

EFFECT OF SHOULDER AND CHAMFER MARGINAL DESIGN ON FRACTURE RESISTANCE OF ZIRCONA CROWNS.

AN IN VITRO STUDY

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INTRODUCTION

One of the major problems of all-ceramic restorations is their probable fracture under occlusal force in posterior region.

AIM

The aim of the present in vitro study was to compare the effect of two marginal designs (shoulder and chamfer) on the fracture resistance of zirconia core restorations.

MATERIAL AND METHOD

The stainless steel dies prepared with two different designs (shoulder and chamfer) were used as premolars. 20 zirconia copings with a wall thickness of 0.6 mm were fabricated for each type of preparation. After cementation by glass ionomer cement, they were loaded on Universal Testing Machine until fracture.

RESULTS

In this cross-sectional study the mean values of fracture resistance for chamfer and shoulder preparation were 888.9 ± 84.3 N and 624.2 ± 116.3 N, respectively. Student's t-test revealed statistically significant differences between the groups.

CONCLUSION

Based on the results of this study, both marginal designs had high fracture resistance, which are higher than the physiological masticatory force in posterior region. Both can be used, but since the fracture resistance of chamfer preparation is significantly higher than the shoulder preparation, it is recommended as a marginal design for zirconia based restorations from both mechanical and periodontal point of view.

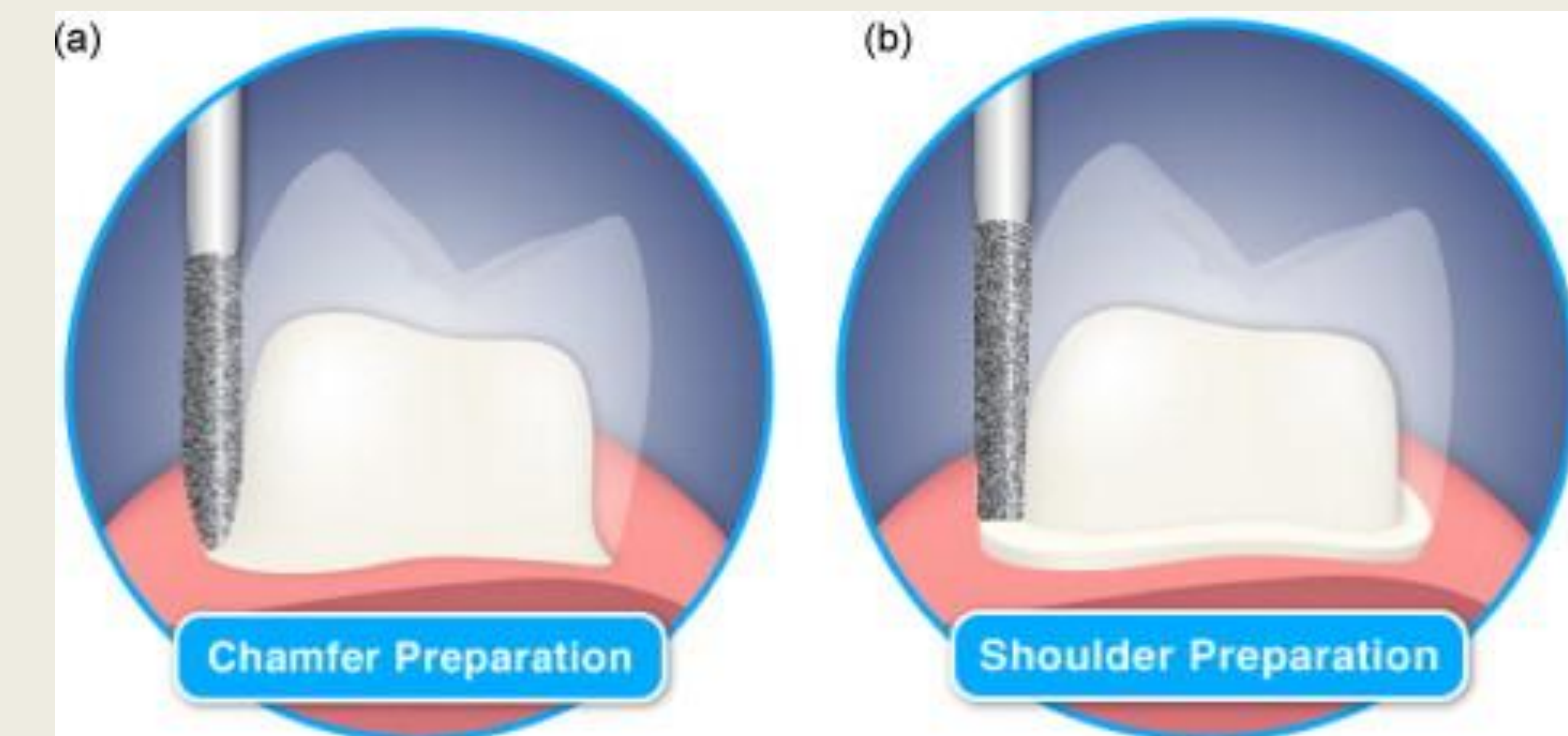


Figure 1. a) chamber preparation, b) shoulder preparation

Authors declare that there is no conflict of interest