

Abstract

ABSTRACT

BACKGROUND:

Over the past years management of the edentulous ridges with implant proved to be a successful and predictable treatment modality for tooth loss. Healing around the implant is termed osseointegration and it is similar to that of the fracture healing. Studies have shown that continuous remodelling process take place around the implant throughout its life. If there is an imbalance in the coupling and uncoupling mechanisms of the bone it may progress to implant failure. For this remodelling to occur, it involves the interaction of the bone cells and the extracellular matrix of the bone. The extracellular matrix comprises of the collagenous and non-collagenous proteins of which, the non-collagenous proteins such as osteocalcin, osteonectin, BSP and osteopontin play a vital role in remodelling. Osteocalcin is a regulator of hydroxyapatite crystal growth and recruiter of osteoclasts. Osteocalcin is a potent bone marker of bone turnover. Osteonectin helps in matrix mineralization, also helps in bone healing and it is important for implant stability. The early and reliable detection of peri implant tissue changes is the pre-requisite for treatment planning, which is usually evaluated by the clinical parameter such as probing depth (PD), bleeding on probing (BOP), clinical attachment level (CAL) and radiograph. The shortcomings of these methods are that it can predict the destruction which occurred but not about the active lesion or the initial disease progression. This is overcome by analysing the

GCF and PISF which comprises of the biomarkers which are released by the periodontal tissue, which mimics the biological process occurring in the proximal tissues.

AIM:

This study is done to evaluate the levels of osteocalcin and osteonectin in the PISF of healthy implant sites 6 months after loading and compare it to the GCF obtained from periodontally healthy sites.

MATERIALS AND METHODS:

Two groups consisting of 12 samples from the periodontally healthy tooth and 12 samples from the peri sulcular region of the implants loaded before 6 months were included in the study. GCF and PISF were collected at the same time on all days and the levels of osteocalcin and osteonectin was detected using sandwich ELISA. Statistical analysis was done using Man Whitney U Test and the independent t-test. p value ≤ 0.05 was considered to be statistically significant.

RESULTS:

It is inferred from the study that the osteocalcin levels were significantly higher in the PISF of the implants after six months of loading with a p value of 0.001 and the osteonectin levels were higher in the PISF when compared to GCF from periodontally health sites with a p value of 0.206

which was not statistically significant. This indicates increase in bone remodelling due to the distant osseointegration.

CONCLUSIONS:

These increased values in PISF need not have to be necessarily correlated with disease. This increased value in implant sites may be due to the increased remodelling occurring around an implant compared to a periodontally healthy tooth. This implicates the need for establishing individual baseline values in PISF if it is to be used as a biomarker for peri implant disease.

KEYWORDS:

GCF, PISF, Osteocalcin, osteonectin, osseointegration, bone homeostasis, bone proteins.