

V. Clinical Results

Fazekas, A, Menyhart, K, Bodi, K, Jako, E **Restoration of root canal treated teeth using carbon fiber posts.** *Fogorv Sz 1998 Jun;91 (6):163-70*

Abstract/conclusions: The restoration of root canal treated teeth – because of the significant loss of tooth structure- is often achieved with post and core. However, posts may generate stresses, which lead to vertical root fracture and the loss of the tooth. Since post design, materials used and post space preparation has significant influence on vertical fracture prevalence, broad investigation is in progress to find the optimal procedure. During the last decade, new prefabricated passive posts were introduced for postendodontic restorations. In order to collect information, clinical trials have been performed on the reconstruction of root canal treated teeth using Carbon fibre posts (ComposiPost). Adhesive technique was applied to cement post in the root canal and for composite core reconstruction. The physical properties of the Carbon fibre posts and the composite are very close to those of the dentine. Post application is simple, does not require special skill and, for the patient, means minimum hazard. The position of the post was controlled by radiography. During the 24 months observation period, no failure was registered in patients treated (N=55). Hence, we attribute our good results to the homogenous reconstruction of the teeth. This procedure seems to be a good alternative to traditional cast metal dowel/cores or metal prefabricated posts.

Ferrari, M., Cagidiaco, M., Vichi, A. Mason, P. N., Goracci, C. **Retrospective clinical study of fiber post restorations over 7-11 years** J Dent. Res 85 (Spec Issue B) Abstract 0079, 2006.

Objectives: To evaluate the clinical performance of **ComposiPost**, **Æstheti-Post**, and **Æstheti-Plus** posts (RTD) after a clinical service ranging from 7 to 11 years. **Methods:** the study sample included 985 fiber posts: 615 Composipost, 160 Æstheti-Post, and 210 Æstheti-Plus posts. Posts were placed into endodontically treated teeth using four combinations of bonding/luting agents. Patients were recalled every 6 months. At each recall a clinical and radiographic examination was performed, and failures of the endodontic and/or restorative treatment (post debonding, crown dislodgement, root fracture, post fracture) were recorded. The influence of type of post and tooth position (anterior/posterior segment; upper/lower arch) on the 7-year recall failures distribution was assessed with chi-square tests, setting the level of significance at $p < 0.05$. **Results:** 79 failures were recorded, giving a 8% failure rate over the observation period. The following types of failure were reported: 21 post debondings, 17 crown dislodgements, 1 post fracture, and 1 root fracture. Also, for 39 teeth failure of the endodontic treatment was noted. No statistically significant differences were found with regard to failure frequency among the three types of post and between upper and lower arch ($p > 0.05$). Conversely, tooth position within the dental arch was a significant factor for failure, with failures being more frequent in posterior than anterior teeth ($p < 0.05$). **Conclusion:** the failure rate recorded over a 7-11 follow-up period supports the routine use of fiber posts for the restoration of endodontically treated teeth. The risk of failure of the endodontic and restorative treatment is greater in posterior than in anterior teeth.

Ferrari, M., Vichi, A., and Garcia-Godoy, F. **Clinical evaluation of fiber-reinforced epoxy resin posts and cast post and cores.** *American Journal of Dentistry. 13: 15B-18B, 2000.*

Purpose: This retrospective study evaluated treatment outcome of cast post and core and **ComposiPost** systems after 4 yrs of clinical service. **Materials and Methods:** 200 patients were included in this study. They were divided into two groups of 100 endodontically treated teeth restored with a post. Group 1: Composipost systems were luted into root canal following the manufacturer's instructions. Group 2: Cast post and cores were cemented into root canal preparations with a traditional technique. The patients were recalled after 6 months, 1, 2 and 4 yrs and clinical and radiographic examinations were completed. Endodontic and prosthodontic results were recorded. **Results:** Group 1: 95% of the teeth restored with Composiposts showed clinical success; 3 of these samples were excluded for noncompliance and 2% showed endodontic failure. Group 2: Clinical success was found with 84% of teeth restored with cast post and core. 2% of these samples were excluded for noncompliance, **9% showed root fracture**, 2% dislodgment of crown and 3% endodontic failure. Statistical evaluation showed significant differences between Groups 1 and 2 ($P < 0.001$). The results of this retrospective study indicated that the Composipost system was superior to the conventional cast post and core systems after 4 years of clinical service.

Ferrari, M., Vichi, A., Mannocci, F., and Mason, P. N. **Retrospective study of the clinical performance of fiber posts.** *American Journal of Dentistry.* 13: 9B-13B, 2000.

Purpose: To evaluate the clinical performance of **C-Posts, Aestheti- Posts** and **Aestheti-Plus** Posts after a period of clinical service ranging from 1-6 yrs. **Materials and Methods:** 1,304 posts were included in the study: 840 Composiposts, 215 Aestheti-Posts and 249 Aestheti-Plus posts were placed into endodontically treated teeth. Four combinations of bonding/luting materials were used. The patients were recalled every 6 months and clinical and radiographic examinations were completed. Endodontic and prosthodontic results were recorded. Actuarial Life Table statistical analysis and Mantel-Haenszel comparison of survival curve have been performed at 95% level of confidence. **Results:** The 3.2% failure rate was due to two reasons: 25 posts debonded during removal of temporary restorations, and 16 teeth showed periapical lesions at the radiographic examination. No statistically significant differences were found among the four groups. The results of this retrospective study indicate that fiber posts in combination with bonding / luting materials can be routinely used.

