



Fracture strength of fiberreinforced and all-ceramic post and core anterior restorations

ROSENTRITT M., BEHR M., KUJAT A., SIKORA M., HANDEL G.
(Department of Prosthetic Dentistry, University of Regensburg, Germany)

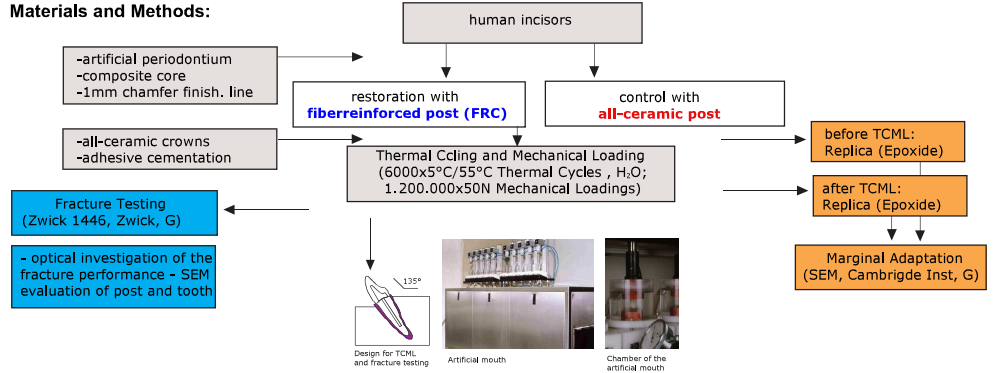
#2564



Introduction:

The aim of this in vitro study was to compare the fracture strength and marginal adaptation glass-fibre reinforced composite (FRC) and all-ceramic posts and cores (PACs).

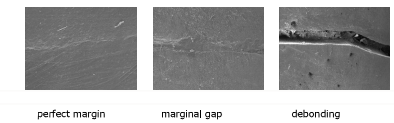
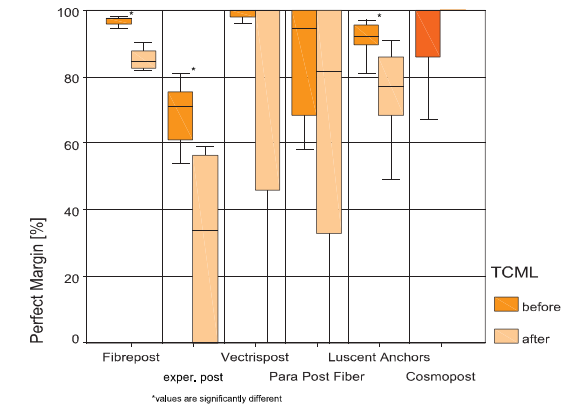
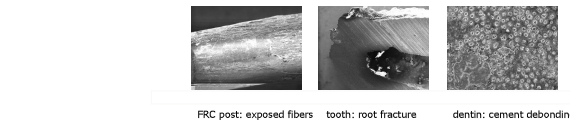
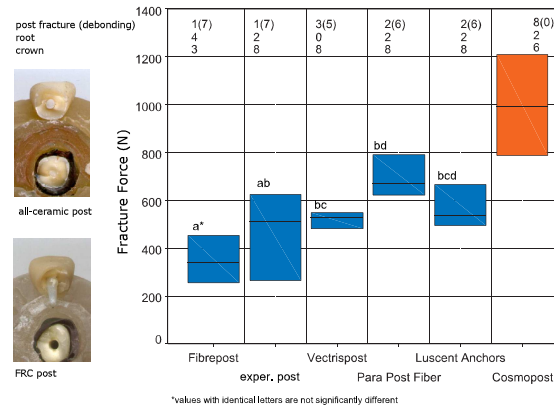
Materials and Methods:



Materials:	Cosmopost	exper. post	Luscent Anchors	Para Post Fiber	Vectris Post	Fibrekor Post
Material	all-ceramic	FRC	FRC	FRC	FRC	FRC
Manufacturer	Ivoclar-Vivadent, FL	Hahnenkratt, D	Dentaurus, USA	Coltene/Whaledent, D	Ivoclar-Vivadent, FI	Jeneric Pentron, USA
Diameter [mm]	1.7	1.8	1.75	1.5	1.8	1.5
Length [mm]	10	10	10	10	10	10
Material core	Tetric Ceram, Ivoclar-Vivadent, FL			Para Core	Tetric Ceram	Tetric Ceram
Bonding post	Variolink 2, Syntac classic, Ivoclar-Vivadent, FL			Para Post Cement	Variolink 2, Syntac	Lute it/Bond it

Human incisors were embedded under 135° to simulate artificial periodontium and oral situation. Identical designed composite cores and all-ceramic crowns (Empress 2, Ivoclar-Vivadent) were provided. Posts, cores and crowns were adhesively fixed with dual curing resin composite. 8 PACs of each group were stressed in an artificial mouth for simulating a 5-year wearing period (TCML). After TCML the fracture resistance was determined (Zwick 1446, G, v=1mm/min, 135°). Marginal adaptation was evaluated at the transition cement-tooth using scanning electron microscopy (Stereoscan 240, Cambridge Instr., G) before and after TCML. The criteria "perfect margin" was ranked as a smooth transition without interruptions of continuity. Statistical analysis was performed using the Mann-Whitney U-test ($\alpha=0,05$).

Results:



Conclusion:

All-ceramic post restorations showed significantly highest fracture resistance. For the other systems good to sufficient fracture results were found. The results encourage the in-vivo application of FRC post systems.