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Dental extractions in patients on antiplatelet therapy. A study conducted by the Oral Health Department of the Navarre Health Service (Spain)

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Abstract

Objectives: Antiplatelet drugs are used to treat and prevent a wide range of cardiovascular pathologies and/or cerebrovascular accidents. Although the use of anticoagulants in dental extractions is highly protocolized, a clear control method has not yet been established for antiplatelet drugs. This study is directed at evaluating the clinical consequences of extractions in patients on antiplatelet therapy. **Study design:** The Oral Health Department of the Navarre Health Service-Osasunbidea conducted a trial on 155 patients who underwent dental extractions and were receiving antiplatelet therapy. The patients were not requested to interrupt the medication and local measures were taken to control potential haemorrhage. **Results:** No major haemorrhages were reported. One patient had a moderate haemorrhage that required emergency care. In the remaining patients the bleeding was controlled with local measures. With regard to subsequent bleeding, no differences were observed between the various antiplatelet drugs used. The only statistically significant relationship found was between bleeding and the number of teeth extracted. **Conclusions:** It can be concluded that no more than 3 teeth should be removed at any one time, and for multiple extractions, the teeth should be adjacent to each other.

Key words: *Dental extractions, antiplatelet drugs.*

Introduction

Antiplatelet drugs are used to prevent and / or treat thromboembolic disorders, which play a key role in cardiovascular diseases. Given the fact that the anti-aggregant mechanism of action consists in inhibiting the platelet function by preventing aggregation, the initial phase of haemostasis (1), use of these drugs can make patients more susceptible to haemorrhages. This is of vital importance in the daily practice of dentists, particularly when performing surgery, such as dental extractions.

In the past, a bleeding time analysis was conducted in order to assess the haemorrhage risk level for these patients. This test was subsequently replaced by more sophisticated ones such as the PFA-100 or the platelet aggregation measurement by the impedance method. However, as Brenan et al. (1) have indicated, there is no analytical test which serves to conclusively evaluate the risk of bleeding in these patients. At the Oral Health Department of the Navarre Health Service - Osasunbidea, we undertook to conduct a study on those patients undergoing routine dental extractions and who were also receiving antiplatelet therapy. The study was directed at monitoring and controlling the patients' progress and their haemorrhagic response to normal dental extractions, using simple techniques and procedures.

Material and Methods

We monitored the progress of 155 consecutive, patients on antiplatelet therapy who underwent dental extractions at the Oral Health Department of the Navarre Health Service - Osasunbidea. Normal procedures were followed for the anaesthesia and dental extractions, which were performed by 4 dentists from the Department. An intra-alveolar gel plug (Gelatamp®) was then applied to the extraction site and a dry gauze was pressed down on top. The patient was monitored for 10 minutes and was then sent home with a gauze pad on the wound and the usual post-extraction written instructions (hold the gauze in place with firm pressure for 1 hour, no mouth rinsing, liquid or soft cold diet for the first 24 hours, etc). After at least 24 hours had elapsed, the patient was contacted by phone to investigate how he/she was progressing and a record was made as to whether the patient had experienced any problems and, if so, the particular problems reported.

The following was recorded in the data collection notebook: professional performing the treatment; patient's social security details; age; gender; medical condition for which the antiplatelet therapy was prescribed; antiplatelet brand name and dose level; whether or not the patient had stopped taking the drug a few days before the extraction (if so, the number of days involved); brand name of the anaesthetic used; amount of anaesthetic; anaesthetic technique; number of teeth extracted

and which teeth involved; type of extraction performed (simple, laborious or surgical); post-extraction attitude; monitoring after 10 minutes; monitoring by phone 24 hours later with three possibilities:

- a) No problems
- b) Still bleeding (with a recommendation for the patient to go to the Oral Health Department)
- c) Bleeding did occur and had been controlled. This in turn was sub-divided into 4 options:
 - 1- Plugging with gauze
 - 2- Plugging with gauze with Amchafibrin®.
 - 3- Mouth rinsing with Amchafibrin®.
 - 4- Visit to accident and emergency (A&E)

The study was approved by the Clinical Research Ethical Committee of the Navarre Health Service.