Fredriksson, M., Astback, J., Pamenius, M., and Arvidson, K. **A retrospective study of 236 patients with teeth restored by carbon fiber-reinforced epoxy resin posts.** *Journal of Prosthetic Dentistry.* 80: 151-157, 1998.

Statement of problem: The **ComposiPost** dowel is made of stretched, aligned carbon fibers embedded in an epoxy-resin matrix. It is widely used in Europe and Canada for the restoration of endodontically treated teeth and was introduced in the United States 2 years ago as the C-Post dowel. **Purpose:** This retrospective study evaluated treatment outcome of the Composipost system after 2 to 3 years. **Material and Methods:** A total of 236 patients treated during a 1-year period by seven Swedish dental practitioners were included. Of those, 146 patients consented and data were collected from the dental records of the remaining patients. Thus, the material comprised 236 teeth restored with carbon fiber-reinforced epoxy resin post, 130 maxillary and 106 mandibular teeth, with a mean restoration time of 32 months (range 27 to 41). Periodontal conditions, radiographic signs, and prosthodontic results were recorded. **Results:** Five teeth (2%) had been extracted for reasons unrelated to the ComposiPost system. Periodontal conditions such as plaque accumulation, gingival health, bleeding on probing, and pocket depth around the teeth with ComposiPost dowels were similar to the control teeth. No dislodgement or root or post fractures were observed clinically or on radiographs. Radiographic examination of bond height measured from the apex to the bone margin mesially and distally showed differences on the mesial side but not on the distal surface ($p < 0.05$) between the ComposiPost-treated teeth and the controls. **Conclusions:** Promising results after 2 to 3 years of clinical service indicate that this system can be a viable alternative to conventional post-and-core systems.

Glazer, B. **Restoration of Endodontically Treated Teeth with Carbon Fibre Posts - A Prospective Study.** *Journal of the Canadian Dental Association.* 66: 613-618, 2000.

Abstract: A prospective study was started in 1995 to evaluate the success of carbon fibre reinforced epoxy resin (Composipost) posts used to restore endodontically treated teeth. All the teeth in the study had lost more than 50% of their coronal structure. **Methods:** Fifty-nine carbon fibre **ComposiPosts** cemented with C & B Metabond and built up with Core Paste cores were placed into the teeth of 47 patients. Each tooth received a full-coverage restoration (porcelain fused to metal crown) and was followed for 6.7-45.4 months (average = 28.0 months, standard deviation = 10.7). **Results:** Results for 52 teeth in 42 patients were analyzed. There were no fractures. The overall failure rate was 7.7% and the cumulative survival rate was 89.6% at the end of the follow-up period. The only statistically significant finding ($p=0.04$) was that posts in lower premolars were at higher risk of failure. **Conclusion:** Composipost posts are among the most predictable systems available today. Composipost posts in the upper anterior teeth are associated with a higher success rate and longer life than those placed in premolars, especially lower premolars. This study contributes to the growing body of evidence that supports the use of ComposiPost posts in the restoration of endodontically treated teeth.

Malferrari, S, Baldissara, P, Arcidiacono, A, **Translucent Quartz Fiber Posts: a 20 Month In vivo Study.** *J Dent Res.* 81 IADR Abstract #2656; 2002

ABSTRACT: In the attempt to achieve the best-performing post and core restoration, many post systems have been studied. In the recent past, the aesthetic fiber posts, in combination with resin

luting cement, have been proposed to provide a reliable rehabilitation for the endodontically treated tooth. The new translucent fiber posts show interesting mechanical properties (comparable to the dentin) and aesthetic characteristics that enhance a final rehabilitation with an all-ceramic crown...with satisfying results. **OBJECTIVES:** The purpose of this study was to evaluate the clinical behavior of 84 endodontically treated teeth treated with translucent quartz fiber posts. Thirty four teeth received a **LIGHT-POST** (RTD) and 50 teeth received the Endo **LIGHT-POST** (RTD, St. Egreve, France). To perform the cementation, Bisco ONE-STEP and dual – cure DUO-LINK (Bisco) were utilized. The luting cement was polymerized through the translucency of the post. **METHODS:** All of the core restorations were performed using CORE-FLO (Bisco) or BIS-CORE (Bisco) composite resin and finalized with an all-ceramic crown. In accordance with the international literature, data, useful for the longitudinal evaluations, were recorded on diagrams. The survival rate of the post and core was evaluated after 2 weeks, 1, 3, 6, 12 and 20 months. Post displacement or detachment, post fracture, restoration fracture and root fracture were investigated. **RESULTS:** No failures took place up to the present day. **CONCLUSIONS:** According to these results, and within the limitations of this study, it is possible to assume that the clinical performance of these translucent fiber posts is successful. Further data will be needed for long-term clinical evaluations of the outcome.

