

OSC16: Effects of Streptozotocin-induced Diabetes Mellitus on Peri-implantitis

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Aim: Diabetes mellitus (DM) is a risk factor associated with dental implant failure. However, the influence of DM on peri-implantitis is not fully understood. The aim of this study was to assess the effects of hyperglycaemia state after osseointegration on peri-implant bone defects of ligature-induced peri-implantitis in rats.

Materials and Methods: Twenty-four male Wistar rats at 5 weeks of age were used. Four weeks after extraction of maxillary first molars, titanium implants (1.8 x 2 mm) were placed. After one month of healing, the healing abutments were installed. The rats were divided into control (N-DM), diabetic (DM) and insulin groups (DM-I). DM group was induced by a single injection of 50mg/kg streptozotocin (STZ). N-DM group received only saline. DM-I group received subcutaneous dose of insulin twice a day. Silk ligatures were placed sub-marginally around the abutments only on the right side (ligature side) to induce plaque associated peri-implant inflammation. The implants on the left side were not ligated (non-ligature side). The samples were analysed radiologically to measure bone level change at 28 days after ligature.

Results: Micro-CT revealed significantly greater bone loss at DM group compared to N-DM group on the non-ligature side. On the other hand, the alveolar bone loss progression was observed on the ligature side in all groups. However, there are no significant differences between three groups.

Conclusion: Within the limitations of the animal study, these results suggested that poor glycaemic control and poor plaque control after osseointegration leads to an increased risk for peri-implantitis.

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