Smart thinking on Restorative Outcome for the Dental Team – Part One

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Handout – hodsollhousedental.co.uk
Resin-Bonded Bridges in 2015
Smart thinking - as trainers - we need to change with the times

• The craft of dentistry has changed
• We need to reflect on this and be prepared to change our understanding (knowledge), our clinical application & teaching (if relevant)
CRRBs - v - Implants
which one is which and how do we know?
We must not abandon RBBs as a treatment option; particularly where they are likely to go well and be non-destructive.


The single unit, single retainer, cantilever resin-bonded bridge.

Briggs P, Dunne S, Bishop K.
What does the science tell us?

Prosthetic treatment planning on the basis of scientific evidence

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SUMMARY The objective of this report is to summarize the results on survival and complication rates of different designs of fixed dental prostheses (FDP) published in a series of systematic reviews. Moreover, the various parameters for survival and risk assessment are to be used in attempt to perform treatment planning on the basis of scientific evidence. Three electronic searches complemented by manual searching were conducted to identify pro-

bonded bridges 87.7%. Moreover, after 10 years of function the estimated survival decreased to 89.2% for conventional FDP, to 80.3% for cantilever FDP, to 86.7% for implant-supported FDP, to 77.8% for combined tooth-implant-supported FDP, to 89.4% for implant-supported SC and to 65% for resin-bonded bridges. When planning prosthetic rehabs, conventional end-abutment tooth-
supported FDP, solely implant-supported FDP or
Resin Bonded Bridge survival – where were we in 2008?

A review of the success and failure characteristics of resin-bonded bridges

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VERIFIABLE CPD PAPER

Objectives This literature review was designed to assess and compare the success rates and modes of failure of metal-framed, fibre-reinforced composite and all-ceramic resin-bonded bridges. Materials and method A Medline search (Ovid), supplemented by hand searching, was conducted to identify prospective and retrospective cohort studies on different resin-bonded bridges within the last 16 years. A total of 49 studies met the pre-set inclusion criteria. Success rates of 25 studies on metal-framed, 17 studies on fibre-reinforced composite and 7 studies on all-ceramic resin-bonded bridges were analysed and characteristics of failures were identified. Results The analysis of the studies indicated an estimation of annual failure rates per year to be 4.6% (±1.3%, 95% CI) for metal-framed, 4.1% (±2.1%, 95% CI) for fibre-reinforced and 11.7% (±1.8%, 95% CI) for all-ceramic resin-bonded bridges. The most frequent complications were: debonding for metal-framed, resin-bonded bridges (93% of all failures); delamination of the composite veneering material for the fibre-reinforced bridges (41%) and fracture of the framework for the all-ceramic bridges (57%). Conclusions All types of resin-bonded bridges provide an effective short- to medium-term option, with all-ceramic performing least well and having the least favourable mode of failure. The methods of failures were different for different bridges with metal frameworks performing the best over time.
Results:
The analysis of the studies indicated an estimation of annual failure rates per year to be: 4.6% (±1.3%, 95% CI) for metal-framed, 4.1% (±2.1%, 95% CI) for fibre-reinforced, 11.7% (±1.8%, 95% CI) for all-ceramic resin-bonded bridges.
Metal frameworks

We must not abandon RBBs as a treatment option; particularly where they are likely to go well and be non-destructive.

The single unit, single retainer, cantilever resin-bonded bridge. Blaker P, Donna S, Elshafie K.
Fibre-reinforced composite RBBs

Fig. 10 The reasons for failure of fibre-reinforced composite resin-bonded bridges
All-ceramic RBBs

Fig. 11 The reasons for failure of all-ceramic resin-bonded bridges
Survival characteristics of 771 resin-retained bridges provided at a UK dental teaching hospital

P. A. King,1 L. V. Foster,2 R. J. Yates,1 R. G. Newcombe3 and M. J. Garrett*4

VERIFIABLE CPD PAPER

Objective To analyse the factors affecting the clinical performance and those influencing the survival of resin-retained bridgework provided at a UK dental teaching hospital between 1994 and 2001. Design A prospective analysis of restorations provided at a single centre using case notes with all patients invited for review to corroborate findings. Setting Department of Restorative Dentistry, University of Bristol Dental Hospital and School, Bristol, United Kingdom. Subjects and methods Between January 1994 and December 2001, data regarding 1,000 consecutive resin-retained bridges provided at Bristol Dental Hospital and School were recorded. Data was available for 805 patients at the time of the study. Following invitation, 621 patients attended for a review appointment. Life table and Kaplan-Meir survival analysis were carried out for all restorations provided. Results The five-year and ten-year survival rates estimated by the life-table method are 80.8% (95% confidence interval 78.0–83.6%) and 80.4% (95% confidence interval 77.6–83.2%) respectively. The median survival cannot be estimated for this study as the survival probability remains above 80% even at the longest follow-up. Analysis of clinical variables influencing survival revealed that design of the restoration and experience of the operator providing the restoration were significant factors. Resin-retained bridges made with minimal tooth preparation are shown to be superior in terms of longevity than those for which other types of tooth preparation is made. Patient satisfaction with their treatment was high.
Prospective outcome of 1000 consecutive RBBs in 805 patients

