An evidence-based assessment of the clinical guidelines for replanted avulsed teeth. Part II: Prescription of systemic antibiotics

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CRD summary
The authors concluded that there was inconclusive evidence to support use of systematic antibiotic therapy in treatment of periodontal healing for replanted avulsed teeth. The review was based on limited numbers and contained some methodological flaws and the conclusions should be treated with caution.

Authors' objectives
To determine whether use of systematic antibiotic therapy (SAT) compared to not prescribing SAT increased the success of periodontal healing after tooth replantation for a replanted avulsed permanent tooth.

Searching
MEDLINE, The Cochrane Library, PubMed and Web of Science were searched for English-language articles. Reviews, position papers, letters, editorials and meeting abstracts were excluded.

Study selection
Retrospective and prospective clinical trials that involved patients with a replanted avulsed permanent anterior tooth (conforming to contemporary clinical guidelines) who were prescribed SAT versus not prescribed SAT were eligible for inclusion in the review if they reported periodontal healing outcomes in relation to SAT. Animal and laboratory studies, intentional extraction, transplantation and avulsion studies were excluded.

Included periodontal healing outcomes were no root resorption, non-progressive root resorption, progressive resorption, periodontal healing, periodontal necrosis, positive (acceptable healing) and negative (inflammatory resorption, ankylosis/replacement resorption, marginal periodontal breakdown or extraction/progressive resorption) outcomes.

Included participants were aged between six and 52 years. Included specified SAT were penicillin and erythromycin. Follow-up ranged from two months to 40 years.

The authors did not state how many reviewers selected the studies.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted to calculate odds ratios (ORs) and 95% confidence intervals (CI).

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
A random-effects (DerSimonian and Laird) meta-analysis was used to synthesise odds ratios and 95% CIs. Inter-study heterogeneity was assessed using $\chi^2$ and $I^2$ tests (values greater than 56% showed marked heterogeneity, less than 31% showed less significant heterogeneity). Sensitivity analysis was used to investigate heterogeneity.

Results of the review
Five studies (n=530 patients, n=576 teeth) were included in the review. Three studies (n=326 teeth, 247 received SAT, 79 received no SAT) were included in the meta-analysis.

Two studies were retrospective clinical audits and one study was a prospective cohort.
Acceptable healing occurred in 30% of teeth that received SAT and 29% of teeth that did not receive SAT. Prescribing SAT did not improve periodontal healing in comparison to not prescribing SAT (OR 0.9, 95% CI 0.51 to 1.58). No between-study heterogeneity was seen ($I^2=0\%$).

**Authors' conclusions**
There was inconclusive evidence for an association between prescribing SAT and an increased likelihood of acceptable periodontal healing.

**CRD commentary**
This review addressed a clear research question, but the inclusion criteria were less clearly defined. Four databases were searched. Search terms were not reported fully. Only English-language publications were included, which introduced a risk of language bias. There was no apparent search for unpublished material, so relevant trials may have been missed and publication bias could not be ruled out. There did not appear to be any validation assessment. No reported steps were taken throughout the review process to minimise errors and bias. There was a lack of detail presented for the type, dose and duration of SAT. The meta-analysis used appropriate statistical techniques, but may have been affected by a unit of analysis issue with some patients with results for multiple teeth. The review had potential for publication bias and methodological flaws and given the limited number of studies the authors' conclusions should be treated with caution.

**Implications of the review for practice and research**

**Practice**: The authors recommend that dentists follow contemporary guidelines for prescribing SAT in the management of replanted avulsed teeth.

**Research**: The authors did not state any implications for research.

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