

# SURGICAL MANAGEMENT OF THE PRIMARY CARE DENTAL PATIENT ON ANTIPLATELET MEDICATION

**Antiplatelet medications do not need to be stopped before primary care dental surgical procedures**

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# SURGICAL MANAGEMENT OF THE PRIMARY CARE DENTAL PATIENT ON ANTIPLATELET MEDICATION

## *Executive summary*

### **Antiplatelet medications do not have to be stopped before primary care dental surgical procedures**

#### **Patients taking**

- low-dose aspirin (75mg-300mg daily)
- clopidogrel (Plavix®)
- dipyridamole (Persantin®, Persantin Retard®, Asasantin Retard®)

**should not have their medications stopped or altered prior to dental surgical procedures in primary care.**

## **How do antiplatelet medications affect clotting?**

Platelets provide the initial haemostatic plug at the site of a vascular injury. They are also involved in pathological processes and are an important contributor to arterial thrombosis leading to myocardial infarction and ischaemic stroke.

Available antiplatelet medications include:

- **Low dose aspirin** (75mg-300mg daily). Used for the secondary prevention of thrombotic cardiovascular or cerebrovascular disease and following coronary artery bypass surgery. N.B. Many patients take low dose aspirin that is recommended by, but not prescribed by, their GPs.<sup>1</sup>
- **Clopidogrel (Plavix®)**. Licensed as monotherapy for the prevention of atherothrombotic events in patients suffering myocardial infarction, ischaemic stroke or peripheral arterial disease and in conjunction with aspirin for unstable angina or non-Q-wave myocardial infarction in acute coronary syndrome.<sup>2</sup>
- **Dipyridamole (Persantin®, Persantin Retard®)**. Used as an adjunct to oral anticoagulation for the prophylaxis of thromboembolism associated with prosthetic heart valves. Modified release dipyridamole preparations are licensed for secondary prevention of ischaemic stroke and transient ischaemic attacks. **Asasantin Retard®** contains both aspirin and dipyridamole and is licensed for the secondary prevention of stroke and transient ischaemic attacks.<sup>1</sup>

All antiplatelet medications affect clotting by inhibiting platelet aggregation but they do so by a variety of different mechanisms.<sup>3</sup> Aspirin and clopidogrel irreversibly inhibit platelet

aggregation within one hour of ingestion and this lasts for the life of the platelets (7-10 days).<sup>3</sup> The effect is only overcome by the manufacture of new platelets.<sup>4</sup> The action of dipyridamole is reversible.

**Non-steroidal anti-inflammatory drugs (NSAIDs)** other than aspirin (e.g. ibuprofen, diclofenac) have a reversible effect on platelet aggregation and platelet function is restored once the drug is cleared from the circulation.<sup>4</sup> NSAIDs are not used clinically for their antiplatelet activity.

**Cyclooxygenase-2 (COX-2) inhibitors** (e.g. rofecoxib) do not have any appreciable antiplatelet activity.<sup>5</sup>

When platelets are inhibited it takes longer for free blood flow from a cut to stop and for primary haemostasis to occur i.e. the 'bleeding time' is prolonged.<sup>4</sup>

### How do antiplatelet medications affect bleeding time?

All patients receiving antiplatelet medications must be considered to have drug-induced altered platelet function.<sup>6</sup> However, the effect on primary haemostasis is minimal in patients without additional risk factors for impaired clotting.<sup>7</sup> Antiplatelet medications can double the baseline bleeding time<sup>4</sup> but this may still be within or just outside the normal range. It has been reported that only 20% to 25% of patients using aspirin have an abnormal bleeding time.<sup>8</sup>

### How is bleeding time assessed?

#### SUMMARY OF EVIDENCE

- There is no suitable test available to assess the increased risk of bleeding in patients taking antiplatelet medications.

