Among patients receiving implants, do implants placed in proximity to a radiolucent lesion, when compared to those placed in areas without radiolucencies, have an increased risk for failure? The investigation hypothesized that implants placed in areas in proximity to radiolucent lesions would have a higher rate of failure than those radiographically negative. The specific aim was to estimate and compare the 1-year survival rates and hazard ratios of implants placed in proximity to radiolucent lesions to implants not placed in proximity to radiolucent lesions. Materials and Methods: A retrospective cohort study, the investigators enrolled a sample composed of subjects having ≥ one radiolucent lesion. The primary predictor variable was whether the implant was (Group A) or was not (Group B) inserted in proximity to a radiolucent lesion. The outcome variable was implant survival at one-year after insertion. Secondary explanatory variables were categorized as demographic, health status, implant-specific, anatomic, and perioperative variables. Descriptive statistics, Kaplan-Meier survival analyses, and Cox proportional hazard regression analyses were completed using SAS version 9.1, 2002-2003, SAS Institute Inc, Cary, NC. Results: The study sample was composed of 199 patients having > one implant (k = 1144 implants) inserted (group A, n = 239 and group B, n = 905). The mean duration of follow-up was 26 months. The one-year unadjusted Kaplan-Meier survival ratios for Group A and Group B implants were 85.9% and 91.5%, respectively (p < 0.001). Multivariate analysis revealed that Group A implants were associated with a significantly higher failure rate than Group B implants (HR = 1.55, 95% CI 1.10, 2.14, p = 0.004). Conclusions: The results of this study suggest that after adjusting for confounders, implants placed in proximity to sites with radiolucencies have a 55% increased risk for failure at one-year post-implant insertion.

Clinical Question: Among patients receiving implants, do implants placed in proximity to a radiolucent lesion, when compared to those placed in areas without radiolucencies, have an increased risk for failure?

null Hypothesis: The adjusted one-year survival rate of implants in proximity to radiolucent lesions equals that of implants not in proximity.

Specific aims:
1. To estimate and compare the 1-year survival of Group A (implant placed in site or adjacent to site with radiolucency) and Group B (implants not placed in area of radiolucency)
2. To identify risk factors associated with implant failure using a rigorous survival analysis adjusting for clustered (correlated) observations

Primary Outcome Variable: Implant survival at 1 year

Materials and Methods: Study design: Retrospective cohort study
Sample enrollment criteria: Patients of the Implant Dentistry Centre, Boston, MA, who had ≥ one implant between July, 2001 and August, 2005

Study Variables: Primary Predictor Variable
Group A: Implant was either placed in the area of a radiolucency, or adjacent to prospective implant site.
Group B: Implant was not placed in the area of a radiolucency.

Clinical Question: Radiolucent Lesions Adversely Affect Implant Survival

References:

Table 1. Study Variables Grouped By Treatment Group

Table 2. Univariate Marginal Cox Regression Model

Table 3. Final Multivariate Marginal Cox Regression Model

Results:

Table 2. Univariate Marginal Cox Regression Model

Table 3. Final Multivariate Marginal Cox Regression Model

Conclusions:

Implants placed in proximity to sites with radiolucent lesions have a 55% increased risk for failure at one-year.

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Implants placed in proximity to sites with radiolucent lesions have a 55% increased risk for failure at one-year.

References:


CONCLUSION

The results suggest that after adjusting for confounders, implants placed in proximity to sites with radiolucent lesions have a 55% increased risk for failure at one-year post-implant insertion.

The adjusted one-year survival rate of implants in proximity to radiolucent lesions equals that of implants not in proximity.