

# Clinical Performance of Veneered CAD/CAM-fabricated Zirconia Substructures

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## Aim of the study

This clinical study evaluated fixed dental prostheses (FDPs) and single crowns (SCs) made of zirconia veneered with a new flour apatite veneering porcelain.

## Methods

- 38 patients received 18 FDP and 50 SC
- Prosthetic procedure according to previous studies
- Substructures fabricated by a CAD/CAM-system (inLab, Sirona)
- Substructure material IPS e.max ZirCAD (Ivoclar Vivadent)
- Veneering Porcelain IPS e.max Ceram (Ivoclar Vivadent)
- Veneering in powder build up technique
- Recalls after 2 weeks, 12, 24 and 36 months
- Results after 35 ( $\pm$  14) months

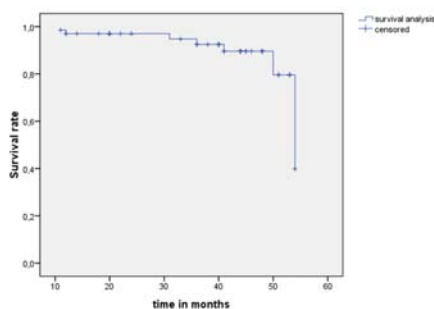


Figure 1: Survival analysis according to Kaplan Meier regarding all failures

## Results

- Survival rate according to Kaplan Meier of 88.2 % concerning all failures
- Survival rate according to Kaplan Meier of 98.5 % concerning restorations in clinical service
- three biological failures
- five technical complications

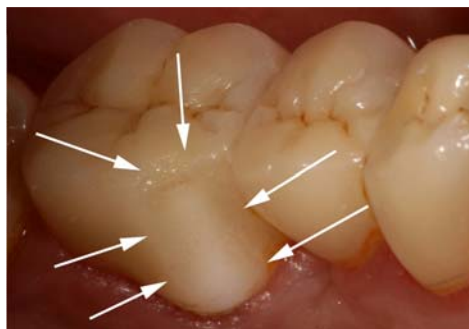


Figure 2: Technical complication: cohesive fracture of veneering porcelain

- Survival rate concerning technical complications of 88.2 % for FDPs and 100 % for SCs (Log-rank-test:  $p=0.013$ )
- Survival rate concerning technical complications of 88.2 % for posterior restorations and 100 % for anterior restorations (Log-rank-test:  $p=0.362$ )
- Survival rate concerning technical complications of 88.2 % for Maxilla restorations and 100 % for Mandible restorations (Log-rank-test:  $p=0.013$ )

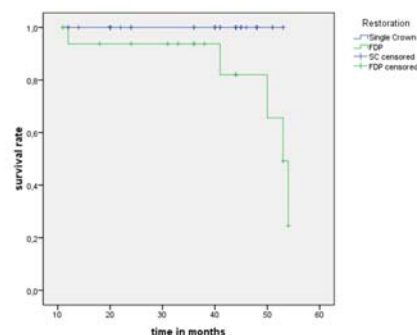


Figure 3: Survival analysis according to Kaplan Meier regarding technical failures distributed into FDPs and SCs



Figure 4: Technical complication: small cohesive fracture of veneering porcelain

- No substructure failure
- Failures in multi-unit restorations only
- Sound bond of zirconia and veneering porcelain

## Discussion

- Firing of veneering porcelain
- Parameters like substructure design and surface quality should be evaluated in-vitro

## Conclusion

- Zirconia substructures veneered with flour apatite veneering porcelain showed an acceptable survival rate
- FDPs have a lower survival rate than SCs
- Posterior restorations have a lower survival rate than anterior restorations



Figure 5: Clinical success: six anterior SCs in the Maxilla 24 months after cementation