International Journal of Scientific Trends- (IJST)
ISSN: 2980-4299
Volume 1, Issue 3, December, 2022
Website: https://scientifictrends.org/index.php/ijst
Open Access, Peer Reviewed, Scientific Journal

Management of Dental extraction in patients received multiple therapy of antiplatelet

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Abstract

Background: Antiplatelet therapy involves giving antiplatelet drugs to patients to prevent thrombosis, either prophylactically or in patients undergoing percutaneous coronary intervention. This study examined the effectiveness of a tooth extraction approach in dual antiplatelet patients.

Material and Methods: There were a total of 100 individuals who had dental extractions investigated. Evaluations were done of the epinephrine fraction and adenosine fraction of collagen with operative surface, the post-surgical measures, and the adverse consequences. As post-surgical therapies, all of the patients were given alveolar sutures and gauzes that had been impregnated with tranexamic acid. The student's t-test and the Pearson correlation coefficient were utilized to do quantitative variable comparisons, and descriptive statistics were calculated and analyzed as a result. We regarded a P value of less than 0.05 to be significant.

Results: Both the epinephrine fraction, which was measured at 302 ± 44.3 seconds with a range of 150 to 350 seconds, and the adenosine fraction, which was measured at 120.3 ± 33.23 seconds with a range of 120-250 seconds, were measured to be greater than the usual range. Because of the post-surgical precautions that were followed, not a single patient experienced any post-operative complications such as bleeding, hematoma, or infection.

Conclusion: In patients receiving dual antiaggregant therapy, dental extraction was performed safely by using non-resorbable sutures and gauze impregnated with tranexamic acid, which the patient held in place for 20 minutes.

Keywords: Dental extraction, antiplatelet, management epinephrine

Introduction

Through the formation of fibrin, hemostasis is able to stop the loss of blood (clotting). This process consists of three stages: the vascular stage, during which neurogenic vasoconstriction inhibits blood flow for a period of twenty seconds(1). Platelet thrombus formation happens

simultaneously with platelet aggregation, which concentrates numerous components that are essential for the third phase of plasma coagulation(2). This phase is a sophisticated chain of proteolytic processes that induces fibrin clotting within 20 seconds(3). The activation of coagulation factors, which include blood vessel, platelet, and blood protein secretions, is the first step in the process of blood clot formation(4). The dual antiplatelet treatment consists of clopidogrel and aspirin and has two indications: the prevention of thrombotic cerebrovascular accidents and acute myocardial infarction in patients who have acute coronary syndromes or who are undergoing percutaneous coronary intervention(5). Both of these indications are for patients who are currently being treated for acute coronary syndromes. Platelets play an important role in thrombotic events; medicines that suppress platelets can stop these processes from happening(6). According to a large body of research, taking aspirin on a regular basis can help avoid vascular issues. By acetylating the serine hydroxyl group of the enzyme, aspirin is able to limit the activity of cyclooxygenase(7). Clopidogrel is an antiplatelet medicine that is manufactured from thienopyridine. It prevents the aggregation of platelets that is triggered by adenosine diphosphate. Clopidogrel was put to the test in a trial that compared a daily dosage of 400 mg of aspirin against a dosage of mg of clopidogrel(8). It has been demonstrated that clopidogrel is superior than aspirin in preventing cardiovascular mortality and myocardial infarction. This benefit was only preserved in those who exhibited symptoms of peripheral artery disease(9). Since aspirin and clopidogrel work in different ways, it was thought that taking both of them would result in an increase in the prevention of cardiovascular disease(10). Treatment for bleeding and hematoma is essential for individuals on antiplatelet medication who require tooth extractions. During oral surgery, it is possible to lessen the amount of bleeding that occurs during and after the procedure(11). In the course of this study, an approach to dental extraction in patients on dual antiplatelet therapy was analyzed.

Material and Methods

Samples

One hundred patients who were scheduled to have tooth extractions at one of the specialist clinics run by dentists in the province of Wasit participated in the research. These individuals were recruited from one of the clinics in the province. Participants in the study were required to have a history of a myocardial infarction or another form of heart disease that necessitated coronary revascularization as well as the implantation of a stent within the previous year. All of these patients were recruited after they had been hospitalized for at least one week due to their condition. Every patient was given a prescription for two platelet antiaggregant medications to use as a preventative step against the possibility of thromboembolic events occurring. Every individual who took part in the research project signed a waiver stating that they were aware of the risks involved and gave their informed consent to take part. Patients who were already on any kind of medicine that might affect their ability to clot blood were not permitted to take part in the study. Patients who required extractions that involved osteotomies

were not included, nor were patients who were diagnosed with disorders that led in a terminal diagnosis or substantial risks of mortality. Patients who required extractions were not included.