The mean age was 68.3 years (C.I. of 95% = 66.6 to 70.1 years), with a range from 32 to 91 years. 125 patients were male (80.6%) and the remaining 30 were female (19.2%).

Table 1 shows the principal pathologies for which the patients were taking antiplatelet therapy, whilst Tables 2 and 3 indicate the percentages of use for the different antiplatelet drugs and the different products available in the market.

Table 1. Pathologies for which the patients were taking antiplatelet therapy.

Pathology	% of patients
Diabetes (primary prevention)	7.3
Acute coronary syndromes	26.6
Angina	7.3
Fibrillation	4.0
Myocardiopathy	1.6
Coronary angioplasty	2.4
Autocoronary vein graft	0.8
Ischemic cerebral vascular disease	15.3
Peripheral arterial disease	15.3
Other symptoms	19.4

Table 2. Antiplatelet drugs percentage of use.

Antiplatelet drug	N° of patients	% of patients
Acetylsalicylic acid	118	76.3
Clopidogrel	20	12.8
Ticlopidine	2	1.3
Triflusal	15	9.6

Table 3. Antiplatelet drug brand percentage of use.

Antiplatelet drug	N° of patients	% of patients
AAS 100®	5	3.2
Adiro 100®	88	56.4
Adiro 300®	18	11.6
Bioplak 125®	1	0.6
Tromalyt 150®	5	3.2
Tromalyt 300®	1	0.6
Iscover 75®	10	6.5
Plavix 75®	10	6.5
Ticlopidine EFG	2	1.3
Disgren®	15	9.7

134 patients continued with their anti-aggregant treatment, whilst the remaining 22 patients interrupted the therapy a few days before the extraction, a mean of 4.9 days before the dental extraction appointment. In 98.7% of the cases, 1% Ultracain® was used as an anaesthetic, whilst Scandinibsa® was used in the remain-

ing 1.3% cases, the latter being a vasoconstrictor-free anaesthetic. An infiltration technique was employed in 138 cases and nerve block anaesthesia was used for the 17 remaining patients. 69.2% of the patients were injected with 2 anaesthetic cartridges (3.6 cm³); 1 cartridge was used for 28.8% (1.8 cm³) and an intermediate amount of anaesthetic was used for 1.9% of patients (3.3 cm³).

A total of 222 teeth were extracted from the 155 patients: 119 anterior teeth (53.8%); 57 premolars (25.8%); and 45 molars (20.4%). The upper lateral right incisor was the most frequently extracted tooth (13 times), followed by the upper right canine (12 times), the lower right central incisor, the lower left first premolar and the upper left second premolar (Fig. 1).

The mean number of teeth extracted per session was 1.4 teeth; on 107 occasions only one tooth was extracted; on 31 occasions two extractions were made; and on 15 occasions three extractions were performed, whilst four teeth were simultaneously extracted on two occasions. The dental extraction was simple in 90.4% of patients, laborious in 7.1% and surgical in 1.9% of these patients. The data were compiled in an Excel 2003 spreadsheet

