

## APPLICATION OF INTRARADICULAR POSTS IN THE RESTORATION OF ENDODONTICALLY TREATED TEETH IN THE CLINICAL PRACTICE - A PILOT STUDY

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### ABSTRACT:

Most of the endodontically treated teeth show a significant loss of dental tissue. The aim of this paper is to study the usage of different types of posts in incisors, premolars and molars of upper and lower jaw. The passive industrial posts are the most preferred and the most frequently used in the restoration of all groups of endodontically treated teeth.

**KEY WORDS:** intraradicular posts, tooth restoration, post systems

### INTRODUCTION

The necessity of strengthening of endodontically treated teeth is well described in literature. The problem of the restoration of such teeth is associated with the disturbance of blood circulation and the loss of tooth structure. Devitalised teeth are with smaller amount of water, elasticity and increased tenderness and fragility. The loss of dental tissue is not only in a result of the endodontic treatment, but it is also caused by caries, trauma or a big old filling. The fracture resistance of the tooth is influenced by the lost tooth tissue as well as its localisation. The endodontic cavities decrease stability of the tooth with about 5% and the additional MOD-cavities reduce mechanical solidity with about 63%. The fact that the teeth with an extirpated pulp loose the area of mechanoreceptors is discussed as another factor, which increases the risk of fracture. In a result of that the pressure on an endodontically treated tooth felt by the patient has to be twice bigger in a comparison to the pressure on a vital tooth.

### AIM

The aim of this study is to present the rate of strengthening of endodontically treated teeth with intraradicular posts and the kind of the used post systems, reviewed and compared by teeth groups.

### MATERIAL AND METHODS

Data for 371 endodontically treated teeth have been examined retrospectively for a six month period (January - June 2005) from the medical history archives of the Department of operative dentistry and endodontics (Medical University of Plovdiv). 215 of them have been primarily diagnosed as pulpitis, 144 as periodontitis and 12 as fractures of tooth crown. 172 teeth have been restored with intraradicular posts and included in the study. The applied posts are two general kinds: industrial (active or passive) and individual (founded). Teeth are divided into six groups - incisors, premolars and molars, respectively for the upper and lower jaws. The groups are analyzed and compared by descriptive statistics and nonparametric tests (chi-square), using the SPSS v.11.5 software.

### RESULTS

The proportion of the 172 restored with posts teeth is 54.26% from all 317 endodontically treated teeth. The frequency of passive industrial posts is 63.95%, while for active is only 2.33%. It could be explained by the less known active industrial post systems, the fear of fracture during and after fixing as well as their higher price. The individual posts are 58 (33.72%) of all fixed posts (Tab. 1).

**Table 1.** Frequency of used posts

posts	n	%	Sp
active industrial	4	2.33	1.15
passive industrial	110	63.95	3.66
individual	58	33.72	3.60
Total	172	100.00	-

The distribution of the posts according to the groups of teeth is shown in Table 2. The biggest proportion of post restorations is found in the group of the upper incisors 67 (38.95%). The lower percentage of post restorations on upper premolars, upper and lower molars are apparent and it could be explained with their anatomic peculiarities and the

more difficult clinical performance.

**Table 2.** Distribution of posts by teeth groups

teeth group	n	%	Sp
upper incisors	67	38.95	3.72
upper premolars	19	11.05	2.39
upper molars	12	6.98	1.94
lower incisors	24	13.95	2.64
lower premolars	31	18.02	2.93
lower molars	19	11.05	2.39
Total	172	100.00	-

The distribution of the different kinds of posts according to the six groups is presented in Table 3. It is of note, that the relative proportions of industrial passive posts and the individual posts put on upper incisors are almost equal - 39.01% for industrial vs. 39.66% for individual. There is a strong statistically significant difference between the kind of tooth and the type of the used post -  $p < 0.01$  ( $\chi^2 = 26.17$ ). The anatomic characteristics of lower premolars are associated with the higher percentage of individual posts. The high percentage of active industrial posts in the group of upper molars is in a result of the small number of such restored teeth in our sample.

**Table 3.** Distribution of the different kinds of posts according to the six teeth groups

Teeth groups		post			Total
		active industrial	passive industrial	individual	
upper incisors	n	1	43	23	67
	% within tooth	1.49	64.18	34.33	100.00
	% within post	25.00	39.09	39.66	38.95
upper premolars	n	0	11	8	19
	% within tooth	0.00	57.89	42.11	100.00
	% within post	0.00	10.00	13.79	11.05
upper molars	n	2	7	3	12
	% within tooth	16.67	58.33	25.00	100.00
	% within post	50.00	6.36	5.17	6.98
lower incisors	n	0	20	4	24
	% within tooth	0.00	83.33	16.67	100.00
	% within post	0.00	18.18	6.90	13.95
lower premolars	n	1	13	17	31
	% within tooth	3.23	41.94	54.84	100.00
	% within post	25.00	11.82	29.31	18.02
lower molars	n	0	16	3	19
	% within tooth	0.00	84.21	15.79	100.00
	% within post	0.00	14.55	5.17	11.05
Total	n	4	110	58	172
	% within tooth	2.33	63.95	33.72	100.00
	% within post	100.00	100.00	100.00	100.00

In conclusion, the passive industrial posts are the most preferred and the most frequently used in the restoration of all groups of endodontically treated teeth.

## DISCUSSION AND CONCLUSIONS

Dentists have to evaluate the individual need of tooth restoration while looking for the balance between the biggest retention and the biggest resistance against fracture.

Minimally damaged endodontically treated teeth without posts are more resistant against fracture compared to those restored with posts and filling material. The resistance against fracture is in a strong association with the thickness of the remaining dentin, especially in V-L direction. Dentists should make the right decision whether to use a post or not and to determine the best way of reaching maximum resistance against fractures.

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