

INTRODUCTION

It's the 21st century however, many dentists are still using the traditional porcelain fused to metal full coverage restoration for posterior teeth, in addition to, using porcelain fused to metal for fixed dental prosthesis. There seems to be a paradigm shift away from porcelain fused to metal towards all ceramic restorations. Due to advancements in technology, all ceramic restorations are the future. Prior to initiation of any treatment, the ethical practitioner will make decisions based on evidence. The aim of this research project is to compare porcelain fused to metal and zirconia restorations in terms of longevity, wear-resistance, marginal integrity, and internal fit.

METHODS & MATERIAL

My search strategy entailed searching in PubMed: “zirconia (ZC) vs. porcelain fused to metal restorations (PFM)”. I discovered a prospective cohort study relevant to the comparison of ZC and PFM. An original article was found comparing marginal integrity and internal fit of ZC and PFM. Another important topic to be discussed is wear resistance. “Zirconia opposing enamel” was searched in PubMed, a systematic review titled, “In Vitro Wear Behavior of Zirconia Opposing Enamel” was found.

WEAR-RESISTANCE

According to the included studies in this review, polished zirconia specimens showed a favorable wear behavior opposing natural teeth. Enamel pathological wear opposing zirconia full coverage restorations has not yet been confirmed. It is important to assess the enamel wear behavior opposing zirconia using clinically relevant surface contours, as well as, to investigate the long-term stability and abrasiveness of polished zirconia. The studies agreed that the polishing of zirconia surface favors lower enamel wear rates.

MARGINAL/INTERNAL FIT

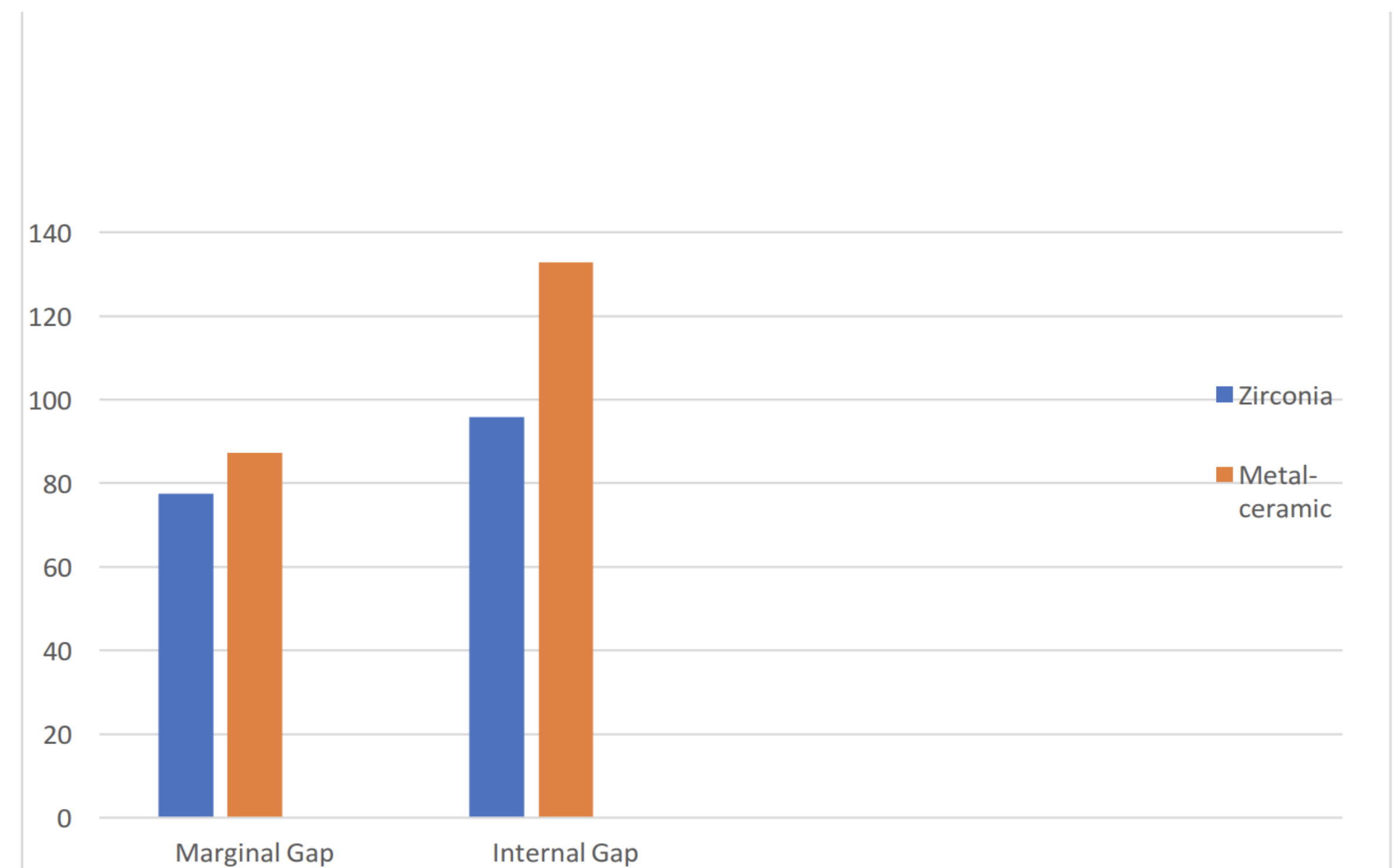


Fig. 4: It shows that both marginal and internal gaps are more for metal-ceramic crowns (Group B) when compared to CAD/CAM fabricated zirconia crowns. (Group A).

LONGEVITY

The 3-year success rate (event-free restoration) was 90.9% (95%-CI): [0.82;0.99] in the metal ceramic crown (MCC) group and 86.8% (95%-CI): [0.76; 0.98] in the ZC group, without showing any statistically significant difference (P=0.49). A separate analysis regarding ceramic fractures revealed that 95.2% (95%-CI): [0.89; 1] of the ceramic veneers in the MCC group were intact, whereas for the ZC group, a success rate of 93.3% (95%-CI): [0.86; 1] was calculated for the ceramic veneer. No statistically significant difference between the two groups could be detected. The null hypothesis of this study was confirmed. Statistical analysis revealed that the success rate of the veneering ceramics in the present study was not influenced by the type of restoration (P = 0.57).

CONCLUSION

Based on the articles included in this research project, there seems to be no statistically significant difference in a 3-year survival rate of metal ceramic and zirconia-based molar crowns, as well as technical complication rates. Past studies have shown technical complications with zirconia-based restorations veneered with ceramic. The CAD/CAM fabricated zirconia crowns demonstrated a better accuracy of fit when compared to metal-ceramic crowns fabricated by conventional technology. The mean marginal and internal gaps varied significantly within a measured tooth. It is also of critical importance to polish zirconia restorations when opposing natural dentition to reduce wear rates. Monolithic zirconia full coverage restorations show a promising future. More studies are required to determine long-term success rates in terms of longevity and wear resistance.