

A practice-based evaluation of Voco Xtra Fil

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A MAJORITY of research into the effectiveness of dental materials is carried out in dental hospitals or other academic institutions, rather than in general dental practice, although this is where the majority of dental treatment is performed, worldwide.

Reasons for this divergence include the potential cost, given that practices are geared to the efficient treatment of patients rather than research. However, there are many reasons why dental practice increasingly should become the prime location for clinical dental research. Dental practice is the real world. Accordingly, if a technique or material is to be successful, it must be readily operated in the dental practice situation.

A number of types of research may be considered particularly appropriate to dental practice. These include clinical trials of materials and techniques, assessment of treatment trends, and assessment of dentists' behaviour and attitudes. Patients have also been found to be approving of practitioner involvement in research, with the practice and practitioner's professional image being enhanced.

As a result, a number of practice-based evaluation groups have become established, such as the Clinical Research Associates, principally in the USA, and the PREP (Product Research and Evaluation by Practitioners) Panel in the UK. The latter group, co-ordinated in Birmingham by Burke and Crisp, is well established and has completed, to date, a total of over 55 evaluations, including "handling" evaluations and clinical trials.

Resin composite materials for posterior teeth

The use of resin composite materials has been considered to be increasing, as patients, worldwide, increasingly request tooth-coloured restorations in their posterior teeth. However, the placement of

such restorations has, in the past, been considered technique-sensitive because of difficulties in obtaining a tight contact and the need for incremental placement and other steps designed to reduce the effects of polymerisation contraction.

The introduction of a material which may be placed in larger than normal increments because of its greater than normal depth of cure and which is only available in one shade may be considered to be an answer to some of the problems of technique sensitivity.

Such a material is Voco Xtra Fil, a tooth-coloured posterior composite restorative material produced by the manufacturer with the objective of being a fast, time-saving, one-shade basic posterior composite.

Materials and methods

The product under evaluation was Voco Xtra Fil (Voco GmbH, PO Box 767, 27457 Cuxhaven, Germany. UK contact details: Voco Service Centre. Telephone 07836 689951).

A questionnaire was designed jointly by the PREP Panel co-ordinators and the manufacturer with the aim of evaluating the evaluators' current use of posterior composite, and the presentation, instructions, handling, aesthetic quality and post-operative sensitivity of the composite under evaluation. Most responses to the questionnaire were given on a visual analogue scale (VAS).

Members of the PREP Panel were contacted by a letter asking if they were prepared to carry out an evaluation of a resin composite material designed for use in load-bearing situations in posterior teeth.

Of those who replied in the affirmative, 13 members were selected at random to conduct the evaluation. Two were female and the average time since graduation was 24 years, with a range of 11 to 38 years.

An explanatory letter, the questionnaire and packs of the Voco Xtra Fil were distributed, with the practitioners being asked to use the material for 10 weeks in the clinical situation suggested by the manufacturer and return the questionnaire on completion of the

evaluation. This paper describes the responses collated from the questionnaires.

Clinical evaluation Background information

Ninety-two per cent (n=12) of the evaluators normally placed composite restorations in posterior teeth, with the number of posterior composite

restorations being placed by the evaluators in a typical week as follows:

No. restorations	No. respondents
<5	2
5-10	4
>10	6

Of these the proportions were:

- Occlusal restorations 46%,
- Class II 36%, and
- MOD 18%

When asked about the technique used for placement of posterior composite restorations, 69% (n=9) used a dentine bonding agent, with 31% (n=4) using a glass ionomer base/sandwich and 62% (n=8) a flowable composite base layer.

A wide range of posterior composite materials were used prior to this study, with the principal reasons for the choice of these materials being good aesthetics, ease of use, good results and familiarity.

Ten (77%) of the evaluators used their present material in compule form and five (38%) in syringe form, with two evaluators using materials in both forms.

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

Difficult to use	Easy to use
1	5
	4.1

Seventy-seven (n=10) the evaluators expressed a preference for composite materials to be supplied in Vita shades. The three remaining evaluators preferred the manufacturer's shades.

Evaluation of Voco Xtra Fil

The instruction card was rated by the evaluators as follows:



Poor	Excellent
1	5
	4.

The total number of restorations placed during the evaluation was 39 comprised as follows: Class I, 168; Class II, 148; Core build-up, 29; CI V, 51; and Other, 22 (22 units of build-ups for the Dahl technique).

When the evaluators were asked to give their, and their dental nurses', assessment of the dispensing and placement of Xtra Fil, the result was as follows:

Inconvenient	Convenient
1	5
	4.5

None of the evaluators stated that they had experienced any difficulty with the material sticking to instruments. When the evaluators were asked if the material flowed satisfactorily, the result was:

No	Yes
1	5
	4.5

The evaluators rated the viscosity of Xtra Fil as follows:

Too thin	Too viscous
1	5
	3.2

Sixty-nine per cent (n=9) of the evaluators agreed that they used fewer increments of Xtra Fil due to its 4mm cure depth and 62% (n=8) felt that this was an advantage. One evaluator, however, wished to know the polymerisation shrinkage percentage of the material to help determine appropriate increment size.

