Practice-based evaluation

The PREP Panel reviews the Voco Rebilda Post System.

The importance of practice-based research has been emphasized by Mandel, who considered that "research is not only the silent partner in dental practice, it is the very scaffolding on which we build and sustain a practice"[1]. In this respect, a wide variety of research projects may be considered to be appropriate to general dental practice. These include[2]:

- Assessment of materials and techniques
- Clinical trials of materials
- Assessment of treatment trends and treatment of disease
- Assessment of behaviour and attitudes (of dentists as well as patients)
- Evaluation of disease incidence
- Patient satisfaction

The volume of clinical material seen in general dental practice makes dental practice an area of central importance in the assessment of new techniques and materials, as success of a material, device or technique could be considered to be its performance in everyday use in a particular dentist's surgery. Central to good performance of dental materials are not only their physical properties but also their ease of use, given that it could be suggested that a restorative which handles easily will be more likely to produce an optimally performing restoration than one which is difficult to use.

The performance or handling of a material by one operator is necessarily subjective, but when practitioners band together to form a group in order to assess the handling of new materials in dental practice, the results are likely to be more objective and generalisable. Perhaps the most well known group of practice-based researchers is the Clinical Research Associates (CRA) founded by Gordon Christensen in Utah, USA 30 years ago. This organisation, funded by the sales from its Clinicians Report Newsletter, carries out practice-based evaluations of a wide range of dental materials in 250 dental practices worldwide as well as in vitro assessments in their extensive laboratory facility.

A UK-based group of practice-based researchers is the PREP (Product Research and Evaluation by Practitioners) Panel. This group was established in 1993 with six general dental practitioners, and has grown to contain 33 dental practitioners located across the UK and one in mainland Europe. It has completed over 60 projects – mainly 'handling' evaluations of materials and techniques, while also developing expertise in carrying out clinical evaluations of restorations in dental practice.

Post systems

Post crowns are generally placed in teeth with limited residual tooth substance and, as a result, it is not surprising to note that they are the least well performing crowns in the dental practitioners' armamentariium[3].

Principal among the reasons for failure of post-crowned teeth is debonding, but root fracture is also a significant problem with metal posts, due, in part, to the difference in the stiffness of the root dentine and the stiffness of the metal post. As a result, more recently introduced fibre posts, whose stiffness is less different from root dentine than metal posts, are associated with only a small risk of root fracture[4]. In this regard, the results of a retrospective evaluation, by Ferrari and colleagues[4], of three types of fibre post at times of seven to 11 years, and which involved 985 posts and four combinations of dentine adhesive/luting material, concluded that "the use of fibre posts in combination with adhesive restorative materials can provide a long-term➲

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➲clinical success in endodontically treated teeth". More detailed analysis of the results indicated 79 failures: 39 due to endodontic reasons, one fibre post fracture, 17 crown dislodgments and 21 debonded posts. The authors considered that mechanical failures always resulted from a lack of coronal tooth structure. However, the most salient point to be gleaned from this extensive study was that there was only one root fracture, that being in a maxillary lateral incisor.

It is therefore the purpose of this study to evaluate the in-practice handling of a recently introduced post and core system, the Voco Rebilda Post and Core System.

Materials and methods

The product under evaluation was the Voco Rebilda Post System. Following a letter sent to all members of the PREP Panel, asking if they would be willing to carry out an evaluation of a fibre-post system, 10 members of the PREP panel were selected at random to conduct the evaluation. One of them was female and the average time since graduation was 23 years, with a range of seven to 39 years. An explanatory letter, questionnaire and the Rebilda Post System kits (comprising of a range of drills, five each of three different sized high-radiopacity fibre posts with corresponding burs, Futurabond DC dual-cure self-etch enamel and dentine bonding material, and a syringe of Rebilda DC, a dual-cure flowable composite core build-up material) were distributed to the evaluators, who were asked to use the material in situations where they were indicated clinically and return the questionnaire after six months of use of the system.

Results

The number of posts placed by the evaluators in anterior teeth in a typical month was as follows:

No of posts	No of respondents
<5	8
5–10	1
11–20	1
>20	0

When the evaluators were asked which type of post was typically used in anterior teeth, the results indicated that cast metal was used by five evaluators, preformed metal by two and fibre posts by eight. In this respect, the principal reasons for the choice of post system were reliability, and a trusted familiar system. Other reasons were the fit of cast posts to irregular canals, reduction in root fractures with fibre posts and ease of removal of fibre posts. Seventy per cent (n=7) of the evaluators stated that they normally placed posts in posterior teeth, with three using cast metal, two using preformed metal, four using fibre posts and four using Nayyar-type posts for retaining cores..

