

Testing Of Crowns Retention To Various Abutments Utilizing Different Cements

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INTRODUCTION

- Every year increases use of implants in dental care. Various types of abutments and cements are being utilized nowadays.
- Retention between crown and abutment depends on adhesive properties of cement. Routine measuring aim to define physical parameters like shear bond strength, compressive strength, etc. However, these methods do not depict an actual situation in crown retention to abutment.
- In this study we used device that has been designed in our laboratory. It enabled us to receive more plausible results of tensile strength between crown and abutment in comparison to those obtained through routine measuring.

OBJECTIVE

To design series of test to evaluate the retention of crown to the various types of abutments utilizing different cements.

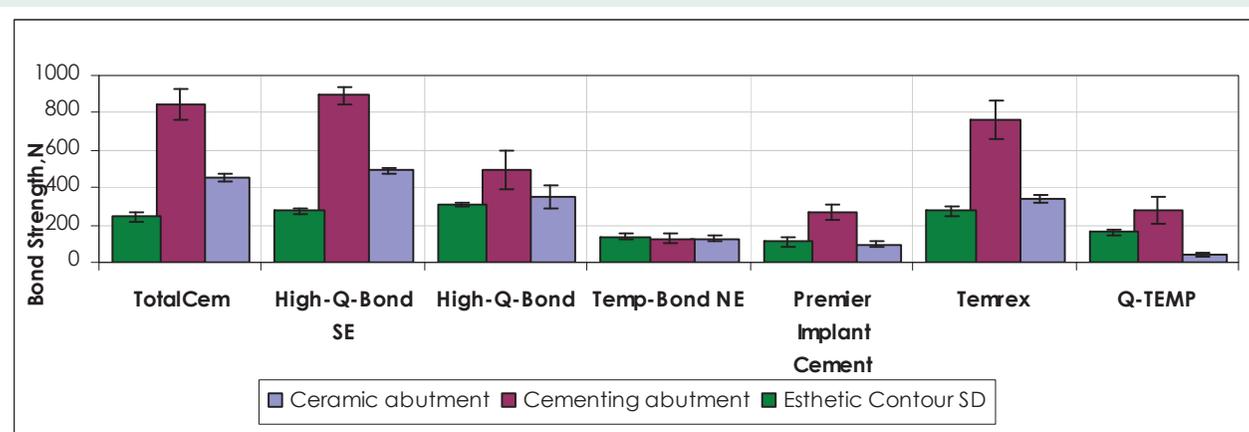
METHODS

- 3 types of abutments:
 - MD-CRO10 Ceramic ZrO2 abutment (MIS)
 - MD-MAC10 Cementing abutment (MIS)
 - 4503 Esthetic Countour SD (Life Core Dental)
 - 2 resin based temporary cements:
 - Q-TEMP (BJM)
 - Temrex (TNE)
 - 1 Implant cement:
 - Premier Implant Cement (Premier Dental)
 - 1 zinc-oxide based temporary cement:
 - Temp-Bond NE (Kerr)
 - 3 dual cured permanent adhesive resin cements:
 - High-Q-Bond (BJM)
 - High-Q-Bond SE (BJM)
 - TotalCem (Itena)
- were tested under the same condition.
- Bond strength was measured in according with ISO/TS11405:2003 utilizing Lloyd material testing machine equipped with a load cell of 10N and specially designed testing device as tensile test apparatus.
 - The experimental results were statistically analyzed (N=10) by ANOVA ($p < 0.05$).

RESULTS

Test results of Bond Strength between tested cements groups, N

Cement	Type of Abutment		
	2Ceramic ZrO MD-CRO10	Cementing MD-MAC10	Esthetic Contour SD
Q-TEMP	41.4 ± 8.3	279.8 ± 15.7	162.6 ± 16.1
Temrex	340.6 ± 17.3	764.7 ± 33.2	274.8 ± 25.2
Premier Implant Cement	93.1 ± 15.2	267.6 ± 37.1	109.6 ± 22.3
Temp-Bond NE	126.5 ± 15.5	126.6 ± 24.6	138.0 ± 19.0
High-Q-Bond	350.5 ± 24.9	495.6 ± 16.2	306.2 ± 10.9
High-Q-Bond SE	490.2 ± 18.3	892.3 ± 50.2	273.2 ± 19.7
TotalCem	455.9 ± 21.7	843.7 ± 54.7	242.4 ± 21.5



DISCUSSION

- Significant differences in bond strength were founded between the tested cements groups. Short-term temporary cements exhibited the lowest bond strength in comparison with dual cured permanent adhesive resin cements.
- The abutments shape and material they are made of are also influence the adhesion.

CONCLUSIONS

- The designed tests simulated the clinical retention and correlate with the findings previously reported by the group. The retention of crown to the various types of abutments utilizing different cements was defined as tensile bond strength.