

THE IMPACT OF ENAMEL MATRIX DERIVATIVE ON MARKERS OF SYSTEMIC INFLAMMATION AFTER PERIODONTAL SURGERY: A RANDOMIZED CONTROLLED CLINICAL TRIAL

Filippo Graziani^{1,2*}, Morena Petrini^{1,2*}, *Marina Peric*^{1,2*}*, Laura Bettini^{1,2*}, Urska Marhl^{1,2*}, Maurizio Tonetti^{3*}, Stefano Gennai^{1,2*} *Presenting author – PhD student

University of Pisa - Department of Surgical, Medical and Molecular Pathology and Critical Care Medicine;
 University Hospital of Pisa – Sub-unit of Periodontology, Halitosis and Periodontal Medicine
 Faculty of Dentistry, University of Hong Kong, Hong Kong, SAR China

INTRODUCTION

Enamel matrix derivative (EMD) showed higher clinical outcome of periodontal surgical treatment of intrabony defects. It has been hypothesized that EMD contributes to the early resolution of inflammation in periodontal lesions.

OBJECTIVE

To evaluate the systemic effect of periodontal surgery with and without the adjunct of EMD in sites with intrabony defects of \geq 4 mm in vertical depth.

PRIMARY OUTCOME

The change of high-sensitive C Reactive Protein (CRP) 24 hours after the surgery.

METHODS

- ✓ RCT , double blind, 6 months follow-up
- ✓ ClinicalTrials.gov: NCT03590093
- ✓ Sample size calculation -> 3.5 mg/l difference in CRP between groups; 90% power, α = 0.05, SD= 3 + 10% drop-out rate: for a total of **19** patients per group

Inclusion criteria

- ✓ Intrabony defects ≥4 mm deep
 ✓ No previous periodontal surgical treatment
- ✓ Systemically healthy

Systemic parameters: CRP, lipid profile, fibrinogen, D-dimer, cystatin, glucose levels.

Clinical parameters: periodontal pocket depth (PPD), clinical attachment level (CAL), recession.

Study flow-chart

CONTROL GROUP







FIBRINOGEN CAL 350 mm340 12 Significant intra-group *Significant intra-330 differences group (control) 10 baseline – 6M 320 increase at 24H (p<0.005) (p<0.05) 310 300 290

RESULTS

Variable Baseline	Test group	Control group
Mean (St. Dev.)		
Age, years	53.47 ± 8.24	60.36 ± 9.26*
Gender, female (%)	47	58
Smoke, current smokers (%)	2	0
BMI, Kg/m ²	24.87 ± 3.23	24.07 ± 2.76
Number of missing teeth	2.26 ± 0.56	2.26 ± 0.81
CRP (mg/L)	2.10 ± 4.02	1.84 ± 2.88
Fibrinogen (mg/L)	295.63 ± 79.22	257.47 ± 91.30
Cystatin C	0.65 ± 0.13	0.72 ± 0.14
D-Dimer (mg/L)	0.32 ± 0.14	0.30 ± 0.13
Glucose (mg/L)	78.95 ± 11.62	85.95 ± 12.53
Total Cholesterol	202.68 ± 25.15	217.16 ± 29.37
HDL	68.89 ± 13.25	62.95 ± 15.60
LDL	118.54 ± 26.38	135.76 ± 26.77
Triglycerides	85.16 ± 26.95	92.26 ± 30.09







CONCLUSIONS

- ✓ EMD adjunction is associated with lower acute phase response, if compared to conventional surgical debridement, in the immediate post-operative period.
- ✓ Regeneration with biologically active molecules may take place through an anti-inflammatory action.
- ✓ Further studies are needed to elucidate the biological rationale behind these findings.