Introduction

The purpose of this study was to evaluate peri-implant soft tissue response by assessing IL-6, IL-1b and MMP-8 levels in peri-implant crevicular fluid (PICF) around machined vs. laser-microgrooved implants abutments during 1 year of function.

Materials and Methods

24 non-smoking partially edentulous patients requiring implant therapy in two contralateral sites. Each patient received two different implants:

- M GROUP: TRX implants with an healing abutment with a machined surface, replaced with a machined prosthetic abutment;
- LMS GROUP: TLX implants with a laser-microgrooved surface, replaced with a laser-microgrooved prosthetic abutment.

The clinical examination during the 1-year follow-up period (at 1, 3, and 12 months) included an assessment of the full-mouth plaque score (FMPS) and full-mouth bleeding score (FMBS). Moreover, plaque index (PI), gingival index (GI), pocket probing depth (PPD), and bleeding on probing (BOP) at six sites around each implant were recorded. Mucosal recession (REC) was also assessed.

Results

The mean values of IL-1β, IL-6 and MMP-8 levels between groups showed that the mean values of IL-1β, IL-6 and MMP-8 level at 1-month, 3-month, and 12-month intervals around machined implants/abutments were statistically significantly higher than around laser-microgrooved implants/abutments.

Mean PPD and percentage of sites with BOP values in group M at 3 and 12 months were statistically higher than in LMS group, whereas no differences were found in the 1-month assessment (P>.05).

Radiographic marginal bone loss at 12 months was significantly greater in M group than in LMS group.

Discussion

Comparisons of the IL-1β, IL-6 and MMP-8 levels between groups showed that the mean values of IL-1β, IL-6 and MMP-8 level at 1-month, 3-month, and 12-month intervals around machined implants/abutments were significantly higher than around laser-microgrooved implants/abutments.

Mean PPD and percentage of sites with BOP values in group M at 3 and 12 months were statistically higher than in LMS group, whereas no differences were found in the 1-month assessment (P>.05).

Patients’ full-mouth plaque score (FMPS) and full-mouth bleeding score (FMBS) recorded during the follow-up period.

Radiographic marginal bone loss at 12 months was significantly greater in M group than in LMS group.

Conclusions

Results of the current study suggest the presence of more remodeling and/or inflammatory phenomena around implants/abutments with machined surface than around implants/abutments with a laser-microgrooved surface.