Dentists’ approach to patients on anti-platelet agents and warfarin: a survey of practice

Précis: A lack of adherence to current guidelines is seen in the operative management of patients on anti-platelet agents and/or warfarin.

Abstract: In everyday practice, dentists are confronted with the dilemma of patients on anti-platelet agents and warfarin who require invasive dental procedures and, more pertinently, dental extractions. There may be a divergence of opinion among dentists regarding how they manage these patients.

Aims: To assess general dental practitioners’ approach to the management of patients taking anti-platelet agents and/or warfarin who are undergoing invasive dental procedures.

Methods and data: A semi-structured questionnaire was designed to survey general dental practitioners in a large Irish urban area.

Results: A response rate of 89% was achieved in a study population of 54 general dental practitioners. A total of 25% of respondents who carry out extractions on warfarinised patients do not check the INR prior to invasive dental procedures. Some 90% of respondents stop anti-platelet agents prior to extractions.

Conclusions: A significant proportion of respondents fail to check warfarinised patients’ INR prior to invasive dental procedures. Furthermore, a trend of stopping anti-platelet agents was noted, which is in contrast with current recommendations in the dental literature. Certain practices in this small study population proved alarming and highlight the need for improved awareness of current guidelines. A further large-scale study may be justified, as variation in practice may have clinical and medico-legal repercussions.

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Introduction
Various anti-platelet agents may be encountered in everyday dental practice; these are often used in combination thus compounding their potential to cause post-operative haemorrhage. Aspirin and clopidogrel are increasingly used in combination following vascular stenting procedures; they work by irreversibly inhibiting platelet aggregation, an effect that lasts for the duration of the life span of the platelet, typically seven to 10 days. Dipyridamole can be combined with aspirin for stroke prevention. It must be noted that many other agents may alter platelet function including other non-steroidal anti-inflammatory drugs (NSAIDs), heparin, antimicrobials, selective serotonin reuptake inhibitors (SSRIs), herbal supplements, and cardiovascular agents such as diltiazem, propanolol, furosemide, and nifedipine. A major concern among dental practitioners is the potential for excessive bleeding after invasive dental procedures and this often prompts them to stop long-term, low-dose anti-platelet therapy. Interestingly, studies have failed to demonstrate prolonged or excessive post-operative haemorrhage attributable to anti-platelet agents following simple dental extractions when compared to non-medicated controls. There are published studies highlighting the inherent danger of interrupting both anti-platelet and anti-coagulant therapy. One study concluded that patients who had clopidogrel therapy interrupted following coronary artery stenting were up to ten times more likely to die or to be re-hospitalised compared to patients who had continuous therapy. It has been estimated that the thrombotic risk is one in 21,448 cases when aspirin therapy is withheld. Some authors suspect the existence of a
such as those with atrial fibrillation, patients with prosthetic heart valves, affected in a manner that hinders thrombus formation. Warfarin is used

The practice of adjusting a patient’s warfarin regime prior to invasive
dental treatment is a result of studies carried out between the 1940s and
1980. During this era, a patient’s degree of anticoagulation was
standardised between laboratories. The International Normalised Ratio
(INR) was introduced in 1983 by the World Health Organisation to effect
a standardisation of the prothrombin time and, subsequently, optimal
therapeutic ranges for anti-coagulation were established. This directly led
to a decrease in patients’ anti-coagulation levels and a concurrent
decrease in the incidence of morbidity from iatrogenic bleeding. Despite this improvement, many dentists still have reservations in
treating the warfarinised patient. One study recently reported that 9% of
general dental practitioners in the study did not treat patients on warfarin
for “a variety of reasons”. With the population-wide cardiovascular
sequence of ageing, general dental practitioners will be treating patients
on warfarin more frequently.

With regard to the potential for bleeding in this cohort of patients, it has been
documented that approximately 90% of post-extraction haemorrhage
originates from sources other than the patient’s anticoagulant. Prolonged or excessive bleeding can be minimised by reducing intra-
operative trauma, delivering clear post-operative instructions both verbally and in written form, and avoiding inappropriate prescribing of
NSAIDs. Local measures can be used successfully to control bleeding
following an extraction and practical advice includes performing dental
extractions at the beginning of the day and week. Tranexamic acid, an
anti-fibrinolytic agent, has been shown to be of value in preventing
haemorrhage post extraction in patients taking warfarin when given via
a mouthwash, yet this agent is not available in general dental practice.