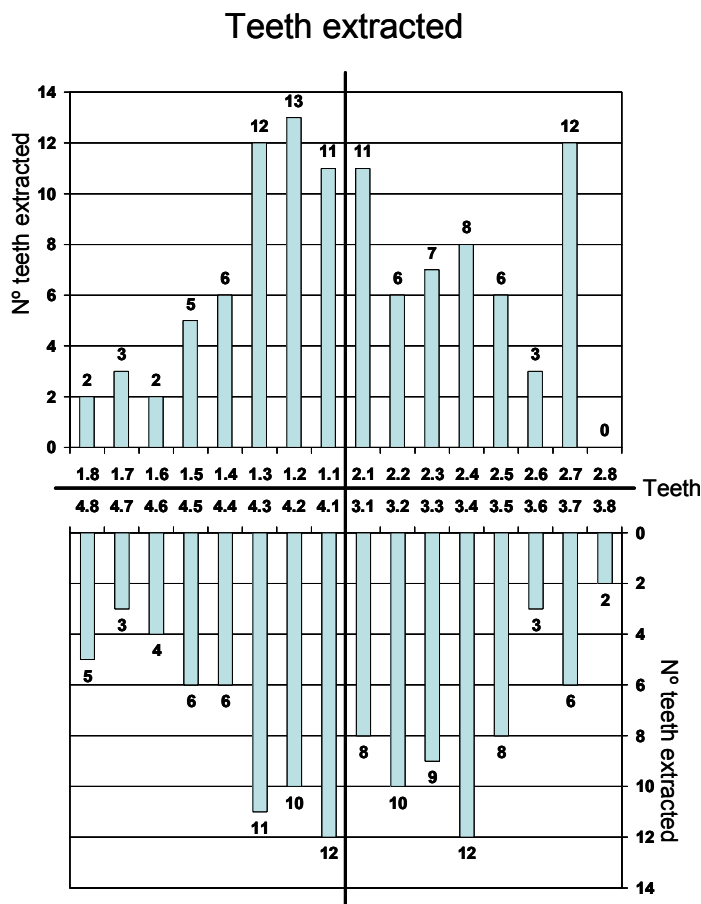


Fig. 1. Teeth extracted and number of extractions.

and formulas were used to calculate the descriptive statistics for the cases. The Windows 14.0 SPSS program was also used for the analytical statistics, using the χ^2 test for comparison between proportions, and Fisher's exact test when the χ^2 test could not be used. The statistical significance was determined when "p" was equal to or less than 0.05.

Results

In the check made 10 minutes after extraction, only one patient was found to be bleeding, and this was controlled with a gauze with Amchafibrin®, with no subsequent problems. In the phone check made 24 hours later, we found that 83.3% of patients had experienced no problems at all, whilst 16.7% (26 patients) reported "bleeding which they had controlled". Of these 26 patients: 20 had simply controlled the bleeding by applying and pressing down with a fresh, dry gauze; 1 had gone to A&E and been given one suture; whilst the other 4 patients reported as follows:

- a) The haemorrhage had stopped by itself.
- b) With mouth rinses of water, vinegar and salt.
- c) And the same patient reported slight bleeding at night on one occasion and, on another occasion, bleeding after 24 hours, which stopped without plugging the extraction site.

Finally, one patient reported that he had "bled and controlled the bleeding" but made no further comments. Of the 26 patients that had bled and controlled the bleeding, 3 patients had interrupted the antiplatelet therapy on their own decision; they were taking a daily dose of 100 mg of Acetylsalicylic acid (ASA) which they stopped taking, on average, 6 days before the extraction. Two of these patients had 3 teeth removed and the other patient had just 1 tooth removed.

These 26 patients had the following gender distribution: 18 male (69.2%) and 8 female (30.8%). Although this distribution appears different from the original population, no significant difference was found (Fischer's exact test $p=0.093$).

The 26 patients who reported on the phone that they had bled and controlled the bleeding were taking the following antiplatelet drugs: 22 were taking ASA (84.6% of those reporting some haemorrhage), 2 were taking clopidogrel (7.7% of these 26 cases) and a further 2 were taking triflusal (again 7.7% of the total of 26 cases). This distribution has no statistically significant differences ($\chi^2=1.483$, $p=0.686$) with the distribution shown in Table 2 corresponding to all the patients of this present study. Of the 22 patients taking ASA, and who reported some haemorrhage, 21 were taking a dose of 100 or 150 mg/day, whilst a further patient had a higher dose of 300 mg/day; there were no statistically significant differences with regard to the ASA dose level and the possible haemorrhage ($\chi^2=2.724$, $p=0.099$).

The type of extraction performed on these patients was surgical for one case (3.8% of the 26 cases), laborious on 2 occasions (7.7%) and simple for the remaining 23 cases (88.5% of the 26 cases); neither did these results give any statistically significant differences ($\chi^2=0.626$, $p=0.731$). In all cases, infiltration anaesthesia was performed with 1% Ultracain®.

With regard to the 26 patients who reported on the phone that they had bled and controlled the bleeding, the following extractions had been performed: 1 case of 4 extractions, 7 cases of 3 extractions (2 patients had stopped taking the antiplatelet therapy), 4 cases of 2 extractions and 14 cases of just one tooth extraction (1 patient had interrupted the antiplatelet therapy). Here a statistically significant difference was found ($\chi^2=12.559$, $p=0.01$).