A typical finishing regime for polishing composite restorations involved fine diamonds, polishing discs and a final paste polish or gloss coat finish, with 92% (n=12) stating that the restorations of Xtra Fil were easily finished in this way.

When asked to describe the surface texture of the Xtra Fil restorations placed, the results were as follows: High Gloss, two evaluators;

Satisfactory Gloss, 10 evaluators; and Low Gloss, one evaluator.

Sixty-nine per cent (n=9) of the evaluators agreed that the one shade of Xtra Fil meant an advantage in terms of reduced storage space, and eight evaluators (62%) agreed time was saved by not having to take a shade.

Comments included: "Goes back to the 'Universal' shade concept - OK for ~50% of cases"; "Not so good on older patients or dark teeth"; and "Most people don't notice or worry about shade in posterior teeth".

The overall aesthetic quality of restorations of Xtra Fil was assessed as follows:

Poor	Excellent
1	5
	3.6

Sixty-nine per cent (n=9) of the evaluators thought the shade provided should not be changed. Two evaluators made the comment that perhaps a minimum of two shades were required - an opaque and a normal. When the evaluators were asked to detail any difficulties experienced during the placement and finishing of the restorations, the following comments were made: regarding the sensitivity to ambient light, five evaluators (38%)

stated that Xtra Fil was too sensitive, and the remaining eight (62%) stating that it was satisfactory in this respect.

When the evaluators were asked to compare Xtra Fil with the normally used composite material, in respect of handling, working time and marginal quality, the results were:

	Better	Same	Worse
Handling	38%	38%	23%
Working time	8%	54%	38%
Marginal quality	0%	92%	8%

Comments made included: "Lovely packing texture and liked big compules"; "Able to produce surface detail prior to curing with great ease"; and "good contact points easily achievable with this material".

The evaluators rated the ease of use of Xtra Fil as follows:

Difficult to use	Easy to use
1	5
	4.4

Seventy-seven per cent (n=10) of the evaluators stated that Xtra Fil achieved the objective of being a fast, time-saving, one-shade basic posterior composite, so making posterior

composite restorations more widely available. Twelve (92%) felt there was a market for this type of material, with one evaluator stating "it fulfils all the criteria it set out to achieve".

Sixty-nine per cent (n=9) of the evaluators would purchase the material at average cost and the same number would also purchase it if it were available at slightly below average cost for a posterior composite.

Final comments included: "This is the only material I have found that mimics the translucency of enamel, but needs 'opaque' for deep cavities"; "Enjoyed using it - quick and effective"; and "Excellent in small class I and II cavities".

Discussion

Voco Xtra Fil has been subjected to an extensive evaluation in clinical practice by members of the PREP Panel in which 396 restorations were placed. The instruction card was given a very high rating of 4.9 (on the visual analogue scale where 5 = excellent and 1 = poor), and all the evaluators stated that the compules worked satisfactorily.

The evaluators and their dental nurses gave a high rating of 4.4 (on a visual analogue scale where 5 = convenient and 1 = inconvenient) for handling and placement of Xtra Fil.

though comment was made by two evaluators regarding the size of the compule nozzle. The viscosity of the material was rated by the evaluators as near to the ideal, 3.2 (on a visual analogue scale where 5 = too viscous and 1 = too thin).

Xtra Fil achieved a rating of 3.6 (on a visual analogue scale where 5 = excellent and 1 = poor) for overall aesthetic quality of the restorations. This may be considered more than satisfactory, given that the material is produced in only one shade. In this respect, the majority (67%) of the evaluators thought that the shade should not be changed.

With regard to ease of use, Xtra Fil exceeded the score for ease of use of the materials previously used, 4.4 cf 4.1 (on a visual analogue scale where 1 = difficult to use and 5 = easy to use). However, in this regard, the sensitivity of the material to ambient light was regarded by five evaluators as too high.

That 77% of the evaluators stated that Xtra Fil achieved its objectives of one shade ease of use and high depth of cure, and that 69% would purchase the material, underlines the successful reception of this material and perhaps with further modifications even higher acceptability could be achieved.

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PREP Panel

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Manufacturer's comments

For many patients, the cost of a high-end composite like Voco's Grandio is not an option. The idea behind Xtra Fil was to use our knowledge and technology to create a composite which enables time-saving and cost-effective treatment.

Apart from the already attractive price, time is money. No shade selection, bigger increments and shorter curing time save minutes on every single patient, especially when used together with Futurabond.

We are proud to see that 77% of the PREP Panel evaluators state that Xtra Fil achieved the objective of making composite restorations more widely available. Nevertheless stability and

handling must not be sacrificed.

Good physical properties and high wear resistance confirmed in external studies show that there is no compromise in stability; and with the PREP Panel dentists rating the ease of use of Xtra Fil higher than their previously used composite, there is obviously no compromise in handling properties as well. In other words, Xtra Fil could be a tooth-coloured alternative to amalgam.

1 Burke IJT. Amalgam to tooth-coloured materials - implications for clinical practice and dental education: governmental restrictions and amalgam-usage survey results. *J Dent* 2004; 32: 343-350.