- Experience of Operator - Yes
- Minimal preparation - Yes
- Design of bridge - Yes

King et al. 2015
Failure characteristics – bond failure commonest failure

- 20% failed by 5 years
- Few failed thereafter even though more than two thirds were assessed for more than 10 years
- No failures of surviving bridges between 10 – 16 years
- As a result 5 and 10 year survival probability was 80% (as shown by survival curve)

King et al. 2015
Median survival can not be calculated as survival probability greater than 80% at longest review period

Very odd shaped bath
• Hazard ratio bigger for multi-abutments than for multi-pontics (the number of supporting teeth very important)
• Minimal preparation (m) more successful than intermediate (I) or maximal (m)
• Where existing restoration present in abutment teeth - placement of new restoration improves outcome compared to accepting old

King et al. 2015
Minimal Preparation and remove and replace existing restorations within abutment tooth

King et al. 2015
Cantilever - v - hybrid / fixed-fixed

- Difference early on
- Then both plateau off – similar survival characteristics
- Cantilever and double cantilever bridges predictable

King et al. 2015
My Cementation Protocol for RBBs

Dycal try-in – assess fit, aesthetics and occlusion

Place retained-retraction cord – palatal / lingual

Rubber Dam – if useful

Intra-oral sandblast

Metal wing sandblast

A/E / Prime / Bond / Lute Cement / Oxyguard

Remove excess cement / polish & review
Clinical Tip: Dycal (orange) try-in to see what the abutment and pontic of the CRRB look like in-situ

Dycal try-in – assess fit, aesthetics and occlusion
Back to lab if not right 35% chance

Walton Dental Arts

Dent Update. 2004 Sep;31(7):393-4, 396-7.
The Dycal try-in technique for Resin-bonded bridges.
Poyser NJ, Briggs PF.
Clinical tip: ‘if the shade is right it will look good in ‘black and white’ if not it will look wrong’
In my hands 35% of RBBs need to go back to the lab for alterations

Dycal 1

Dycal 2

Poyser and Briggs (2004)
Dycal Re-Try-in – assess fit, aesthetics and occlusion

Aesthetics – where opaque cement used no grey out noted – overall patient satisfaction very good (King et al 2015)
Cementation protocol of CRBB

- Place retained-retraction cord – palatal / lingual
- Rubber Dam – if useful
- Intra-oral sandblast
- Metal wing sandblast
- A/E / Prime / Bond / Lute Cement / Oxyguard
- Remove excess cement / polish & review
Cementation protocol – retained retraction cord and if helpful ‘open’ rubber dam

Place retained-retraction cord – palatal / lingual

Rubber Dam – if useful

Rubber Dam used - twice as likely to de-cement compared to no rubber dam used – less experienced operators had most failures
Remove: excess cement / retained retraction cord / location cast location cleat and polish & review
A smart and predictable solution to non-organic pain following implant treatment UR1
Metal Rochette provisional RBBs are great to temporise around implants

Work the pointed end of a Ward’s Carver beneath the metal wing
Cost effectiveness – it was not possible to calculate the median 50% survival as survival at final follow up of over 80 too high (King et al 2015)

Creugers NH, Kayser AF.

A method to compare cost-effectiveness of dental treatments: adhesive bridges compared to conventional bridges.

The study shows that in the Netherlands the break even point for equal cost-effectiveness compared to conventional bridges is achieved when the 50% survival for adhesive bridges is at approximately 6.5 yr. Clinical data indicate a higher cost-effectiveness for anterior adhesive bridges.
‘....If you do everything well – it’s very smart thinking that also buys time.....’

- Likely 10 years of survival (80% survival at 15 years King et al 2015)
- Aesthetically good
- Biologically sound
- CRRB likely to be Retreatable

King et al, 2015
My Message

Do not be afraid to use them in practice – it’s very smart thinking

I hope that this was helpful

The End

Thanks for your attention and I hope you all enjoy the rest of the conference