Platelet function is commonly assessed using the cutaneous bleeding time test. When platelet function is normal, bleeding time ranges from 2 to 10 minutes.<sup>9,10,11</sup> This range varies between institutions and depending on the method of measurement used. Bleeding times may be longer in women than men.<sup>9</sup>

However a correlation between bleeding time test results and the rate of surgical bleeding complications has not been established.<sup>8</sup> One study in 30 healthy patients found no relationship between the cutaneous bleeding time test and oral bleeding time following a single tooth extraction.<sup>10</sup> The authors concluded that the cutaneous bleeding time test has no role in the prediction of bleeding in the dental setting.

The cutaneous bleeding time test should not be used to estimate the haemorrhagic risk in a patient on antiplatelet medication.<sup>6,12</sup> There is currently no suitable bioassay test sophisticated enough to be used routinely for the monitoring of side effects associated with antiplatelet medications.<sup>6</sup>

### What are the thromboembolic risks associated with stopping antiplatelet medications in the perioperative period?

#### SUMMARY OF EVIDENCE

- Stopping aspirin prior to surgical procedures may increase the risk of thromboembolic events by 0.005%.

In a retrospective analysis of 475 patients admitted to hospital with a myocardial infarction, 11 (2.3%) had discontinued aspirin therapy within 15 days prior to admission. Nine patients discontinued aspirin prior to planned surgical procedures, one of which was a dental procedure. The dental patient had been stable and symptom free on aspirin for 10 years but suffered a myocardial infarction 10 days after stopping aspirin therapy.<sup>13</sup>

Thromboembolic events were reported in two patients following the withdrawal of antiplatelet medication one week prior to cutaneous surgery<sup>14</sup> and in five patients (two died) following withdrawal of aspirin 8 to 10 days prior to transurethral prostatectomy.<sup>15</sup>

It has been estimated that the risk of thromboembolic events associated with the withdrawal of aspirin for 3 to 14 days prior to cutaneous surgery is about 0.005% (1 thromboembolic event in every 21,448 cutaneous excisions).<sup>16</sup>

### **What are the risks of bleeding associated with continuing antiplatelet medications in the perioperative period?**

#### **SUMMARY OF EVIDENCE**

- Patients taking antiplatelet medications will have a prolonged bleeding time but this may not be clinically relevant.
- Postoperative bleeding after dental procedures can be controlled using local haemostatic measures.

Clinically significant postoperative bleeding has been defined<sup>12</sup> as that which:

1. continues beyond 12 hours
2. causes the patient to call or return to the dental practice or accident and emergency department
3. results in the development of a large haematoma or ecchymosis within the oral soft tissues
4. requires a blood transfusion.

Patients with underlying hepatic, renal or bone marrow disorders often have disease related bleeding disorders. Bleeding risk also increases with age and with heavy alcohol consumption.

A small prospective study investigated stopping versus continuing low-dose aspirin prior to dental extraction.<sup>11</sup> Thirty-nine patients taking aspirin 100mg daily were studied. Nineteen continued aspirin as normal and 20 stopped aspirin seven days prior to the planned extraction(s). A bleeding time test was performed one hour prior to the procedure.

The mean bleeding time was longer in patients who continued aspirin compared to those who stopped (3.1 mins vs. 1.8 mins,  $p=0.004$ ). Although the difference was statistically significant, none of the patients who continued aspirin had a bleeding time outside the normal range (2-10 minutes in this study). Intraoperative bleeding was controlled in 33 (85%) patients with gauze packing and sutures. Six patients (2 who stopped aspirin and 4 who continued aspirin) had tranexamic acid added to the local packing. No patient experienced uncontrolled bleeding immediately postoperatively or in the following week.

A prospective study of 253 patients (41 taking aspirin, 212 not taking aspirin) undergoing cutaneous surgery found bleeding was easily controlled in all patients.<sup>8</sup> There was no significant difference between the two groups in terms of postoperative complications.

