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study

Risk of tooth loss with supportive periodontal care

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Background

The risk of tooth loss during supportive periodontal care has been examined in only a few studies. These studies – predominantly retrospective – demonstrated a correlation between tooth loss and background factors including smoking, diabetes, and high plaque scores.

Local factors of relevance were tooth type, furcation involvement, probing pocket depth (PPD), clinical attachment level (CAL), tooth mobility, bleeding on probing, angular bony defects, and endodontic pathology.

Accurate tooth-by-tooth prognosis is of importance in clinical decision-making and in patient communication. Prognostic and risk factors are ideally evaluated in studies with a prospective design, reducing the risk for bias. Outcomes and exposures are thereby recorded in a systematic and consistent manner, while confounders and loss to follow-up/dropouts can be accounted for.

Aim

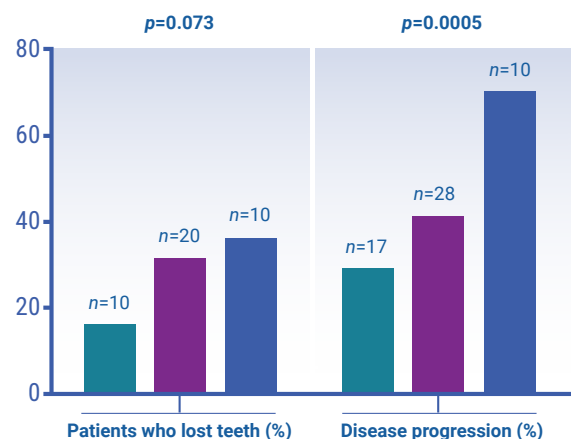
The aim of this study was to evaluate the correlation between patient- and tooth-related variables and tooth loss during supportive periodontal care over a five-year period in patients with periodontitis.

Materials & methods

- The study was a prospective observational study.
- Following initial periodontal therapy in one of three private clinical centres, the study sample (n=143) was followed over five years in supportive periodontal care (interval: 3-12 months).
- Patients' risk profile was assessed based on a baseline periodontal risk assessment (PRA) score: "high", "moderate", or "low".
- Tooth prognosis was categorised as "good", "fair," "questionable," or "unfavourable" at baseline.
- Rates of tooth loss were recorded over five years (primary outcome).
- Progression of periodontitis was defined as ≥ 2 teeth exhibiting loss of proximal attachment of ≥ 3 mm.
- Tooth loss during supportive periodontal care was analysed through Poisson regression analysis.
- Logistic regression and survival analyses were performed to evaluate the impact of PPD, CAL, furcation involvement, tooth mobility, restorative status, bone loss, intrabony defects, and endodontic status.
- A tooth prognosis score (TPS) was performed on tooth loss.

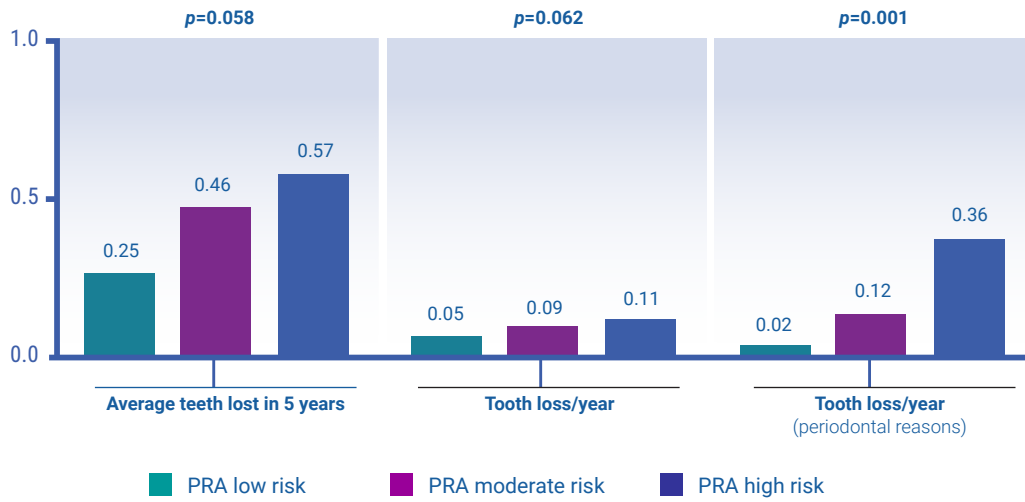
Figure 1: Number of patients with five-year follow-up (n = 143) who lost teeth and had disease progression, classified by baseline periodontal risk assessment (PRA) profile

■ PRA low risk
■ PRA moderate risk
■ PRA high risk



Note: Of 143 patients, 40 had lost teeth during follow-up. 15.6% of them were categorised as low risk, 30.8% as moderate risk and 35.7% as high risk based on the PRA system. Fifty-five out of the 143 patients experienced disease progression (Tonetti & Claffey, 2005). When compared with different PRA scores, patients who experienced disease progression had increased higher risk profiles (28.2%, 40.5%, and 70%).

Figure 2: Teeth lost and tooth-loss rates of patients with five-year follow-up (n=143)



Results


- Out of an initial 200 patients, 143 completed the five-year follow-up period (mean: 52 months).
- Patients presented with either stage III (87%) or stage IV (13%) periodontitis.
- The annual tooth loss was 0.02 teeth/patient/year (teeth extracted: 55).
- Categorisation of the patient into PRA “moderate” or “high” did not entail a higher risk for tooth loss.
- Categorisation of the tooth into “fair”, “questionable”, or “unfavourable” entailed a significantly higher risk for tooth loss.
- Both PRA (82.4%) and TPS (99.5%) showed high negative predictive values for tooth loss, while positive predictive values were low: PRA, 30.0%; TPS, 2.6%.
- Patient-related risk factors for tooth loss were smoking, age, and periodontitis stage and grade. No impact was found for BMI, gender, ethnicity, or medical history.
- Tooth-related risk factors for tooth loss were PPD, CAL, restorative and endodontic status, intrabony defect, tooth mobility, and furcation involvement.

Limitations

- Several participants had already been in supportive periodontal care at the start of the study.
- Some participants had been involved in the development of the TPS system (no true external validation).
- Consistent frequency of supportive periodontal care, irrespective of initial risk classification.
- Negative impact of Covid-19 pandemic on patient retention.
- Limited sample size.

Conclusions & impact

- In periodontitis patients undergoing supportive periodontal care in a private practice setting, the overall tooth loss rate was low.
- Tooth-based and patient-based prognostic systems showed high negative but low positive predictive values for tooth loss during supportive periodontal care.
- The study emphasised the need to improve positive predictive values of prognostic systems to identify patients/teeth at risk of tooth loss. Low positive predictive values infer a risk of over-treatment.

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