

Evaluation of failed implants by metallographic and energy dispersive x-ray analysis

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Objective: To evaluate the microscopic structure and chemical composition of titanium dental implants removed from patients with implant failure. **Materials and Methods:** Thirty-eight dental implants removed from 29 patients between January 2012 and September 2014 were studied by metallographic analysis, and 7 of these implants were also studied by energy-dispersive x-ray (EDX) analysis. Medical records of these patients were examined. **Results:** Dental implants were removed in a median of 54.6 ± 88.1 weeks after insertion. The lack of osseointegration without symptomatology or signs of infection was the main reason for implant failure (55.17%). Seventeen patients presented implant failure in the maxilla and 12 patients in the mandible. Metallographic analysis revealed that all the dental implants were manufactured from commercially pure titanium, presenting microscopic uniform appearance, with no α case?. The implants studied by EDX analysis presented between 99.85% and 99.87% of titanium and 0.13% and 0.15% of iron by mass. All the implants evaluated were within the ASTM specifications in both analyses. **Conclusion:** There was no relationship between dental implant failure and the microscopic structure and chemical composition of these devices. Copyright © 2018 Wolters Kluwer Health, Inc.

Dental materials-osseointegration

Prostheses and implants

Titanium

titanium

adverse device effect

dental restoration

female

human

male

middle aged

procedures

spectroscopy

tooth implant

tooth implantation

torque

Dental Implantation, Endosseous

Dental Implants

Dental Restoration Failure

Female

Humans

Male

Middle Aged

Spectrometry, X-Ray Emission

Titanium

Torque