There are few published studies on the relative risks of peri-operative bleeding with clopidogrel and dipyridamole. The pharmacological mechanisms underlying the antiplatelet action of clopidogrel and dipyridamole suggest that patients taking these medications will be at no greater risk of excessive bleeding than those taking aspirin. A review of the implications of antithrombotic medications in dentistry concluded that patients on clopidogrel should not have the dose altered prior to dental procedures.<sup>17</sup> On this basis we suggest these medications should not be discontinued prior to dental surgical procedures. There is insufficient evidence to comment on the bleeding risk if patients take both aspirin and clopidogrel, these patients should be referred to a dental hospital or hospital based oral/maxillofacial surgeon.

NSAIDs other than aspirin e.g. ibuprofen, diclofenac also have antiplatelet activity and may increase bleeding time. However, this rarely exceeds normal limits. Even major surgery is not usually complicated by patients taking NSAIDs<sup>4</sup> and they should not be discontinued prior to dental surgical procedures.

## How do the risks of thromboembolic events and postoperative bleeding balance?

### SUMMARY OF EVIDENCE

- Bleeding complications, while inconvenient, do not carry the same risks as thromboembolic complications.
- Patients are more at risk of permanent disability or death if they stop antiplatelet medications prior to a surgical procedure than if they continue it.
- Published reviews of the available literature advise that aspirin should not be stopped prior to dental surgical procedures.

Thromboembolic events, including fatalities, have been reported after antiplatelet withdrawal. Although the risk is low, the outcome is serious. This must be balanced against the fact that there is no single report of uncontrollable bleeding when dental procedures have been carried out without stopping antiplatelet medications.<sup>18,19</sup>

A recent guidance document advised that antiplatelet medications should only be discontinued in the perioperative period when the haemorrhagic risk of continuing them is definitely greater than the cardiovascular risk associated with their discontinuation.<sup>6</sup>

Consensus is that for minor surgical procedures, including dental procedures, antiplatelet medications should not be stopped or doses altered but that local haemostatic measures are used to control bleeding.<sup>3,8,16,11,17,18,19,20,21,22</sup>

## Which patients taking antiplatelet medication should not undergo surgical procedures in primary care?

Patients taking antiplatelet medication with the following medical problems should not be treated in primary care without medical advice or should be referred to a dental hospital or hospital based dental clinic:<sup>12,21,22</sup>

- liver impairment and/or alcoholism
- renal failure
- thrombocytopenia, haemophilia or other disorder of haemostasis
- those currently receiving a course of cytotoxic medication.

Patients requiring major surgery are unlikely to be treated in the primary care setting.

## For what procedures can antiplatelet medications be safely continued?

Minor surgical procedures can be safely carried out without altering the antiplatelet medication dose. Those likely to be carried out in primary care will be classified as minor e.g. simple extraction of up to three teeth, gingival surgery, crown and bridge procedures, dental scaling and the surgical removal of teeth.<sup>12,23</sup>

When more than 3 teeth need to be extracted then multiple visits will be required. The extractions may be planned to remove 2-3 teeth at a time, by quadrants, or singly at separate visits.

Scaling and gingival surgery should initially be restricted to a limited area to assess if bleeding is problematic.

## How should the risk of bleeding be managed?

### Timing

Think about the timing of the surgery. Planned surgery should ideally be:

- At the beginning of the day - this allows more time to deal with immediate re-bleeding problems.

- Early in the week - this allows for delayed re-bleeding episodes occurring after 24–48 hours to be dealt with during the working week.<sup>22</sup>

### Local anaesthetic

A local anaesthetic containing a vasoconstrictor should be administered by infiltration or by intraligamentary injection wherever practical.<sup>12,22</sup> Regional nerve blocks should be avoided when possible. However, if there is no alternative, local anaesthetic should be administered cautiously using an aspirating syringe.<sup>24</sup> Local vasoconstriction may be encouraged by infiltrating a small amount of local anaesthetic containing adrenaline (epinephrine) close to the site of surgery.