Monticelli, F., Grandini, S., Goracci, C., Ferrari, M. **Clinical behavior of translucent fiber posts: a 2-year prospective study.** *Int. J Prosthodont* 2003; 16:593-596

Purpose: This study prospectively evaluated the clinical performance of three types of translucent posts over a follow-up period of between 2 and 3 years. **Materials and Methods:** Selected were 225 patients with one premolar in need of endodontic treatment, followed by restoration with a fiber post and porcelain crown. The sample was randomly divided into three groups of 75 patients each. The same type of post was used in all patients within the group: Group 1=**Aestheti-Plus** posts (RTD), Group 2= D. T. Light-Post (RTD), and Group 3= FRC Postec (Vivadent / Ivoclar). For bonding the posts, a light-cure adhesive (One-Step; Bisco Dental) and a dual-curing resin cement (Duo-Link; Bisco Dental) were applied in Groups 1 and 2, whereas self-curing materials ExciteDSC adhesive (Vivadent/ Ivoclar) and MultiLink resin cement (Vivadent / Ivoclar) were used with Group 3. After 6, 12 and 24 months, patients were recalled, and a clinical and radiographic examination was performed. For some patients, 30-month follow-up data were also collected. **Results:** Debonding of the post occurred in eight cases (3.5%); in another six cases, a recurrence of the periapical lesion was reported. **Conclusion:** The statistical analysis did not reveal any significant difference in the survival rate of the tested posts, suggesting that all are equally and sufficiently reliable for clinical use.

Schmitter M, Rammelsberg P, Gabbert O, Ohlmann B. **Influence of clinical baseline findings on the survival of 2 post systems: a randomized clinical trial.** *Int J Prosthodont.* 2007 Mar-Apr;20(2):173-8

PURPOSE: The aim of this prospective randomized controlled trial was to evaluate the influence of clinical baseline characteristics on the survival of 2 post systems. **MATERIALS AND METHODS:** One hundred patients needing a post were included. Half the patients received a glass fiber-reinforced post (FRP: ER DentinPost, Komet), and the other half received metal screw posts (MSP: BKS post, Komet). The posts were assigned randomly. In addition to demographic data, the following parameters were recorded: type of tooth (incisor/canine versus molar/premolar), length of the post in relation to root length (percentage), extent of coronal tooth destruction (percentage), ferrule height (in millimeters), type of restoration (fixed or removable partial denture), and presence of antagonistic contacts (yes/no). After at least 1 year (mean: 13.84 months), the patients were recalled. Statistical analysis was performed using the log-rank test and Cox regression analysis. **RESULTS:** The survival rate of FRPs was 93.5%. In the MSP group, the survival rate was significantly lower (75.6%; log-rank test, $P = .049$). Additionally, the metal posts were associated with more unfavorable complications, for example, root fracture. The type of the tooth and the degree of coronal tooth destruction influenced the survival of MSPs, whereas no influence of these variables could be seen for FRPs. **CONCLUSION:** FRPs are superior to MSPs with respect to short-term clinical performance. Especially for MSPs, clinical survival depends on several variables.

Scotti, R., Malferrari, S., Monaco, C.. **Clinical Evaluation of Quartz Fiber Posts: 30 months results.** *J Dent Res.* 81 IADR Abstract #2657; 2002

The usage of the aesthetic fibre posts is progressively growing for their promising clinical performances and their good aesthetic characteristics. **OBJECTIVES:** the aim of this 30 months in

vivo study is to evaluate the clinical success-rate of 180 endodontically treated teeth, restored by the usage of "white" quartz fiber post and finalized with the metal-ceramic crowns and all-ceramic crowns. **METHODS:** all the teeth were endodontically treated according to the recent techniques. In accordance with the international literature, to achieve clinical information, parameters were recorded in diagrams. Posts used were **ÆSTHETI-PLUS** (RDT, St. Egrève, France) in combination with All Bond 2 adhesive resin (Bisco, Schaumburg, IL, USA) and C&B Resin Cement (Bisco, Schaumburg, IL, USA), the build up of the core was performed with the composite material Core-Flo (Bisco, Schaumburg, IL, USA), or Bis-Core (Bisco, Schaumburg, IL, USA). The post and core restorations were evaluated after 2 weeks, 1, 3, 6, 12, 20 (Malferrari et al., IADR abstr #11; Rome 2001) and 30 months, recording the surviving rate. **RESULTS:** three failures were observed, one was a cohesive fracture that occurred after two weeks, involving a margin of the composite restoration and two were adhesive fractures, that occurred after a couple of months, both located at the interface cement and dentinal walls of the canal. As all the failures occurred during removing the temporary it was possible to replace the restorations, that are still in place up to the present day. The 3 failures that occurred during this period do not show any relevance according to the statistical analysis with the Chi Square test ($p=0.246$). **CONCLUSIONS:** according to these results, and considering the limits of this study, the quartz posts, within a 30 months period of rehabilitation of endodontically treated teeth, clinically performed with success.