Finally, patients taking warfarin should not be prescribed NSAIDs as
analgesic agents because these agents act as reversible inhibitors of
thromboxane production in platelets and hence increase post-operative
bleeding; this fact also applies to COX-2 inhibitors.

Objectives

The objective of this study was to assess the management of patients on
anti-platelet agents and warfarin by general dental practitioners in a large
urban area in Ireland.

Materials and methods

A semi-structured questionnaire was developed to assess how dentists
manage patients who take anti-platelet agents or warfarin. To assess
validity, the questionnaire was piloted on five general dental
practitioners with a cumulative experience of 65 years in dental
practice. Using their feedback, the questionnaire was revised and these
dentists were re-administered the questionnaire and included in the
study. Thirty general dental practices were selected at random from the
telephone directory and all the dental practitioners in these practices
were asked to complete the questionnaire. Between July and August
2008, 54 questionnaires were personally delivered to and collected
from the respondents in sealed envelopes to ensure anonymity. Forty-
eight completed questionnaires were returned and the data were
recorded in a database and analysed using Microsoft Access™ and
SPSS™.

Results

Anti-platelet agents

As seen in Figure 1, 10% (n = 5) of respondents never stop anti-platelet
agents prior to dental extraction. Some 23% (n = 11) always stop anti-
platelet agents prior to dental extraction and the majority do so in
conjunction with the patient’s general medical practitioner. Those who
always stop anti-platelet agents do so for a mean of 3.6 (range 2-7)
days prior to extraction. Furthermore, five respondents in this group
advise their patients to stop taking anti-platelet agents for a mean of
1.8 (range 1-3) days post extraction. The remaining 67% (n = 32) of
respondents replied that they sometimes stop anti-platelet agents.
Some 7% (n = 3) of respondents who stop patients’ anti-platelet agents
prior to extractions always do so without prior consultation with the
patient’s medical practitioner.

Warfarin

A total of 92% (n = 44) of respondents carry out extractions on patients
taking warfarin, as seen in Figure 2. Some 25% (n = 11) of those
reported that they did so without checking the patient’s INR prior to
extraction. Of those who do attempt to check the patient’s INR, 21%
(n = 7) have the patient’s INR checked more than 72 hours prior to
extraction. The mean upper INR limit at which respondents would
carry out extractions was 3.2 (range 2-4).

Discussion

Every year it is estimated that about 800,000 people worldwide
undergo a non-surgical coronary artery interventional procedure and
most patients with stents are maintained on an anti-platelet
regimen. It is therefore extremely likely that dental practitioners will
encounter these patients on a regular basis. The management of
patients on anti-platelet agents requiring extractions in primary dental
care may be both inappropriate and inconsistent, as demonstrated by
our limited study. The majority of respondents prefer to stop patients’
anti-platelet agents prior to extraction. This practice is at variance with
the current literature, which argues that the interruption of therapy
may expose such patients to an increased risk of developing adverse
cardiovascular events.
This study showed that of those dentists who stop anti-platelet agents, 86% do so in conjunction with the patient’s medical practitioner. The decision to interrupt therapy is often arrived at following discussion with the patient’s general medical practitioner or cardiologist, a person whose decision may be based on their experience in general surgery or orthopaedic surgery.2 If advice from general medical practitioners is at variance from the current guidelines, one should consider consulting the patient’s cardiologist. It is proposed that the study population’s practice of withholding therapy is based on evidence other than current guidelines from the dental literature. Furthermore, the practice of withholding anti-platelet agents in the post-operative period has no foundation in the current literature and should be strongly discouraged.21 Recommendations for the management of dental patients on anti-platelet agents are seen in Table 1.

