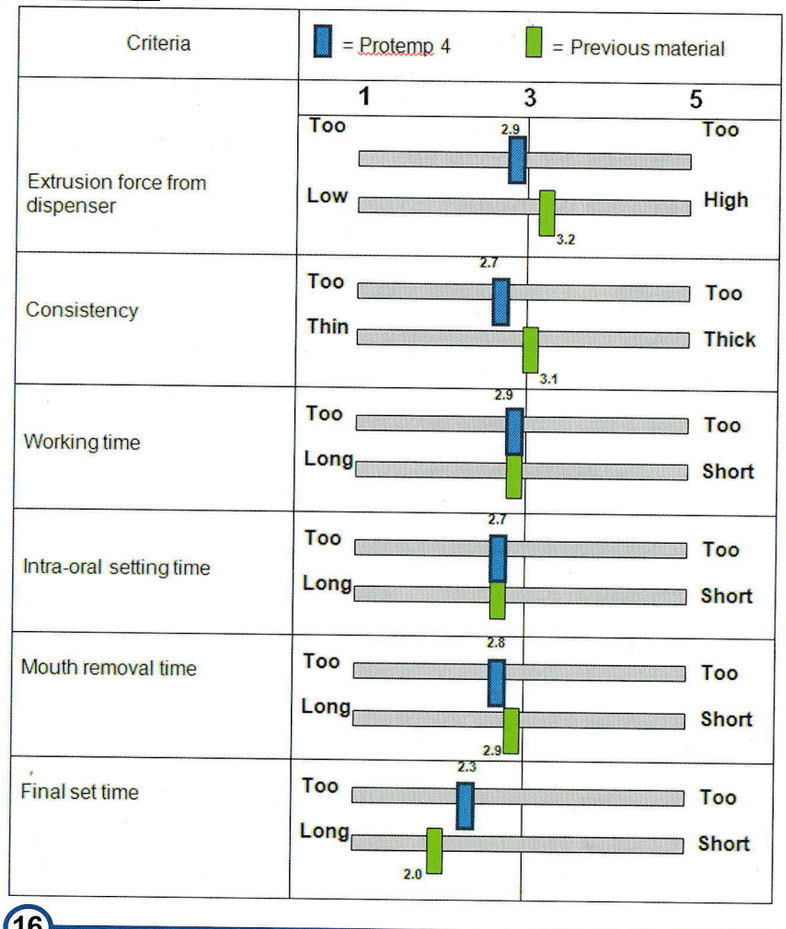
- Resists functional loads
- Maintains stability of intra- and inter-arch relationships
- Maintains positional stability of prepared teeth
  - Maintains appearance of the prepared tooth by mimicking the prepared tooth or the final restoration

Provisional crowns generally fulfil these conditions as they are usually in place for only a matter of weeks, but, increasingly, patients may be considered to expect an aesthetically excellent provisional restoration.

It is therefore the purpose of this study to evaluate the performance of a nanofilled provisional material, the nanoparticles being expected to provide an easily polishable and aesthetic provisional restoration in the same way that a nanofilled composite (Filtek Supreme: 3M Espe) achieved a surface lustre which was better (along with another material, Enamel Plus HFO), after ageing, than six of the other seven other resin composite materials that it was tested against[2].

The new material was also developed to have high strength and low fracture rates with regard to its longer term use in clinical situations where a wait time is indicated before placement of the final restoration.

TABLE 1



Materials and methods

Protemp 4 is a high strength material for the temporisation of crown and bridge preparations (3M Espe, Germany). It differs from previous materials by way of the filler being comprised of nano-sized (a nanometer = 1/1000 microns) particles to enhance its surface properties.

The surface is smooth and glossy after removal of the inhibition layer with alcohol and only requires polishing in areas that have been adjusted, e.g. marginal or occlusal areas.

General dental practice is *the* appropriate location for the testing of new materials, given that this is the real world, with "real" patients and "real" dentists operating under the pressures of patient throughput and the need to operate as a business.

Accordingly, the PREP panel (Product Research and Evaluation by Practitioners) was established in 1993 to carry out "handling" evaluations of materials and clinical studies of the survival of restorations. This group was commissioned to carry out a study of Protemp 4.

Thirteen members, of whom three were female, were selected at random to conduct the evaluation. The average time since graduation was 22 years, with a range of 13 to 40 years. Packs of Protemp 4 with full instructions and a questionnaire were sent to the 13 practitioners with a request that they used the material for eight weeks and then complete the questionnaire.