
Karaky AE, Sawair FA, Al-Karadsheh OA, Eimar HA, Algarugly SA, Baqain ZH.


Abstract

PURPOSE:

To compare the efficacy of three different antibiotic regimens in reducing early dental implant failure.

MATERIALS AND METHODS:

In a controlled clinical trial, 270 consecutively treated patients were allocated to three antibiotic groups, alternatively, according to order of participation in the trial: Group A (2 g amoxicillin single preoperative dose), Group B (single preoperative 2 g amoxicillin followed by 500 mg three times daily for 5 days) and Group C (postoperative amoxicillin with clavulanic acid 625 mg three times daily for 5 days). Outcomes were pain, wound infection, dehiscence, adverse events possibly related to antibiotics and early implant failure. The patients were followed postoperatively at 1 week, 1 month and at the beginning of the prosthetic stage. Chi-square test and ANOVA test were used to examine differences.

RESULTS:

In total, 240 patients were adherent to the trial protocol: Group A, 73 patients (210 implants); Group B, 79 patients (266 implants); and Group C, 88 patients (290 implants). Patients experiencing early implant failure: 12 in Group A (16.4%), 11 in Group B (13.9%) and 13 in Group C (14.8%). No statistically significant differences were observed for any of the outcome measures between the three groups.

CONCLUSIONS:

It may not be necessary to provide postoperative antibiotics in patients undergoing dental implant placement, however, these preliminary findings need to be confirmed by large multicentre clinical trials.
Interventions for replacing missing teeth: antibiotics at dental implant placement to prevent complications.

Esposito M, Worthington HV, Loli V, Coulthard P, Grusovin MG.


Abstract

BACKGROUND:

Some dental implant failures may be due to bacterial contamination at implant insertion. Infections around biomaterials are difficult to treat and almost all infected implants have to be removed. In general, antibiotic prophylaxis in surgery is only indicated for patients at risk of infectious endocarditis, for patients with reduced host-response, when surgery is performed in infected sites, in cases of extensive and prolonged surgical interventions and when large foreign materials are implanted. To minimise infections after dental implant placement various prophylactic systemic antibiotic regimens have been suggested. More recent protocols recommended short term prophylaxis, if antibiotics have to be used. With the administration of antibiotics adverse events may occur, ranging from diarrhoea to life-threatening allergic reactions. Another major concern associated with the widespread use of antibiotics is the selection of antibiotic-resistant bacteria. The use of prophylactic antibiotics in implant dentistry is controversial.

OBJECTIVES:

To assess the beneficial or harmful effects of systemic prophylactic antibiotics at dental implant placement versus no antibiotic/placebo administration and, if antibiotics are of benefit, to find which type, dosage and duration is the most effective.

SEARCH STRATEGY:

The Cochrane Oral Health Group's Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE were searched up to 2nd June 2010. Several dental journals were handsearched. There were no language restrictions.

SELECTION CRITERIA:

Randomised controlled clinical trials (RCTs) with a follow up of at least 3 months comparing the administration of various prophylactic antibiotic regimens versus no antibiotics to patients undergoing dental implant placement. Outcome measures were prosthesis failures, implant failures, postoperative infections and adverse events (gastrointestinal, hypersensitivity, etc).

DATA COLLECTION AND ANALYSIS:
Screening of eligible studies, assessment of the methodological quality of the trials and data extraction were conducted in duplicate and independently by two review authors. Results were expressed as random-effects models using risk ratios (RRs) for dichotomous outcomes with 95% confidence intervals (CIs). Heterogeneity was to be investigated including both clinical and methodological factors.

MAIN RESULTS:

Four RCTs were identified: three comparing 2 g of preoperative amoxicillin versus placebo (927 patients) and the other comparing 1 g of preoperative amoxicillin plus 500 mg 4 times a day for 2 days versus no antibiotics (80 patients). The meta-analyses of the four trials showed a statistically significant higher number of patients experiencing implant failures in the group not receiving antibiotics: RR = 0.40 (95% CI 0.19 to 0.84). The number needed to treat (NNT) to prevent one patient having an implant failure is 33 (95% CI 17 to 100), based on a patient implant failure rate of 5% in patients not receiving antibiotics. The other outcomes were not statistically significant, and only two minor adverse events were recorded, one in the placebo group.

AUTHORS’ CONCLUSIONS:

There is some evidence suggesting that 2 g of amoxicillin given orally 1 hour preoperatively significantly reduce failures of dental implants placed in ordinary conditions. No significant adverse events were reported. It might be sensible to suggest the use of a single dose of 2 g prophylactic amoxicillin prior to dental implant placement. It is still unknown whether postoperative antibiotics are beneficial, and which is the most effective antibiotic.

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A PILOT STUDY TO DETERMINE THE EFFECTIVENESS OF DIFFERENT AMOXICILLIN REGIMENS IN IMPLANT SURGERY.

Caiazzo A, Casavecchia P, Barone R, Brugnami F.


