



# Influence of the variable age for long-term tooth retention after 15 years of periodontal supportive therapy (SPT)

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## Introduction and Aim:

Aggressive periodontitis (AgP) affects younger subjects and is characterized by early destruction and subsequent severe alveolar bone loss (Armitage 1999). A limited number of studies using different surgical approaches have evaluated age-related effects on the outcome of periodontal treatment. Trombelli et al. (2010) indicated that age has a limited effect on treatment response following non-surgical periodontal treatment. Abbas et al. (1984) reported less pockets and gingival bleeding in older than younger periodontitis patients following surgical debridement. The aim of this study was to evaluate the effect of patient age on the tooth loss during long-term SPT in advanced aggressive and chronic periodontitis (CP).

## Material and Method:

Periodontal treatment sequence and strategy was uniform for AgP and CP patients. Active periodontal therapy (APT, T0-T1) was non-surgical mechanical root debridement. If indicated (residual PPD > 5mm with signs of inflammation), treatment of furcations and additional access flap surgery was performed. 213 compliant patients (AgP: 55; CP: 158; n teeth = 4939) were included when following criteria were fulfilled: bone loss ≥50% at ≥2 teeth and SPT (T1-T2) over at least 10 years (Table 1). Age groups (A: <40, B: 40-49, C >49y) at baseline were defined. Kaplan-Meier estimate was used to determine survival. The local Ethical Committee approved the protocol of the study (D442/10).

## Results:

During SPT of 15.6±4.8 years, 437 (8.8%) teeth were lost in total (Figure 1a). The tooth survival with confidence interval (α=0.05) in the three age groups overlaps, and therefore no significant difference can be assumed (Figure 1b). In AgP 6.1%, 12.3% and 0% (n. a.) (CP: 7.3%, 10.0%, 9.5%) of all teeth for the age groups A, B and C, respectively, were extracted during SPT (Table 2). After 15 years the tooth survival probability in A was 94.2%, B 92.0% and C 90.0%, independent from the initial diagnosis (p<0.001, log-rank test). For the first 10 years of SPT the tooth survival rate for AgP was 96.3% compared to 93.8% in CP (p=0.064, log-rank test). In the following 5 years the tooth survival rate in AgP decreased to 93.0% (CP 91.5%) (Figure 3a). After adjusting for age, 90.0% survival rate in AgP after 15 years was found (CP 92.7%). This revision of the age effect caused a significant course profile change (Figure 3b).

## Conclusions:

In patients with advanced periodontitis long-term tooth retention is feasible independent from patient's age. After more than ten years SPT, age-adjusted tooth survival in AgP seemed to be less favorable than in CP. Comparing the data with the current literature supports our philosophy in maintaining stable long-term results. A different clinical approach for periodontal treatment based on patient's age does not seem to be justifiable.

## References:

Abbas, F., Van der Velden, U. & Hart, A. (1984) Relation between wound healing after surgery and susceptibility to periodontal disease. *J Clin Periodontol* 11, 221-229.  
Armitage, G.C. (1999) Development of a classification system for periodontal diseases and conditions. *Annals of Periodontology* 4, 1-6.  
Trombelli, L., Rizzi, A., Simonelli, A., Scapoli, C., Carrieri, A. & Farina, R. (2010) Age-related treatment response following non-surgical periodontal therapy. *J Clin Periodontol* 37, 346-352.

