10 year follow-up of implant-supported fixed restorations complications in partial edentulism

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Background: Long term results represent an essential index of any treatment efficiency. During a long term period the implant-prosthetic treatment is reflected by: success and survival rates, frequency of failures and complications – categories accepted by the implantologic community. The success of implant supported restorations depends on the peri-implant bone as well as prosthesis conditions, which are in fact the final treatment objective.

Aim/Hypothesis: The analysis at 10 years follow-up of the complications occurred after rehabilitation of patients with partial edentulism using fixed implant restorations.

Material and methods: The study was axed on 237 partially edentulous patients from which 158 women (66.7\%\pm3.06\%) and 79 men (33.3\%\pm3.06\%), aged between 18 and 83 years (43.3\%\pm0.54). The implant-prosthetic treatment was made using 1021 implants. The study group was consisted from 653 (64.0\%\pm1.5\%) one-piece implants immediately or early loaded using fixed restorations with tooth-implant anchorage. The control group included 368 (36\%\pm1.5\%) two-piece dental implants, loaded in conventional terms using pure implant anchorage. During 10 years, failures and post-prosthetic complications which occurred at 257 (25.17\%\pm1.36\%) implants have been analyzed. In dependence on implant failure, two types of complications were distinguished: with implant loss – 83 (61 study and 22 control) implants and other complications – 174 (133 study and 41 control) implants. Statistical analysis was made by calculating percentages, standard error, Student’s paired t test.

Results: In the Study group, the causes of implant loss were: overloading – 24 (9.35\%\pm1.82), crown/implant ratio >1 – 9 (3.5\%\pm1.15\%), abnormal implant angulations – 4 (1.56\%\pm0.77\%), bruxism – 4 (1.56\%\pm0.77\%), poor oral care – 10 (3.89\%\pm1.21\%), trauma with implants fractures – 7 (2.72\%\pm1.01\%), unknown – 3 (1.17\%\pm0.67\%). The causes of implant loss in the control group were: periimplantitis – 8 (3.11\%\pm1.08\%), overloading – 6 (2.33\%\pm0.94\%), crown/implant ratio >1 – 8 (3.11\%\pm1.08\%). Other complications which occurred in the study vs. control groups were: discementation – 56 (21.79\%\pm2.58\%) vs. 13 (5.06\%\pm1.37\%), ceramic layer dislocation – 32 (12.46\%\pm2.06\%) vs.10 (3.89\%\pm2.11\%), mucositis – 11 (4.28\%\pm1.26\%) vs. 8 (3.11\%\pm1.08\%), periimplantitis without implant loss – 6 (2.33\%\pm0.94\%) vs. 5 (1.94\%\pm0.86\%), threads exposure – 6 (2.33\%\pm0.94\%) vs. 4 (1.56\%\pm0.77\%), fracture of the restoration – 14 (5.45\%\pm1.42\%, study), implant collar exposure – 8 (3.11\%\pm1.08\%, study), abutment fracture – 1 (0.39\%\pm0.39\%, control).

Conclusions and clinical implications: Long term follow-up demonstrates the advantage of implant-prosthetic rehabilitation of patients with partial edentulism using two-piece dental implants with pure implant anchorage. The percentage of irreversible complications at the level of implant or prosthesis is significantly higher for the study group versus the control one (19.44\%\pm1.54\% vs. 11.41\%\pm1.65\%, P<0.001). Some of them are caused by the discrepancies of implant and teeth mobility, in case of tooth-implant anchorage.