

# TABLE CLINIC/RESEARCH POSTER GUIDELINES

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3. Send all elements for your poster including dimensions and due date

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- **Charts/graphs** – one per page; in MSExcel
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## 4. Review and edit drafts promptly and return to designer.

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*Please allow a minimum of 5 working days for poster layout, proofing, revisions, printing and delivery.*

### Fracture Strength of Teeth Restored with Different Designed Post and Core Systems

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**Objective:** The purpose of this study is to evaluate the fracture strength of teeth restored with varying post and core systems cemented in situ. The different post and core systems will be tested in vitro. This study aims, in the presence of suitable supporting evidence, to develop a protocol for the substitution of varying post and core systems.

**Background:** The ability to restore severely broken down teeth depends largely on the successful internal reconstruction of these teeth with a strong and durable post and core system. Until recently, all ceramic materials were not used for root posts, because they could not withstand the intrinsic loading conditions. A metal supporting post and core is very strong, has a higher refractive index compared to metal, can be stained to resemble dentin shades, and cemented to place with auto-polymerizing resin, thus providing a very strong and aesthetic custom milled down and in-crown.

**Methods:** Thirty extracted mandibular anterior teeth were collected and root canal treated. The crowns were cut off at the proximal CEJ level. Post space and retention features were created using LightSpeed<sup>®</sup> and diamond burs. Group A (n=10) were thick parallel Zirconia posts, Group B (n=10) were axial parallel Zirconia posts, Group C (n=10) were tapered Zirconia post design (Figure 1). Group D (n=10) were thick parallel fiber posts (Luster, Andromed, Duralux) with composite buildups (Phosphor, Esthetic Universal and Group E were thin parallel cast gold post and cores. Duralux patterns (Figure 2 and 3) were fabricated for the samples and sent to the lab to be milled (Figure 4 and 5) to Group A, B, and C. The axial post and cores were mounted in the tracing chamber of a ceramic milling machine and surface treated using a laser. The information of the dimension of the post and core was combined with the information of the ceramic block and used for the milling process of the zirconia blocks (VITA In-Ceram<sup>™</sup>/TZ). Conventional methods of fabricating composite and gold post and core systems were used for Group D and Group E respectively. All post and core were cemented within the tooth (Figure 6) using the X-Block<sup>®</sup> G3 RESIN. The teeth are then embedded in occlusal contacters using auto curing resin and fracture strengths tests have been performed using the universal testing machine (Instron 301) at a crosshead speed of 1 mm/min until fracture (Figure 7). Student t-test was used at a 95% confidence interval to analyze the data.

**Results:** The greatest fracture strengths were found in Group A, thick parallel Zirconia posts, with average fracture strength of 570 N. Group C, tapered Zirconia posts, had slightly greater fracture strength of 563 N. Group B, the parallel Zirconia posts, average of 285 N. Group D, thin parallel composite fiber post, had the lowest average fracture strength of 276 N. Group E, thin parallel Cast Gold post, had a medium fracture strength of 380 N. Group A had significantly higher fracture strength than Group B (p<0.02) while Group C had not significantly different strength than Group A (p>0.07). The fractures most commonly occurred within the tooth structure mesio-distally rather than at the zirconium post and core.

**Figure 1: Fracture Strength of Post and Core**

Group	Fracture Strength (N)
Group A	570
Group B	285
Group C	563
Group D	276
Group E	380

### Effect of Surface Treatments on Bond-Strength of Composites for Class-5-Fillings

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**OBJECTIVE:** To analyze if the shear bond strength (SBS) of human dentin/enamel from artificial class-V lesions (Incoposts) is influenced by treatment with commercial toothpaste (containing stabilized stannous fluoride) as well as by treatment with self-etching versus acid-etching adhesive materials and bur versus no bur treatment.

**METHODS:** Enamel (E) and Dentin (D) sections from human teeth were embedded in resin and serve as base substrate for SBS-testing. The surface of D or E samples received treatment with toothpaste (TP) (Pro Health Advanced, CREST, Figure 1) and were also treated with (1) a bur or (2) no bur. Groups are further divided in (A) treatment with toothpaste and self-etching material, (B) no toothpaste and self-etching, (C) with toothpaste and acid-etching, (D) no toothpaste and acid-etching, E, samples received only acid-etching treatment (n=10). 150 dentin and 50 enamel samples were tested. The strength of the adhesive bond was measured with the Ultratester (Ultradent Product Inc.). For the short-term (S) the toothpaste was applied for 60sec on each sample versus twice daily (2 min total) for 21 days in long-term samples (L). For acid-etching the Optobond-Sole-Plus (Kerr) and for self-etching the Prime-D (Denville) system was used. Experimental flowable composite was cured for 40-sec on each sample. For statistical evaluation Two-sample T-test was applied at a 95%-confidence interval.

**RESULTS:** All samples tested show no significant differences between the use of toothpaste for once-daily or twice-daily for 3 weeks. When dentin samples were compared for TP vs no TP it was found that there was significant higher SBS on acid-etch technique when no bur was used (short-term model) and on acid-etch technique with bur use (long-term model). On E samples significant higher SBS was found between the use of TP and no TP in all groups except when no bur was used (long-term model). In general higher bond strength was found in TP samples.

**Table 1: Dentin samples**

Post term	TP vs No TP	TP	TP	TP	TP	TP	TP	TP	TP
Short term	15.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)
Long term	15.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)
Short term	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Long term	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Table 2: Enamel samples**

Post term	TP vs No TP	TP	TP	TP	TP	TP	TP	TP	TP
Short term	15.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)
Long term	15.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)	16.42 (0.1)
Short term	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Long term	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**CONCLUSION:** Treatment with stabilized stannous fluoride toothpaste showed improvement on bond strength to composite. Further analysis is needed to determine if other toothpastes with different ingredients have a similar effect.

**REFERENCES:** Schulze N, Noble M, Lussi A, Engemann F, Kinnari J, Garas C. Tin-containing fluoride solutions as anti-erosion agents in enamel: an in vitro tin uptake, tooth-bulk, and scanning electron microscopy study. *Int J Oral Sci.* 2009 Aug;11(4):427-34.  
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These are great examples of posters that show a good balance of copy to photos, charts and tables. Poster layout may be horizontal or vertical, depending on the requirements of the meeting where it will be presented.