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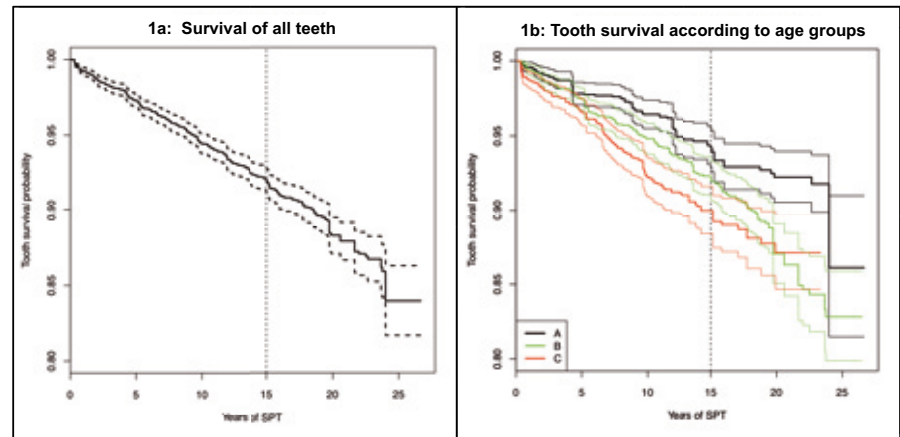
## Results:

**Table 1:** Patient characteristics

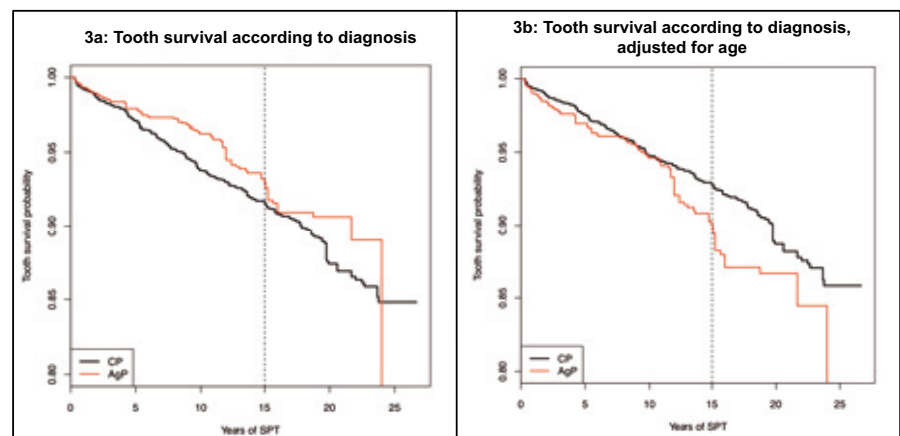
	AgP	CP
patients	55	158
gender (mal/female)	21/34	76/82
age at initial examination (±SD)	34.2±6.9	51.0±8.5
maintenance period (±SD)	14.9±4.6	15.9±4.8
Tooth loss per patient/year during SPT (±SD)	0.11±0.15	0.15±0.18

**Table 2:** Tooth loss during SPT according to smoking, diagnosis, periodontal treatment (APT), number of missing teeth (T1) and age group

		<40 year		40-49 year		>49 year	
		Tooth loss	p	Tooth loss	p	Tooth loss	p
diagnosis	CP	29 (7.3%)	0.390	156 (10.0%)	0.266	156 (9.5%)	-
	AgP	65 (6.1%)		31 (12.3%)		0	
periodontal treatment (T0-T1)	surgical	86 (6.7%)	0.195	168 (10.9%)	0.030	116 (10.6%)	0.023
	non-surgical	8 (4.2%)		19 (6.7%)		40 (7.2%)	
smoking (T0-T1)	non-smoker	49 (4.7%)	<0.001	127 (9.3%)	0.031	112 (8.5%)	0.005
	former smoker	7 (4.1%)		33 (14.9%)		16 (10.5%)	
	smoker	38 (15.0%)		27 (11.5%)		28 (16.1%)	
number of missing teeth (T1)	≤ 2 teeth	26 (3.3%)	<0.001	47 (5.2%)	<0.001	27 (6.3%)	<0.001
	3 - 5 teeth	32 (7.9%)		61 (15.7%)		41 (7.0%)	
	> 5 teeth	36 (14.2%)		79 (14.8%)		88 (13.9%)	



**Fig. 1:** Survival probability of all teeth with CI (1a) and according to age groups A: <40, B: 40-49, C >49y with CI (1b). The dashed line indicates the range of statistical conclusion.



**Fig. 3:** Tooth survival probability of AgP and CP (3a) and adjusted for age (3b). The dashed line indicates the range of statistical conclusion.