### Local haemostasis

Sockets should be gently packed with an absorbable haemostatic dressing<sup>12,18,21,22</sup> e.g. oxidised cellulose (Surgicel<sup>®</sup>), collagen sponge (Haemocollagen<sup>®</sup>) or resorbable gelatin sponge (Spongostan<sup>®</sup>) then carefully sutured. Resorbable sutures are preferable as they attract less plaque.<sup>22</sup> If non-resorbable sutures are used they should be removed after 4-7 days.<sup>22</sup> Following closure, pressure should be applied to the socket(s) by using a gauze pad that the patient bites down on for 15 to 30 minutes.

Efforts should be made to make the procedure as atraumatic as possible and any bleeding should be managed using local measures.

Patients should be given clear instructions on the management of the clot in the postoperative period and advised:<sup>25</sup>

- to look after the initial clot by resting while the local anaesthetic wears off and the clot fully forms (2-3 hours)
- to avoid rinsing the mouth for 24 hours
- not to suck hard or disturb the socket with the tongue or any foreign object
- to avoid hot liquids and hard foods for the rest of the day
- to avoid chewing on the affected side until it is clear that a stable clot has formed. Care should then be taken to avoid dislodging the clot
- if bleeding continues or restarts, to apply pressure over the socket using a folded clean handkerchief or gauze pad. Place the pad over the socket and bite down firmly for 20 minutes. If bleeding does not stop, the dentist should be contacted; repacking and resuturing of the socket may be required
- who to contact if they have excessive or prolonged postoperative bleeding. The surgery and out of hours/on call dentist's name/number should be provided. There should be a facility for the patient to be reviewed and treated immediately by a dentist if a bleeding problem occurs. If it is not possible for the patient to be seen immediately by a dentist then the patient should be referred to their local Accident and Emergency department
- on pain control – see below.

## How should postoperative pain control be managed?

Generally paracetamol is considered a safe over the counter analgesic for patients taking antiplatelet medications and it may be taken in normal doses if pain control is needed and no contraindication exists. Aspirin at analgesic doses and non-steroidal anti-inflammatory drugs (NSAIDs) e.g. ibuprofen are considered less safe and should be avoided if possible (see interaction below).

If prescribed analgesia is to be provided additional options include:

- **Rofecoxib** – a cyclo-oxygenase-2 (COX-2) inhibitor. The COX-2 inhibitors are as effective as standard NSAIDs and have a similar side effect profile, however, the risk of gastro-intestinal bleeding is lower.<sup>24</sup> Rofecoxib has not been shown to affect the antiplatelet activity of low dose aspirin.
- **Dihydrocodeine** – an opioid analgesic with similar analgesic efficacy to codeine. It is suitable for mild to moderate pain. It has no anti-inflammatory activity.

## **Are there any drug interactions that are relevant to this patient group undergoing dental surgical procedures?**

**NSAIDs** in combination with aspirin or clopidogrel should be used with caution. NSAIDs can damage the lining of the gastro-intestinal tract leading to bleeding that may be worsened by aspirin or clopidogrel.<sup>1,24,26</sup>

There is no evidence of an interaction between dipyridamole and NSAIDs.<sup>26</sup> The concomitant use of dipyridamole plus aspirin does not increase the risk of bleeding.<sup>27</sup>

