

A restorative assessment

Trevor Burke, Russell Crisp and F Dolan give a practice-based evaluation of a low shrinkage resin composite.

A wide variety of research projects may be considered to be appropriate to general dental practice. In this respect, the volume of clinical material seen in general dental practice makes it an ideal area for the assessment of new techniques and materials. Central to good performance of dental materials are their physical properties and 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 technique sensitive. The assessment of the handling of a new dental material is therefore important.

The handling of a given material by one operator is necessarily subjective, but when practitioners band together to form a group to assess the handling of new materials in dental practice, the results are likely to be more objective and generalisable. All of this is possible when practitioner-based research groups are teamed with the expertise available in academic institutions.

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 GDPs, and has grown to contain 30 dental practitioners located across the UK. It has completed over 50 projects, mainly 'handling' evaluations of materials and techniques, but also, currently, has six clinical trials of new materials and techniques (varying from two to five years) operating in UK dental practices.

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Fig 1: Top - N'Durance A3.5 + Incisal.

One project has involved dentists in mainland Europe (the EuroPREP project).

The product under evaluation in this study is Septodont N'Durance (Septodont, PO Box 253, ME16 0JF. Tel: 01622 695520, email: information@septodont.co.uk and see also www.septodont.co.uk).

This is a low shrinkage resin composite restorative material which uses novel dimer-acid based resin chemistry¹.

Materials and methods

Ten members of the PREP panel were selected at random for participation in this evaluation, two of whom were female. The average time since graduation was 26 years, with a range of 10 to 42 years. Explanatory letters and packs of N'Durance and N'Durance Flow, were distributed to the evaluators in August 2009 with a request that they use the material, where indicated, for 10 weeks. They were also sent a questionnaire (with most responses given on a visual analogue scale), designed to evaluate their current

composite usage, and the present instructions, handling, aesthetic quality and post-operative sensitivity of the new composite.

Results

Background information: Seventy cent (n=7) of the evaluators stated they did not typically use a multi-shade layering technique for anterior composites. Typical comments from evaluators who did not use a layering technique routinely were:

- 'Usually two shades sufficient'
- 'Only use multi-shade layering for large anterior restorations' and
- 'Simplicity - current composite is forgiving'

Ninety per cent (n=9) of the evaluators stated that they normally placed composite restorations in posterior teeth. When asked about technique used for posterior composite restorations, 90 per cent used a dentine bonding agent, with 30 per cent using a glass ionomer base/sandwich and 70 per cent a flowable composite base layer.

A wide range of composite materials were used prior to this study by the respondents with three of the respondents using more than one