Abstract

The aim of this study was to attempt to determine the minimum effective regimen of Amoxicillin antibiotic prophylaxis for dental implant surgery. One hundred patients were randomly allocated to four different antibiotic prophylactic treatment groups. At second stage surgery only 2 implants failed in the non-antibiotic group. No statistically significant differences were found in the 4 groups, probably because the limited number of the samples. Until a study with a larger population may definitely rule on the role of antibiotic in oral implant surgery, in may be prudent for the pratitioner to adopt the Single Preoperative Antibiotic Dose as the minimal effective regimen.
Retrospective analysis of 521 endosseous implants placed under antibiotic prophylaxis and review of literature.


Abstract

AIM:

Antibiotic prophylaxis in surgical implants has not a consensus in the scientific world. This is due both to reports and statistical studies with contradictory results, both to the risk of severe anaphylactic reactions and the emergence of antibiotic resistance and, finally, to the lack of published RCTs. The purpose of this study is to retrospectively analyze and assess the success of surgical therapy with endosseous implants inserted under antibiotic prophylaxis at the Department of Oral Sciences "S. Palazzi", University of Pavia. The data presented are compared to those published in international literature. The work is complemented by a statistical data analysis in order to propose a statistically valid judgement on the effectiveness of antibiotic prophylaxis in preventing postoperative infections.

METHODS:

Retrospective observational study with an average follow-up of 4.5 months, until the abutment connection. Furthermore, after extensive review of the literature, published data are compared with what retrieved in our department. Patients operated consecutively from June 2002 to December 2007. Review of literature data concerning the influence of antibiotic prophylaxis on the implant success.

RESULTS:

The data relating to post-operative complications encountered at the Division of Oral Surgery, University of Pavia and the comparison with those presented in the bibliography indicate statistically significant differences in favor of the antibiotic prophylaxis used in our department.

CONCLUSION:

There were no anaphylactic reactions recorded. It seems advisable to perform implantology with prophylactic antibiotic coverage.
Retrospective analysis of 736 implants inserted without antibiotic therapy.
Mazzocchi A, Passi L, Moretti R.

Abstract

PURPOSE:

The routine use of antibiotics in oral implant treatment seems to be widespread. The principle of antibiotic prophylaxis before oral surgical procedures in patients at risk for endocarditis or in those who are severely immunocompromised is well established. Antibiotic therapy in conjunction with implant surgery in fit patients and its correlation with failure and success rates remains poorly documented, however. The debate regarding overprescription of antibiotics raises the need for a critical evaluation of proper antibiotic coverage in association with implant treatment. The purpose of this study was to retrospectively show and value the outcomes of dental implant treatment without antibiotic prophylaxis.

MATERIALS AND METHODS:

The study included 437 consecutively treated patients, in whom a total of 736 implants were placed. The population received no prophylactic antibiotics, but received anti-inflammatory therapy (nimesulide 100 mg twice daily or Arnica montana 5C 3 times a day) for 3 days postoperatively. Healing was evaluated at second-stage surgery (4 to 6 months postoperatively). Failure was defined as removal of the implant due to either signs of infection or nonosseointegration of the implant, according to the criteria for success described by Albrektsson and Coll in 1988.

RESULTS:

The implant survival rate in the sample (96.2%) was no lower than the high success rates published in the literature using various antibiotic regimens.

CONCLUSIONS:

Our findings support the results of several recent reviews of minor use of antibiotics in oral surgery. These findings suggest that the use of antibiotics for routine oral implants may not be as beneficial as once believed and that clinicians should look forward to the reduction of their unnecessary use. The use of antibiotic prophylaxis before oral surgical procedures remains a controversial issue, poorly documented in the literature.
According to the American College of Surgeons, complex oral surgical procedures, including the transoral placement of endosseous implants, are of the type that may require prophylactic antibiotics. However, the routine use of prophylactic antibiotics in the field of dental implantology continues to be controversial, and their utilization varies widely. No data from a randomized prospective clinical study of the prophylactic use of antibiotics in implant surgery have been previously published. As part of the comprehensive Dental Implant Clinical Research Group clinical implant study, the preoperative or postoperative use of antibiotics, the type used, and the duration of coverage was left to the discretion of the surgeon. These data were recorded and correlated with failure of osseointegration during healing (stage I) and at stage II surgery (uncovering). The results showed that significantly fewer failures occurred when preoperative antibiotics were used.

Influence of different prophylactic antibiotic regimens on implant survival rate: a retrospective clinical study.

Kashani H, Dahlin C, Alse'n B.


Abstract

BACKGROUND:

The routine use of antibiotics in oral implant treatment seems to be widespread. The pre- or postoperative use of antibiotics in conjunction with implant surgery and its correlation with failure and success rates are poorly documented in the literature. The debate regarding overprescription of antibiotics raises the need for a critical evaluation of proper antibiotic coverage in association with implant treatment.

