Introduction

The use of perioperative antibiotics is now common as it has been found to be beneficial in preventing postoperative infection, particularly when a normally sterile area is contaminated by a non-sterile area. This practice has been adopted in endoscopic sinus surgery with postoperative antibiotics being routinely used to improve postoperative healing and outcomes [3-5]. Commonly, patients are given a 7-14 day postoperative course of prophylactic oral antibiotics. Many surgeons site not only reduction in postoperative infection but also improved surgical outcomes and reduction in morbidity if antibiotics are used routinely postoperatively. Despite the routine use of postoperative antibiotic prophylaxis following endoscopic sinus surgery, there is a lack of published evidence to support this practice. Antibiotic use can be associated with increased bacterial resistance, added cost to the patient, and potential side effects such as allergic reaction or Clostridium difficile infection. Furthermore, other otolaryngological surgeries such as tonsillectomy and otologic surgery have been studied and reviewed in detail with the findings that routine postoperative antibiotic use is not supported despite these surgeries also being of the clean-contaminated category [7,8]. Lastly, many other fields have studied the use of prophylactic antibiotics and none support use beyond 48-72 hours with the large majority supporting preoperative dosing only or a 24 hour maximum prophylaxis period [9]. For these reasons we felt a systematic review of the literature on the use of prophylactic antibiotics in endoscopic sinus surgery was warranted.

Results

We reviewed 524 articles and found 4 eligible trials with varying quality of which 3 were included in the quantitative analysis. These were all RCTs. The 3 included in the analysis investigated postoperative antibiotic use only. Antibiotic prophylaxis was associated with non significant reduction in the incidence of infections (RR 0.76; 95% CI, 0.64 to 1.09), symptoms scores (SMD = 0.04; 95% CI, -0.46 to 0.38) and endoscopic scores (SMD = 0.09; 95% CI, 0.30 to 0.13). The heterogeneity associated with the analysis was only significant for the change in symptoms score (I-squared values, 0%, 70% and 0% for the three outcomes, respectively).

Discussion

We conducted a systematic review and meta-analysis of randomized trials to evaluate the effect of systemic prophylactic antibiotics following endoscopic sinus surgery. We found 4 eligible trials. Meta-analysis of 3 trials demonstrates that routine postoperative antibiotic prophylaxis did not show a statistically significant reduction in the incidence of infection, endoscopic scores and symptoms.

The strength of this systematic review include the comprehensive literature search that spans across multiple databases, conducting the review by two independent reviewers to reduce bias, and analysis using the random effects model which incorporates between studies heterogeneity.

The main limitation of this report is the small number of patients and studies; which leads to imprecision and wide confidence intervals. Imprecision lower the confidence of the results. This analysis has shown that antibiotic prophylaxis has not been shown to improve postoperative healing and outcomes.

Materials and Methods

Design and Methods: We searched electronic databases from inception through May 2011 for any relevant clinical trials or observational studies investigating the use of perioperative antibiotics in endoscopic sinus surgery... Two reviewers working independently extracted study characteristics, quality, and the outcomes of interest. Random-effects meta-analysis was used to pool the relative risks (RR) and the standardized mean differences (SMD) across trials.

Conclusion

Trial data available at date are unable to demonstrate a statistically significant reduction in infection, symptom scores or endoscopic scores to support the routine use of prophylactic antibiotics following endoscopic sinus surgery. Our analysis was limited by the number of published trials related to this topic.

References