All evaluators reported using resin-based or resin-modified materials for luting posts in anterior and posterior teeth, though one evaluator also used zinc phosphate, with the principal reasons for the choice of these materials in both anterior and posterior teeth were: ease of use/handling, and good results. Other reasons were: 'self-etching & bonds to fibre-posts', 'same material as for crown cementation', and 'easy to clean up'.

When the evaluators were asked to rate the ease of use of their current anterior post system, the result was as follows:

When the evaluators were asked to rate the ease of use of their current posterior post system, the result was as follows:

The ease of use of the drill system for post preparation currently used was rated as follows:

The evaluators currently used a variety of core build-up systems. Reasons given for the use of these materials were primarily ease of use and reliability. Other reasons were: 'Prep Panel evaluation', 'respected manufacturers' and 'bonds to the tooth'.

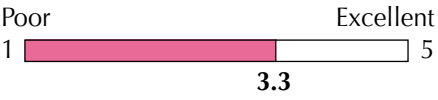
The ease of use of the current core build-up material was rated as follows:

Evaluation

Evaluators rated the presentation of the kit as follows:

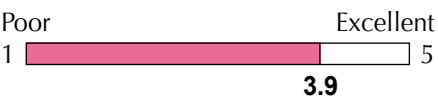
in terms of the completeness of the system:

in terms of ability to place on working place:



ease of cleaning of the kit:

overall presentation:



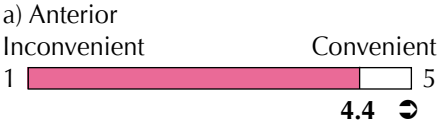
When the evaluators were asked to rate the technique guide/instructions, the results were as follows:

Comment was made by some evaluators that the instructions looked too complex and it was suggested that they be produced on a smaller wipe clean laminated card.

The total number of posts placed during the evaluation was 115, comprised of 63 anterior and 52 posterior.

The Rebilda fibre post was assessed for ease of use as follows:

a) Anterior



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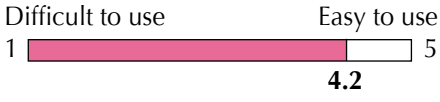
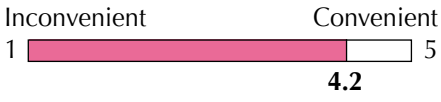
➲b) Posterior

Eighty per cent (n=8) of the evaluators experienced no difficulty with the Rebilda system and, when asked to rate the ease of use of the drill system, the result was as follows:



With regard to the Rebilda DC material, 47 placements were made with the material. Seventy per cent (n=7) of the evaluators stated that the viscosity of the material was satisfactory and 100 per cent stated that the material had sufficient working time and the same number stated that the core build-ups were easily prepared.

The overall ease of use of Rebilda DC was rated as follows:



Comments made by the evaluators included: " Will order! Drills scary at first but I found them easy to use", "Very good system" and " Nice feel to core material" and " Long brushes gave feeling of good bond coverage in the canal".

Overall, 80 per cent (n=8) of the evaluators were satisfied with the Rebilda Post System with Rebilda DC and the same number would purchase the Post system. 70 per cent (n=7) of the evaluators stated they would purchase Voco Rebilda DC if available at average price and 80 per cent (n=8) of the evaluators would recommend the Rebilda Post System, with Rebilda DC, to colleagues.

Discussion

The Voco Rebilda Post System has been subjected to an extensive evaluation in clinical practice by members of the PREP panel in which 115 (63 Anterior and 52 posterior) fibre posts, and 47 Rebilda cores, were placed. Based on this the following conclusions may be made:

Presentation

The presentation of the components scored well in terms of the completeness of the system (4.3 on a visual analogue scale [VAS] where 5 = excellent and 1 = poor). Four evaluators stated that the kit was too large and this was reflected in the lower score of 3.3 (on the same VAS) in terms of the ability to place the kit on the working space.

Instructions

Five (56 per cent) of the evaluators made similar comments regarding the complexity of the instructions and suggestions for improvement were made

Ease of use

The Voco Rebilda Post System achieved similar scores to the previously used system for use with both anterior and posterior teeth. The Rebilda DC improved slightly on the ease of use score achieved by the previously used core build-up system.

Conclusions

The good reception of this new fibre post system is underlined by the high percentage of evaluators who were satisfied with the system and would both purchase and recommend the new system and Rebilda DC to colleagues.

Manufacturer's comments

Voco would like to thank the PREP Panel for their evaluation and the positive report.

The Rebilda Post System is designed as a complete adhesive post and core build up system. This system increases clinical safety, as all components are perfectly compatible with each other and are at hand when an endodontic post procedure is pending. To place all the materials for this step by step procedure in one set, it was necessary to design a package of this size.

Nevertheless, the suggestions of experienced practitioners like the PREP Panel members are very helpful for Voco to improve both, the material and the packaging to provide user-friendly products.

References

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