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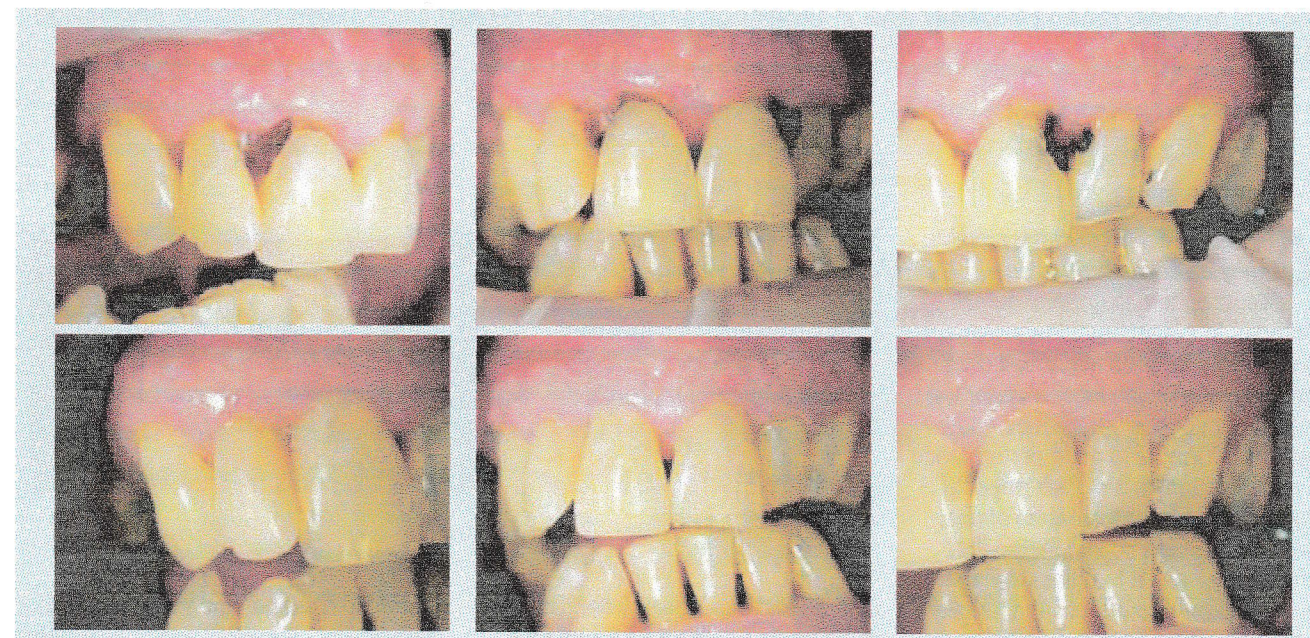
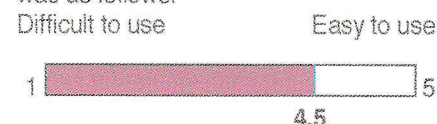


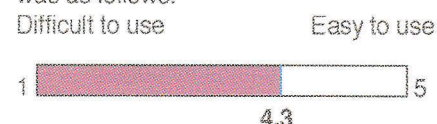
Fig 2: N'Durance A3.5 - the post-op pictures were taken three days after the pre-op. The patient is a 64-year-old man.

material. The principal reasons for the choice of these materials were good aesthetics, ease of use, good results, ease of finishing, consistency, familiarity and, for posterior teeth, low shrinkage.

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



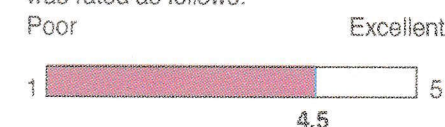
When the evaluators were asked to rate the ease of use of their current posterior composite material, the result was as follows:



The evaluators currently used a variety of dentine/bonding systems. Nine (90 per cent) of the evaluators expressed a preference for composite materials to be supplied in Vita (Vita Zahnfabrik, Germany) shades, though one evaluator commented 'I have got

used to the Miris system which doesn't use Vita shades'.

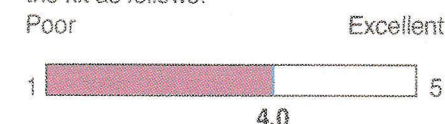
The aesthetic quality of anterior restorations placed by the evaluators using their current composite material was rated as follows:



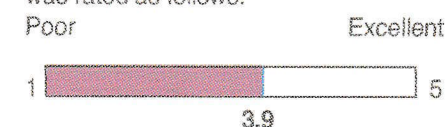
Evaluation of Septodont N'Durance

The total number of restorations placed during the evaluation was 583, comprised of 293 anterior and 290 posterior restorations.

Evaluators rated the presentation of the kit as follows:



The ease of use of the shade guide was rated as follows:



When the evaluators were asked

to give their, and their nurse's, assessment of the dispensing and placement of N'Durance the result was as follows:



When the evaluators were asked if the material flowed satisfactorily when a matrix was applied, the result was as follows:



The viscosity of the material was rated as satisfactory by nine (90 per cent) of the evaluators. The remaining evaluator stated it was too viscous.

Six of the evaluators (60 per cent) stated that the material had sufficient working time but five evaluators (50 per cent) commented that some shades set prematurely under ambient or operating light. 'More of a nuisance than a problem' one evaluator commented.

All (100 per cent) of the evaluators