Parts for evaluation

Numerous components of the experiment, such as the epinephrine fraction, the adenosine fraction, the collagen surgical surface, postsurgical measures, and adverse effects, were subjected to analyses. The epinephrine fraction and the adenosine fraction are two figures that are derived from a test that evaluates platelet function using a platelet function analyzer that aspirates blood through two discs containing different agonists to platelets. These two figures are referred to by their respective names as the epinephrine fraction and the adenosine fraction. The third figure represents collagen. It provides a numerical representation of the length of time necessary to close the opening on the inside of the disc. If we are talking about the adenosine samples, the usual values might fall anywhere between 70 and 120 seconds.

Before surgery

Platelet function test times are prolonged in cases of thrombocytopenia or thrombopathia, and so the delay in obturation with collagen/adrenalin is characteristic of patients who consume aspirin or other non-steroidal anti-inflammatory drugs, while the prolongation of obturation time with collagen- the adenosine samples occurs in patients consuming antiaggregant inhibitors of the adenosine samples. Platelet function test times are prolonged. In order to carry out surgical surface evaluation, points were awarded for each different kind of tooth as well as the area of the alveolar surface that it occupied. The upper and lower incisors each received a score of two points, the canines and premolars each received a score of 2.5 points, and the molars each received a score of three points. These scores were used to investigate the possibility of a connection between the occurrence of problems and the portion of the alveolar surface that was occupied by the tooth.

After surgery

All of the patients were given the same post-operative care and instructions. After the hematologist had provided a positive report on the findings of the coagulation test, only then did surgical procedures get underway. With the exception of individuals who had an intolerance to local anesthetics or an excessive sensitivity to epinephrine, the local anesthetic that was administered was articaine mixed with 1 milligram of epinephrine. All of the alveolae were stitched together using 2.5–3 silk and a curved triangular needle. This was done with the intention of securing the gingival margins and, as a result, improving the hemostasis. The patient was given gauze that had been impregnated with tranexamic acid and asked to bite on it for the following twenty minutes after the sutures had been put. Following that, the patient was examined once again to ensure that the bleeding had been brought under control after the initial attempt. Before being released from the hospital, the patient was provided with an ampoule of tranexamic acid and a packet of sterile gauzes when it was verified that this was

the correct diagnosis. Throughout the course of the research, the following secondary effects were taken into account: none (zero points), bleeding (a), oedemic (b), inflammation (c), and others (d).

Statistical analysis

The student's t-test and the Pearson correlation coefficient were utilized so that comparisons could be made between quantitative factors. The results of these comparisons led to the compilation and analysis of descriptive statistics. We determined that there was a statistically significant relationship between the two variables when P was less than 0.05.

Results

There were a total of one hundred patients, with fifty-one of them being female and forty-nine of them being male. The patients' ages varied from forty-five to seventy-seven (the mean age was seventy-five years and six months), and there were fifty-one female patients and forty-nine male patients. A mean age of seventy-five years and six months was found among the participants. The adenosine fraction in seconds was measured at 120.3 ± 33.23 seconds, with a range of 120 to 250 seconds; on the other hand, the epinephrine fraction in seconds was measured at 302 ± 44.3 seconds, with a range of 150 to 350 seconds, and the P value for this comparison was 0.01(Figure 1).

Figure 1: patient no. 22 without treatment with adenosine intervention.

Both of the percent values were much greater than what may be considered to be the laboratory's average for that particular variable. Following the procedure, there was not a single patient who had any bleeding after the procedure. The values that were obtained for the surgical

surface varied from one to four points, with a value of 3.4±0.22 points being the mean value (Figure 2).