### **ACKNOWLEDGEMENTS**

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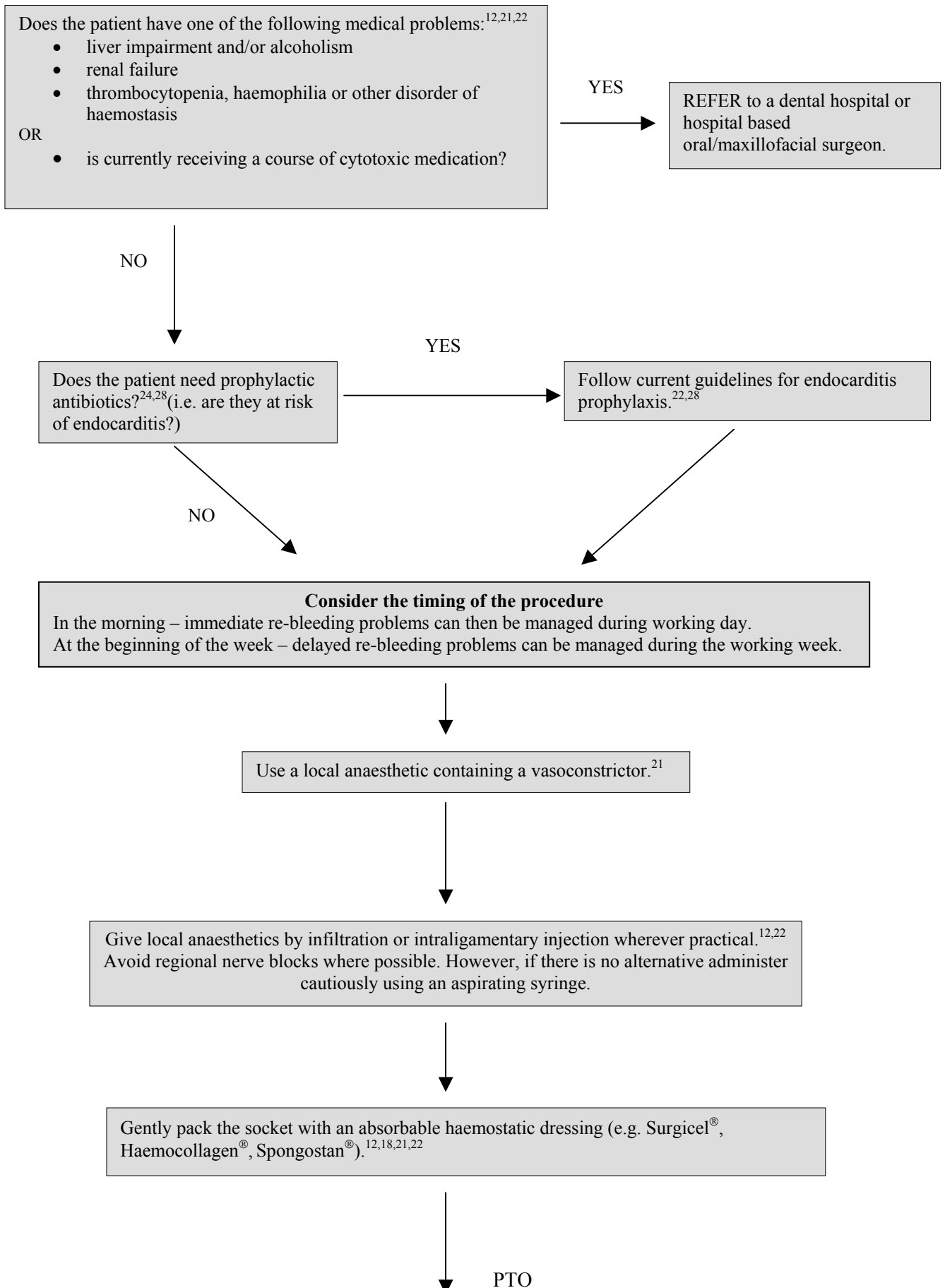
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# Surgical Management of the Primary Care Dental Patient on Antiplatelet Medication

This algorithm applies to patients taking low dose aspirin, clopidogrel or dipyridamole.





Carefully suture the socket.<sup>22,23</sup>

There is no indication for routinely prescribing antibiotics following the above procedures in this group of patients.

Will the patient require post-operative analgesia?

YES

Paracetamol is the analgesic of choice. AVOID non-steroidal anti-inflammatory drugs (NSAIDs) e.g. ibuprofen, diclofenac, aspirin in analgesic doses \*(interaction, see below). Rofecoxib and dihydrocodeine are available on prescription.

