TITLE: Resin-Bonded Fixed Bridges and Conventional Fixed Bridges: A Review of the Advantages and Disadvantages and Indications

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CONTEXT AND POLICY ISSUES:

Single-tooth replacement can be done through the use of a removable prosthesis or a fixed prosthesis.\(^1\) Developments in the field of implantology and adhesive dentistry have increased the options available for fixed prostheses. Fixed options for tooth replacement include: resin-bonded fixed bridge (also known as Maryland bridge, butterfly bridge, or Rochette bridge), conventional fixed bridge, or implant.\(^2\) With the advent of high-strength ceramics (porcelain), it is possible to fabricate all-ceramic prostheses without a metal reinforcement.\(^3\) All ceramic materials have therefore been introduced as an alternative to metal-ceramic prostheses because of the esthetic disadvantage of the latter (the metal wings of the dentures appear grayish through transparent teeth).\(^3,4\)

Despite the fact that resin-bonded bridges and conventional bridges have their own advantages and disadvantages, the use of the former is decreasing over time.\(^5,6\) Updated evidence to compare resin-bonded bridges to conventional bridges as well as to compare 100% porcelain bridges to metal-ceramic bridges is needed to aid in decision-making.

RESEARCH QUESTIONS:

1. What are the advantages, disadvantages, and longevity of resin-bonded bridges compared to conventional bridges?

2. What are the advantages, disadvantages, and longevity of 100% porcelain bridges (resin-bonded and conventional) compared to metal and porcelain bridges?

3. What are the indications for resin-bonded bridges or conventional bridges?

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METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, The Cochrane Library (Issue 3, 2009), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between 2004 and August 2009. No filters were applied to limit the retrieval by study type.

SUMMARY OF FINDINGS:

Advantages, disadvantages, and longevity of resin-bonded bridges compared to conventional bridges

The literature search identified one meta-analysis on survival and complication rates of different fixed dental prostheses, with literature search up to July 2006.7 Prospective and retrospective studies on patients with fixed prostheses with a follow-up time of at least 5 years were included. The 5-year survival rate of conventional bridges was 93.8% (95% CI: 87.9-96.9) and 87.7% (95% CI: 81.6-91.9) for resin-bonded bridges. After 10 years of function, the survival rate decreased to 89.2% (95% CI: 76.1-95.3) for conventional bridges and to 65% (95% CI: 51.4-76.9) for resin-bonded bridges.

A 2008 prospective study examined the long-term clinical performance of 232 resin-bonded bridges inserted in 184 patients.8 The mean observation period was 6.3 years with a maximum of 18.3 years and a minimum of 0.3 years. In total, 12 failures of resin-bonded bridges were observed. The overall survival rate of the bridges was 77% after 10 years. The mean survival time was 12.36 ± 1.76 years (95% CI: 8.91-15.81).

Advantages, disadvantages, and longevity of 100% ceramic bridges (resin-bonded and conventional) compared to metal and ceramic bridges

Systematic reviews or randomized controlled trials comparing ceramic bridges to metal-ceramic bridges were not identified. One prospective study examined the survival rates of 38 all-ceramic resin-bonded bridges.9 The conventional two-retainer design was used for 17 all-ceramic bridges, and a single-retainer design was used for 21 all-ceramic bridges. The mean observation periods were 21.2 months for the two-retainer group and 15.1 months for the single-retainer group. The survival rates were 60.3% for the two-retainer resin-bonded bridges and 90.9% for the single-retainer resin-bonded bridges.

Indications for resin-bonded bridges or conventional bridges

No systematic reviews or randomized controlled trials on the indications for resin-bonded bridges or conventional bridges were identified. According to the literature,5,10 patients receiving resin-bonded bridges should have unrestored or minimally restored abutments, sufficient good quality enamel, and sufficient interocclusal space for retainers (or space can be created).
CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING:

There is very scarce evidence to compare the longevity between resin-bonded bridges and conventional bridges. The limited evidence identified showed that conventional bridges have a higher survival rate as compared with resin-bonded bridges. Survival rates for all-ceramic resin-bonded bridges were reported in one study, but no comparisons with metal and ceramic bridges were made. No information about other advantages or disadvantages of resin-bonded bridges or 100% ceramic bridges was identified. Limited information about indications for use of resin-bonded bridges was identified. This lack of information may be a consideration for decision-making.

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