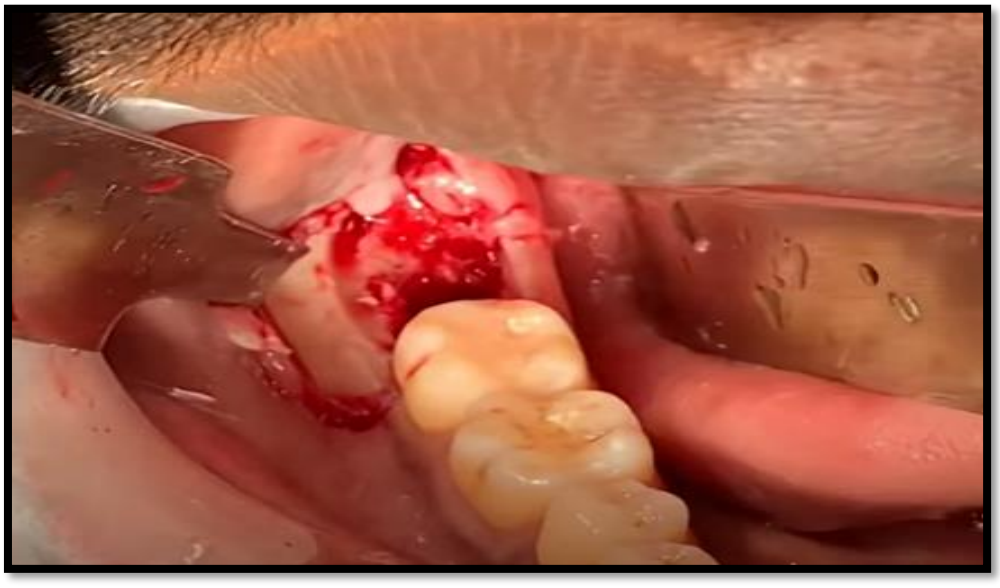

Figure 2: patient no. 20 with treatment with adenosine intervention.

There was a one-point range all the way up to a four-point range. In respect to sex, there were no differences that could be considered statistically significant (p = 0.78). As a direct result of the post-surgical care that was provided, not a single patient had post-operative problems such as hematoma or infection after having teeth extracted. Before being released from the hospital, the patient was provided with an ampoule of tranexamic acid and a packet of sterile gauzes when it was verified that this was the correct diagnosis. Throughout the course of the research, the following secondary effects were taken into account: none (zero points), bleeding (a), oedemic (b), inflammation (c), and others (d) (figure 3) (Figure 4).

Figure 3: patient no. 13 without treatment with adenosine intervention.

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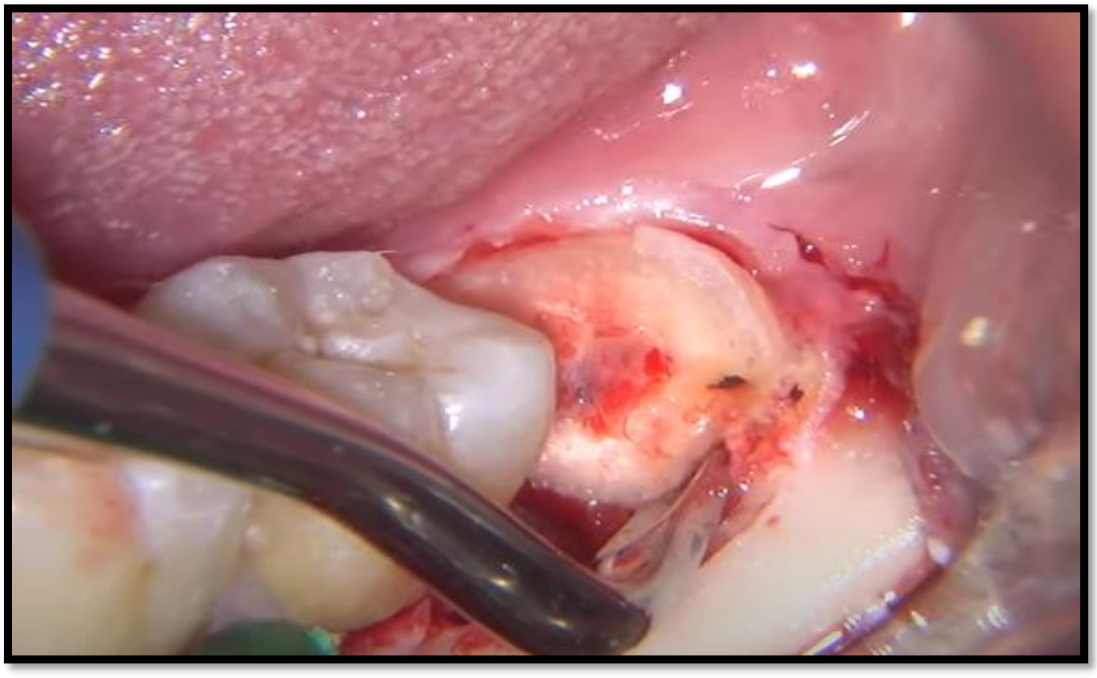

Figure 4: patient no. 16 with treatment with adenosine intervention.

