



Response of head and neck radiotherapy in patients with dental implants

Maria Cândida D. P. Oliveira, Tarcísio P.R. Campos, Arno H. de Oliveira.



Universidade Federal de Minas Gerais – Departamento de Engenharia Nuclear – Escola de Engenharia
Programa de Pós-graduação em Ciências e Técnicas Nucleares

Av. Antônio Carlos, 6627. Escola de Engenharia, CEP 31270-901, Pampulha. BH/MG - Brasil
bia.dpacheco@gmail.com.br, tprcampos@yahoo.com.br, heren@nuclear.ufmg.br

Radiotherapy plays an important role in the treatment of patients with head and neck cancer. Clinical changes in the surrounding healthy tissue are often inevitable. The aim of the present study was to evaluate the effect of RT on the survival of osseointegrated dental implants in patients with head and neck cancer.

Methodology: The electronic search was performed in the MEDLINE database to retrieve articles published during the last five years. The key words used were "radiotherapy", "dental implants" and "head and neck cancer". To track the review, the following question was structured: is there a change in the survival rate of implants installed in patients undergoing head and neck RT? Search strategies retrieved a total of 67 articles. Final sample of four articles was obtained.

Results: 950 implants were included in this review, a greater number of implants were installed in the mandible (654) than in the maxilla (295). The implants installed in irradiated bone tissue (375) were in smaller number than those installed in non-irradiated bone (457), in addition 118 implants were installed in a control group (healthy patients). The overall survival rate of implants was 97.37%. The percentage of dental implant failures tended to be higher in the group of irradiated patients.

Table: Data of implants installed in irradiated site, in non-irradiated site, control group, failure implant and survival rate

Study year	Irradiated implants sites, n	Non irradiated implants sites, n	Implants control group, n	Failure implant, n	SR irradiated implants, %	SR non irradiated implants, %
Ernst et al., 2016	88	106	0	4	96.59	99.05
Patel et al., 2020	132	244	0	10	96.06	97.90
Alberga et al., 2020	42	8	0	4	90.50	100
Pieralli et al., 2021	91	113	113	4	98.20	98.10

Conclusions: Dental implants installed in the irradiated area have high survival rate, if strict clinical and dose monitoring is instituted as a treatment protocol. Since the late RT effects can be present years after treatment, prognostic studies and controlled clinical trials in humans with long follow-up periods shall be required to confirm potential clinical changes and limitations on implant installations and response.