NO

**Patients should be given clear instructions on the management of the clot in the postoperative period.**

**Patients should be advised:<sup>25</sup>**

- to look after the initial clot by resting while the local anaesthetic wears off and the clot forms (2-3 hours)
- to avoid rinsing the mouth for 24 hours
- not to suck hard or disturb the socket with the tongue or any foreign object
- to avoid hot liquids and hard foods for the rest of the day
- to avoid chewing on the affected side until it is clear that a stable clot has formed. Care should then be taken to avoid dislodging the clot
- if bleeding continues or restarts, apply pressure over the socket using a folded clean handkerchief or gauze pad. Place the pad over the socket and bite down firmly for 20 minutes. If bleeding does not stop the dentist should be contacted; repacking or suturing of the socket may be required
- who to contact if they have excessive or prolonged postoperative bleeding. The surgery and out of hours/on call dentists name/number should be provided. There should be a facility for the patient to be reviewed and treated immediately by a dentist if a bleeding problem occurs. If it is not possible for the patient to be seen immediately by a dentist then the patient should be referred to their local Accident and Emergency department.
- to avoid taking non-steroidal anti-inflammatory drugs (NSAIDs) e.g. ibuprofen or aspirin in analgesic doses for pain control immediately post-operatively. Paracetamol may be taken if pain control is needed and no contraindication exists.

## INTERACTIONS

- \* The combination of NSAIDs and aspirin or clopidogrel should be used with caution. NSAIDs can damage the lining of the gastro-intestinal tract leading to bleeding that may be worsened by the platelet antiaggregant effect of aspirin or clopidogrel.<sup>2,24,26</sup> Rofecoxib is as effective as standard NSAIDs and has a similar side effect profile, however, the risk of gastro-intestinal bleeding is lower.

There is no evidence of an interaction between dipyridamole and NSAIDs.<sup>26</sup> The concomitant use of dipyridamole plus aspirin does not increase the risk of bleeding.<sup>27</sup>

## Appendix 1

### Will I be paid if I use a haemostatic dressing?

Where a dentist wishes to make a claim for treatment, which is necessary to secure and maintain oral health, and which is not included elsewhere in the fee scale, the Dental Practice Board (DPB) may allow a fee for the treatment provided under Item 4001 (any other treatment).<sup>29</sup> Each case is considered individually and the DPB require details of the clinical circumstances and the treatment provided.

#### **Claiming for packing and/or suturing an extraction socket in a patient on antiplatelet medication**

The DPB will consider the treatment of patients taking antiplatelet medication on a case by case basis. The Board may allow a fee under Item 4001, in addition to scale fees payable under Item 21 (extractions) after consideration of the particular circumstances of the case and the clinical conditions at the time of treatment. Details of the clinical conditions, the use of a haemostatic dressing and / or the number of sockets sutured should be provided.

#### **Claiming for treatment of delayed bleeding of a socket**

If delayed bleeding occurs and further visits are required then treatment under Item 2301 (treatment for arrest of abnormal haemorrhage) can be claimed in accordance with the Statement of Dental Remuneration.

Although the overall management, including the actual treatment, of a patient on antiplatelet medication may take longer than for a patient not on antiplatelet medication, the payment of additional patient management fees for patients taking antiplatelet medication would not normally be considered appropriate.

## Appendix 2

### Will I be at risk from litigation if the patient bleeds?

We live in an increasingly litigious society and there will always be the possibility that a patient may pursue a legal claim. Adherence to clinical practice guidelines is one way to limit potential liability.

Dental defence societies assess each case individually but take the following general view:<sup>30,31</sup>

- Practitioners should be aware of and abide by best evidence-based medicine, current teaching and guidance from a responsible body of opinion.
- If contrary advice is received from another medical practitioner, a discussion around the differing opinions is advised with this practitioner. It is important that the patient is not compromised in any way.
- If practitioners adhere to guidance advising that antiplatelet medication is not stopped prior to minor surgical procedures in primary dental care, especially with respect to advice on local haemostasis and suturing, then the practitioner could be defended should problems arise.

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