Discussion

Over the last few years the recommendation has been to continue with the antiplatelet therapy during dental extractions (1-6), and we have worked along these lines in our study; the 14 patients who interrupted their antiplatelet therapy did so on their own initiative, based on former beliefs and criteria, and never by recommendation of the Oral Health Department professionals.

As part of the Navarre Health Service - Osasunbidea, the Oral Health Department operation is typical of that of any National Health System dental clinic. Patients come to the clinic of their own free will (or are referred by the Primary Care doctor, or by their private dentist) for a dental extraction for any type of pathology (7). Due to the fact that the patients in our study had a mean age of 68.3 years, that there is no Clinical Analysis Laboratory at the centre in which the Oral Health Department is located, and that getting to the clinic is not always easy due to the geographical dispersion of the Community, we were obliged to dispense with performing a pre-extraction analysis. This was further supported by the fact that there is no analytical test that serves to predict post-extraction haemorrhages in those patients taking aspirin as an antiplatelet drug, as indicated by Brennan et al (1). Along these same lines, Aframian et al. (5) indicated that laboratory tests are not normally recommended for patients taking aspirin as an antiplatelet drug and who are to undergo dental extractions.

There is little literature referring to dental extractions in patients taking antiplatelet drugs, and the majority of the studies available exclusively, or almost exclusively, refer to the use of aspirin or acetylsalicylic acid (1-5). Although ASA is actually the most used antiplatelet drug (76.3% of the study patients), it can also be observed that almost one quarter of our patients used a different antiplatelet drug, a circumstance which coincides with the observations of other authors (6). Whilst Marimoto et al. (6) indicate aspirin, ticlopidine, cilostazol

and dipyridamol in descending order of use of platelet antiplatelet drugs, in our study although ASA is also shown to be the most used drug, this is then followed by clopidogrel, triflusal and ticlopidine, as can be observed in Table 2. During our study, no particular antiplatelet drug was found to promote haemorrhages more than another; neither were the different ASA dose levels seen to be associated with a higher or lower post-extraction haemorrhagic risk.

Of the works published to date on dental extractions in patients receiving antiplatelet therapy, this present study involves the highest number of patients.

Unlike other authors (3,6) we did not include tooth-socket suturing as a means of achieving local haemostasis, this is in line with the work of Al-Mubarak et al. (8) who do not consider suture to be normally necessary, only on a case by case basis and depending on the extension of the trauma. In our study, the wound was sutured for those patients undergoing surgical extractions.

At first sight, the results appear poor compared to other studies (6) which recorded 2.2% post-operative haemorrhages, or none at all in the case of other authors (3). However, our study was designed to record anything the patient considered to be anomalous as an anomaly, despite the fact that the application of a gauze pressure pack for a longer duration of time cannot really be considered anomalous, as occurred in 20 cases in which the patients simply applied a fresh dry gauze plug and which was sufficient to resolve the possible haemorrhage. This leaves just 5 cases, accounting for 3.2% of patients, of which only one patient actually went to A&E (0.6%), as the other 4 patients reported that they did the following: "rinses with water, vinegar and salt", "the haemorrhage stopped by itself", "it bled a little after 24 hours" and "it bled a little during the night". In other words, the values for what could be considered to be an unexpected or uncontrolled haemorrhage are between 0.6 and 3.2%, which are closer to those values recorded for other studies.

We would underscore the fact that, amongst those patients applying a fresh dry gauze, 20 patients in all, 3 had interrupted the antiplatelet therapy, an average of 6 days before.

There is a clear relationship between the number of extractions in the same session and the subsequent haemorrhage, for which a statistically significant result was obtained; the more teeth removed the greater the risk of haemorrhage.

This present work reaffirms the fact that local measures are sufficient to control post-extraction haemorrhages in patients receiving antiplatelet therapy.

It seems advisable to be cautious with regard to the number of teeth to be extracted during the same session. We would advise not extracting more than 3 teeth

at a time, and that these should either be adjacent or correlative, not in different parts of the dental arch. For molar teeth, no more than two adjacent teeth should be extracted.

For further studies, the method to monitor or evaluate the post-operative haemorrhage should be refined.

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