

# Survival Rate Comparison between Zirconia and Porcelain-Fused-to-Metal Crowns – CAT summary

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## Clinical problem

- Zirconia crowns is an esthetic alternative to porcelain-fused-to-metal (PFM) which has gained popularity.<sup>1</sup>
- There is a lack of literature comparing the long-term survival rate of both material.<sup>1</sup>
- It is pertinent to investigate whether one material performs better intra-orally.

## Clinical question

**In adults** requiring full coverage coronal restorations, **compared to PFM crowns** do zirconia crowns result in altered survival rate over a period of at least 5 years?

## Evidence search

Search date: Oct 4th to 18th, 2023

PubMed/Ovid Medline yield: 57 articles

Key words: PFM, Porcelain-Fused-to-Metal, Porcelain Fused to Metal, metal-ceramic, Zirconia\*, crown\*, Extra-coronal restoration\*, Permanent prosthesis

MeSH terms: Dental porcelain, Crowns

Selected studies:

**1-Monaco, C., et al., (2017)** Zirconia-based versus metal-based single crowns veneered with overpressing ceramic for restoration of posterior endodontically treated teeth: 5-year results of a randomized controlled clinical study.

**2 – Rinke, et al. (2016)** A practice-based clinical evaluation of the survival and success of metal-ceramic and zirconia molar crowns: 5-year results.

## Clinical bottom line

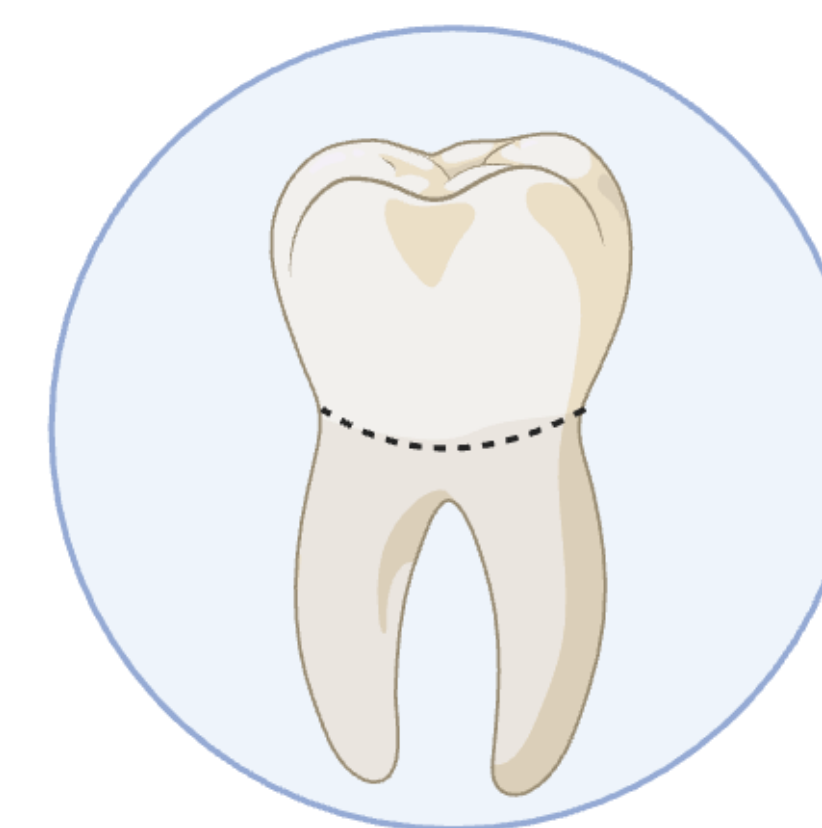
- ***The results of the RCTs (Monaco et al., 2017; Rinke et al., 2016) did not show clinically meaningful and clinically decisive differences between the survival rates of zirconia crowns and porcelain fused to metal crowns.***
- Both studies replicated clinical scenarios and adequate follow-ups in relevant patient populations
- With the limited available evidence, the decision to choose one type of crown over another should be made on a case-by-case basis based on the clinician's experience with the materials, the amount of available tooth structure, the type of bonding protocols and agents used, location of the tooth in the mouth and aesthetic needs of the patient.

## Strengths

- Both the studies replicated clinical scenarios and adequate follow-ups in relevant patient populations.
- Analysis of confounding factors
- Description of reasons for loss to follow-up
- Follow-up time was sufficiently long
- Blinding of patients, clinicians and evaluators
- Clear inclusion and exclusion criteria.
- Moderate degree of homogeneity in tooth selection and preparation.
- Validated tool of outcome measurement

Figure 1.

### Zirconia Crown



### PFM Crown



## Results

### Monaco, et. al. (2017), RCT – Zirconia vs. PFM

- Sample size N = 72; age range = 18-70, Annual follow-up 5-year duration
- **Risk Difference** = - 0.28% [95% CI -2.4% to 31.9%]
- The risk difference is not statistically significant, not clinically meaningful, nor clinically decisive
- The Risk of failure in control (PFM crown recipients) = 2.5%; assumed clinical meaningful threshold 5%.

### Rinke, et. al. (2016), Prospective Cohort Study – Zirconia vs PFM

- Sample size N = 53; mean age = 49.6 ± 9.9%, Bi-annual follow-up 5-year duration
- **Risk Difference** = 1.1% [95% CI -3.84% to 29.47%]
- The Risk of failure in control (PFM crown recipients) = 4.9%; assumed clinical meaningful threshold 5%.

*For both studies the risk difference in survival rates of Zirconia vs PFM crowns is not statistically significant, it is neither clinically meaningful, nor clinically decisive.*

## Limitations

- Small sample size
- Unclear whether crowns lost to follow-up were accounted in final analyses
- Discrepancies in the proportion of premolars and molars prepared in each group

## Applicability

- Italian and German patients, age ranged from 18-70 years.
- Monaco et al., was conducted in university clinical setting, whereas Rinke et al., was conducted in a private practice. Follow-up is pertinent to our clinical question.
- No information on dental insurance coverage.

## Acknowledgements to

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## References

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3. Rinke, S., Kramer, K., Bürgers, R., & Roediger, M. (2016). A practice-based clinical evaluation of the survival and success of metal-ceramic and zirconia molar crowns: 5-year results. *Journal of oral rehabilitation*, 43(2), 136-144.