39th IACDE National Conference

FLEX,FRACTURE,WEAR: AN INLAY FACE OFF!

INTRODUCTION

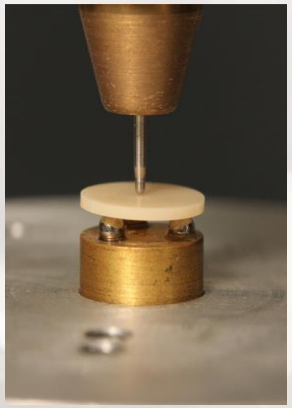
- Zirconia ceramics are the most preferred for indirect restoration
- High aesthetic satisfaction, strength and durability
- Long term effects have detrimental impact on opposing teeth surfaces
- Novel 3D printable resin TC80DP, a possible alternate to Zirconia

AIM AND OBJECTIVE

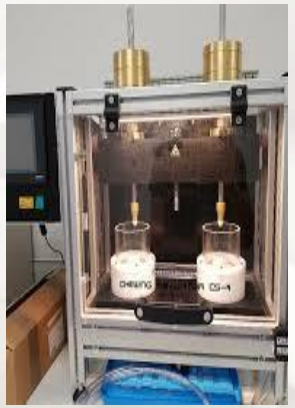
To compare and evaluate the flexural strength, Fracture resistance, wear resistance of 3d printable resin TC80DP and ceramic inlays.

FRACTURE TOUGHNESS

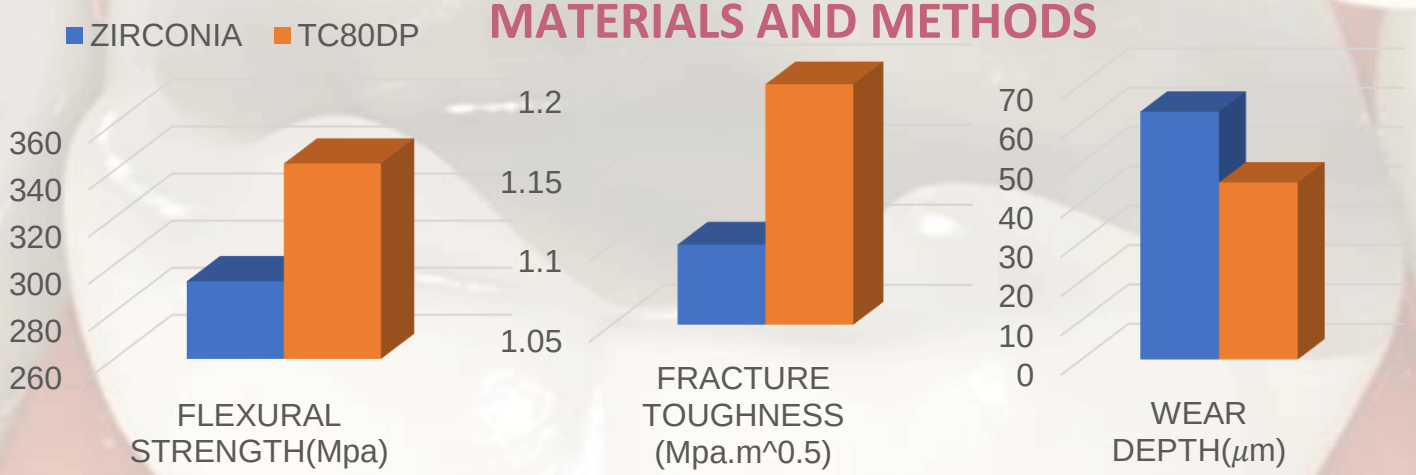
FLEXURAL STRENGTH



WEAR RESISTANCE



MATERIALS AND METHODS



DISCUSSION

- Universal testing machine, 3 point ball test and chewing stimulation tests were carried out on 10 samples each of Zirconia inlays and TC80DP inlays
- Statistically significant results for flexural strength and wear resistance
- Both materials show similar fracture toughness, suggesting equivalent resistance to crack propagation
- The material's strength, wear resistance, and tooth-friendly characteristics make novel TC-80DP versatile for various restorations.

CONCLUSION

The research results imply that, in lieu of zirconia, TC80DP material has a low measure of wear depth along with high flexural strength and toughness.

Further research on TC80DP could be done to evaluate and assess its accuracy and potential as a future ceramic substitute.

REFERENCES: Kim N, Kim H, Kim IH, Lee J, Lee KE, Lee HS, et al. Novel 3D Printed Resin Crowns for Primary Molars: In Vitro Study of Fracture Resistance, Biaxial Flexural Strength, and Dynamic Mechanical Analysis. Children (Basel) [Internet]. 2022 Sep 22;9(10). Available from: http://dx.doi.org/10.3390/children9101445 ; Tang Z, Zhao X, Wang H, Liu B. Clinical evaluation of monolithic zirconia crowns for posterior teeth restorations. Medicine (Baltimore) [Internet]. 2019 Oct;98(40):e17385. Available from: http://dx.doi.org/10.1097/MD.0000000000017385, Janyavula S, Lawson N, Cakir D, Beck P, Ramp LC, Burgess JO. The wear of polished and glazed zirconia against enamel. J Prosthet Dent [Internet]. 2013 Jan;109(1):22–9. Available from: http://dx.doi.org/10.1016/S0022-3913(13)60005-0