PURPOSE:

The purpose of this study was to compare the implant survival rate following a 1-day single-dose preoperative antibiotic regimen with that following a 1-week postoperative antibiotic protocol.

MATERIALS AND METHODS:

The study included 868 consecutively treated patients. A total of 3,021 implants were placed. The population was split into two categories, either receiving a 1-day single-dose administration only, or a 1-week postoperative administration of antibiotics. Healing was evaluated at second-stage surgery (6 months for the upper jaw, 3 months for the lower jaw). Failure was defined as removal of implants because of non-osseointegration. Statistical analyses were performed with analysis of variance and the Scheffé test, with a significance level of 5% for comparison of data.

RESULTS:

No significant differences with regard to complications and implant survival were found in the study.

CONCLUSION:
Based on the present data, a more restrictive regimen consisting of a 1-day dose of prophylactic antibiotic in conjunction with routine implant procedures is recommended.

Alveolar ridges of limited dimensions could preclude the placement of dental implants of the regular dimension. Smaller diameter implants - narrow platform (NP) implants were commercially available to address this issue. The aim of the study was to determine the 5-year clinical performance of 3.3 mm diameter NP implants. Twenty-three machined screw-shaped NP implants were placed in nine patients (six males; three females) between 18 and 70 years of age. Clinical and radiographic examinations were performed annually for 5 years. Recognized implant success criteria was used. The criteria were based on the mean marginal alveolar bone loss, the placement of prosthesis of satisfactory appearance, and the absence of implant mobility, peri-implant radiolucency, pain, discomfort or infection. One implant failed at abutment connection. The remaining 22 implants were restored and functioned successfully according to the criteria. The mean marginal alveolar bone loss during the first year was 0.41 +/- 0.17 mm. The mean marginal alveolar bone loss between the second and fifth year was 0.03 +/- 0.06 mm. The success rate of NP implants according to a well-established set of criteria was 96%.

### Abstract

The objective of this study was to retrospectively compare the outcomes of dental implant treatment with and without antibiotic prophylaxis. Two groups of patients with edentulous or partially edentulous maxillas or mandibles (or both) were treated with dental implants. One group, consisting of 147 patients (790 implants), was given prophylaxis with oral phenoxymethylpenicillin; 1 g of antibiotic was administered 1 hour preoperatively, and 1 g was administered every 8 hours for 10 days postoperatively. The other group, consisting of 132 patients (664 implants) was not given any antibiotics preoperatively or postoperatively. There were no significant differences with respect to early and late postoperative infections or with respect to implant survival between the two groups. It appears that antibiotic prophylaxis for routine dental implant surgery offers no advantage for the patient.
Antibiotic prophylaxis and postoperative complications after tooth extraction and implant placement: a review of the literature.


Schwartz AB, Larson EL.

Abstract

OBJECTIVES:

To assess published evidence regarding the use of preoperative antibiotic prophylaxis among children and adults undergoing dental extraction or implant placement.

DATA:

Research published between 12/31/97 and 6/30/07 in English.

SOURCES:

MEDLINE, PUBMED, EMBASE, EBM Reviews, and Cochrane Central Register for Controlled Trials using the following search terms linked with Boolean AND logic: prophylactic antibiotics, dentistry, tooth, third molar, extraction, implant, endosseous, prophylaxis, prophylactic, infective endocarditis, bacterial, infection, and bacteremia.

STUDY SELECTION:

Eight randomized clinical trials and one retrospective study was found involving preoperative use of antibiotics before tooth extraction. Four additional non-randomized intervention studies among patients undergoing implant placement were found. These 13 studies comprised all of the published research found that met our inclusion criteria. Overall, this body of literature was limited and of poor quality. In general, sample sizes were small and provided insufficient statistical power to avoid type II, or false-negative errors. In some studies no comparison group was included and/or it was difficult to determine the extent to which the intervention had actually been implemented.

CONCLUSION:

With the recent improvements in the current standards of antibiotic prophylaxis in dentistry, further monitoring of antibiotic use among dental practitioners as well as continuing education for practitioners concerning the public health risks related to the over-prescription of antibiotics are needed.
The influence of preoperative antibiotics on success of endosseous implants at 36 months.

Laskin DM, Dent CD, Morris HF, Ochi S, Olson JW.


Abstract

The benefits of prophylactic antibiotics are well recognized in dentistry. However, their routine use in the placement of endosseous dental implants remains controversial. As part of the comprehensive Dental Implant Clinical Research Group (DICRG) clinical implant study, the preoperative or postoperative use of antibiotics, the type used, and the duration of coverage were left to the discretion of the surgeon. These data for 2,973 implants were recorded and correlated with failure of osseointegration during healing (Stage 1), at surgical uncovering (Stage 2), before loading the prosthesis (Stage 3), and from prosthesis loading to 36 months (Stage 4). The results showed a significantly higher survival rate at each stage of treatment in patients who had received preoperative antibiotics.