Discussion

When treating patients who have issues with their platelet function, oral surgery must take into consideration the origin, severity, type, location, and extent of the condition(12). The accessibility of the surgical site for local hemostasis treatment will determine the risk. Both hemorrhage and hematoma have the potential to limit airflow, which places the patient's life in jeopardy(13). The most effective strategies for reducing intra- and post-operative bleeding include minimizing trauma, avoiding flaps, utilizing surgical methods that encourage suturing and cauterization, and providing appropriate care for hemostasis(14). Within the preceding twenty-four hours after oral surgery, a hematological research and coagulation test has to be carried out. In the case that there is a series of extractions, the findings of the test should be valid for up to two weeks, taking into consideration the behavior of the patient after each session(15). After the two weeks have passed, a new coagulation test needs to be performed before any further extractions may take place. In this study on the activity of platelets, the effects of clopidogrel and aspirin led to an increase in the collagen/epinephrine fraction as well as the adenosine fraction. The platelet function analyzer known as the PFA-100 was investigated(16). We sampled one hundred antiplatelet-treated oral surgery patients ranging in age from 24 to 80. They had a bleeding time test with the Ivy approach, an international normalized ratio test on the same day, a Coagula-check one hour before surgery, and a PFA-100 evaluation(17). When compared to the conventional technique of determining bleeding duration, the PFA-100 platelet function analyzer demonstrated superior accuracy(18).

Anticoagulant drugs both speed up the bleeding process and raise the risk of post-operative bleeding(19). It is recommended by several dentists that patients cease taking these medications three days prior to oral surgery. Patients are put at risk for potentially catastrophic vascular problems if their pharmacological treatment is suddenly stopped(20). Antifibrinolytic medications have been reported to be used in oral surgery by a number of studies; however, the manner in which these medications are administered, the techniques that are used, and the timing might vary substantially(21). In order to prevent bleeding after surgery(22), some sources advise using antifibrinolytic medication in addition to drugs that stop bleeding. Some people feel that many people can effectively undertake surgical operations without breaking their regular anti-coagulation regimen and without additional medical intervention if tranexamic acid is administered locally as a post-operative antifibrinolytic medication for two days after the surgery(23). The fibrin found in human blood has been used in several hemostatic procedures. Because of its high price, fibrin gel is not commonly used to treat hemorrhagic patients in order to stop bleeding. According to several other studies, fibrin gel can't be used since it might allow viral infections. Platelets are a natural deposit for growth factors such platelet-derived growth factor(24), TGF-beta, insulin-like growth factor, and epidermal growth factor(25). Autologous platelet concentrate is used by a great number of doctors to assist anti-coagulation patients in recovering in advance of cardiovascular surgery, which has a considerable risk of bleeding. During the course of the tamponade, patients were instructed to gargle their saliva rather than spitting it out and to refrain from speaking(26). This method stopped the bleeding by keeping blood clots in place and allowing them to coagulate(27). Following the extraction process, Rojas et al. applied a tranexamic acid–soaked gauze tamponade to the area for ten minutes. Additionally, applying pressure for several minutes with gauze soaked in tranexamic acid immediately after having teeth extracted, and then following this up with mouthwashes every six hours for seven days(28). The topic of variable surgical sutures is another challenging one. Suturing should be avoided at all costs, and if it must be done, non-resorbable sutures should be used to limit the likelihood of inflammatory responses that might prevent blood from clotting(29). In the case of others, like as Brewer, the dentist may choose to use either resorbable or non-resorbable sutures, according on the requirements of the procedure and their level of expertise(30). When removing non-resorbable sutures, there is a risk of bleeding, which necessitates a post-operative visit to be scheduled 8 days after the procedure(31). During this experiment, every extraction that was performed required a suture. In order to improve hemostasis and seal the gingival boundaries, a 2-0 silk suture was used in conjunction with a curved triangular needle(32). Following an extraction, sutures were removed between 8 and 10 days later. The duration of treatment is another contentious issue; estimates range from six months to two years, with twelve months being the standard(33). In the current study, the incidence of issues was rather low when comparing persons who received basic antiagreggation treatment to those who received combination treatment.

Conclusion

Dental extraction in patients receiving dual antiaggregant therapy was made safe by using a protocol that kept trauma to a minimum, used non-resorbable sutures, and applied an antifibrinolytic agent gauze impregnated with tranexamic acid that the patient held in place under pressure for 20 minutes.

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