**Hemostatic mouthwashes in anticoagulated patients undergoing dental extraction**

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**CRD summary**
This 2006 review concluded that dental extractions in anticoagulated patients could be performed with haemostatic mouthwashes to control local bleeding, without temporary discontinuation of oral anticoagulants. The limitations of the review methods, and a lack of data on thromboembolism risk, mean that these conclusions may be overstated.

**Authors' objectives**
To evaluate the efficacy and safety of local-acting haemostatic agents to prevent bleeding in patients taking oral anticoagulants and undergoing dental extraction.

**Searching**
MEDLINE, IPA and EMBASE were searched in July 2006 for English-language publications. Search terms were reported. Bibliographies of relevant papers were manually searched.

**Study selection**
Eligible for inclusion were clinical trials evaluating haemostatic mouthwashes for patients taking oral anticoagulants and undergoing dental extraction, or oral surgery including extraction.

The included trials were conducted in Italy, Israel, Sweden, Denmark, Spain, or Australia. Where reported, patient age ranged from 19 to 93 years. Most trials included both single and multiple extractions. The patient's indications for oral anticoagulation, the oral surgeries performed, the treatment duration, and the patient's international normalised ratio (INR) target range on the day of surgery, varied. Most trials were of tranexamic acid mouthwashes (4.8% or 5%) with uninterrupted oral anticoagulation; one trial assessed epsilon aminocaproic acid mouthwash. Control conditions varied, including placebo mouthwash, interrupted oral anticoagulation, haemostatic mouthwash for a different duration, and gelatin sponge sutures or autologous fibrin glue (details reported in the paper).

The authors did not state how many reviewers selected studies for inclusion in the review.

**Assessment of study quality**
The authors did not state that a quality assessment was performed.

**Data extraction**
The outcomes were extracted by an unknown number of reviewers. They included the incidence of bleeding, the incidence of bleeding requiring treatment, the time taken for blood to clot (assessed using the groups' mean INR), and the adverse events. It was unclear whether these outcomes were specified before study selection.

**Methods of synthesis**
The data were synthesised in a narrative.

**Results of the review**
Eight prospective clinical trials were included in the review (585 patients, range 30 to 150). Six included randomisation, and three were double-blind.

**Tranexamic acid:** Two trials (142 patients) demonstrated a statistically significant difference in bleeding requiring treatment, favouring tranexamic acid (4.8%) mouthwash over placebo mouthwash. All patients had uninterrupted oral anticoagulation, and the mouthwashes were administered over seven days. The remaining six trials had only very rare occurrence of bleeding and bleeding requiring treatment; the differences between groups were not statistically significant (details reported).

**Epsilon aminocaproic acid:** One trial (92 patients) had five treatment groups and a control group, which received oral epsilon aminocaproic acid once before treatment and reduced anticoagulation plus heparin. Two groups receiving
epsilon aminocaproic acid mouthwash for two days (one with uninterrupted anticoagulation, and the other with reduced anticoagulation and heparin) were each compared with the control group. They both demonstrated a higher risk of bleeding complications, but it appears that the differences were not statistically significant.

No severe adverse events were reported. No trial assessed the risk of thromboembolism with the different treatments.

Authors' conclusions
The evidence indicated that dental extraction, in anticoagulated patients, could be performed with haemostatic mouthwashes to control local bleeding, without temporary discontinuation of oral anticoagulants.

CRD commentary
The review question and inclusion criteria were clearly defined. Suitable databases were searched, but the restriction to publications in English means that relevant trials may have been missed. The was no report of duplication of the processes, so there was potential for reviewer error and bias. No quality assessment was reported. So, the risks of bias within the included trials, and the reliability of their findings, are unclear. Trial details were presented and the differences across the trials suggested that the narrative synthesis was appropriate.

The authors' conclusions reflect the evidence presented, but limitations to the review methods, and a lack of data on the thromboembolism risk, mean that these conclusions may be overstated.

Implications of the review for practice and research
Practice: The authors stated that pharmacists should educate dentists and other health care professionals about the use of haemostatic mouthwashes, and discourage temporary discontinuation of anticoagulation for dental extractions.

Research: The authors stated that well-designed trials were needed to define the best duration and the efficacy of tranexamic acid for other dental procedures. Trials of epsilon aminocaproic acid were needed to define its optimal duration, safety, and efficacy for dental extraction alone and alongside other dental procedures.

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