In 2007, the British Committee for Standards in Haematology (BCSH) Task Force on Haemostasis and Thrombosis, together with the British Dental Association and the National Patient Safety Agency, developed evidence-based guidelines for managing patients on warfarin.22 The guidelines clearly state that the risk of significant bleeding in patients whose warfarin is stopped prior to dental surgery. Indeed, fatalities due to thrombo-embolic events have been documented as a result of stopping warfarin prior to invasive dental surgery.23 Potentially fatal haemorrhages may occur in procedures, including dental extractions, be they simple or surgical, periodontal treatment including sub-gingival scaling and root planing, subgingival restorations, inferior alveolar nerve blocks, biopsies and, in theory, endodontic treatment. Complicated management situations arise in the following circumstances: when patients are on both warfarin and anti-platelet agents; when a patient has a disease that modifies the pharmacokinetics of warfarin such as chronic liver or kidney disease; or, when a patient has a bleeding disorder. Referral to a dental hospital or maxillofacial surgery unit is advisable for this group of patients.24 The guidelines unambiguously state that the patient should have his or her INR measured within the 72 hours preceding the procedure and ideally within 24 hours.9 This study revealed that this guideline was not adhered to by 41% of respondents. The patient’s INR record book may be referenced, yet it is not sufficient to carry out an invasive dental procedure based on such information unless the patient’s last entry was within 72 hours. Table 2 contains recommendations for the management of dental patients on warfarin.

This study had several weaknesses. One was the small sample size, which always limits the value of reporting the means in a descriptive analysis. A further weakness was the design of the questionnaire. The question: “Do you check the patient’s INR (International Normalised Ratio) pre dental extraction?” may have been ambiguous and led to an artefactually high negative response rate. Those that responded in the negative may have interpreted the question as meaning: “Do you personally check the INR in-office?” However, we feel that the way the question was phrased was in a colloquially acceptable and unambiguous manner, so likely had minimal impact on the overall results.

Conclusion

In conclusion, general dental practitioners in this study population display a wide range of practice in their approach to patients on anti-platelet agents and warfarin. A trend towards overly conservative management is seen in the former. In contrast, the approach to the warfarinised patient would appear to be haphazard, with 25% of those that extract never checking the INR in the immediate pre-operative period. There is a clear need for greater awareness of an evidence-based approach to the dental management of this unique patient group to avoid unnecessary and preventable complications.

Acknowledgement

We would like to extend our gratitude to the respondents who took time to fill out our survey.

References

Table 1: Recommendations for the management of patients on anti-platelet agents.

<table>
<thead>
<tr>
<th>Patients on a single anti-platelet agent</th>
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<tbody>
<tr>
<td>■ Do not stop for dental procedures</td>
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<table>
<thead>
<tr>
<th>Patients on concurrent aspirin and dipyridamole</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Do not stop for dental procedures</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Patients on concurrent aspirin and clopidogrel</th>
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</thead>
<tbody>
<tr>
<td>■ Consult with the patient’s cardiologist</td>
</tr>
<tr>
<td>■ Patient may need referral to the dental hospital for the invasive dental procedure</td>
</tr>
</tbody>
</table>

Adapted from: Randall, C., (ed.). Surgical management of the primary care dental patient on antiplatelet medication. 2007. A guideline revision is due in late 2009 and will be available at: http://www.ukmi.nhs.uk/activities/specialistServices/.

Table 2: Recommendations for the management of patients on warfarin.

<table>
<thead>
<tr>
<th>Pre-operative</th>
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<tbody>
<tr>
<td>■ Check INR within 72 hours of proposed invasive dental procedure (do not proceed unless the INR is checked)</td>
</tr>
<tr>
<td>■ Primary dental care practitioners should never instruct a patient to stop their warfarin</td>
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<tr>
<td>■ Plan the invasive procedure for the start of the week and/or the beginning of the day</td>
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<table>
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<tr>
<th>Intra-operative</th>
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<tr>
<td>■ It is safe to proceed with the following invasive dental procedures if the INR is ≤4:</td>
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<tr>
<td>■ local anaesthetic administration, including inferior dental nerve blocks;</td>
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<tr>
<td>■ single and multiple extractions;</td>
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<td>■ minor oral surgical procedures;</td>
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<td>■ periodontal treatment, including surgery;</td>
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<td>■ biopsy; and,</td>
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<td>■ endodontic treatment.</td>
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<tr>
<td>■ Minimise operative trauma</td>
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<tr>
<td>■ Sutures and oxidised cellulose (Surgicel™, etc.) are suitable adjuncts to achieve haemostasis</td>
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<tr>
<th>Post-operative</th>
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<tbody>
<tr>
<td>■ Do not prescribe NSAIDs or aspirin</td>
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<tr>
<td>■ If prescribing a course of antibiotics (not including a single prophylactic dose), the INR needs to be checked 72 hours after first dose.</td>
</tr>
</tbody>
</table>


For a detailed list of references, please see the original document.