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RETROSPECTIVE STUDY OF PATIENTS UNDER ANTICOAGULANTS REPORTING FOR DENTAL EXTRACTIONS

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ABSTRACT:

Background :

Anticoagulants are medicines that help prevent blood clots. They're given to people at a high risk of getting clots, to reduce their chances of developing serious conditions such as strokes and heart attacks. Warfarin, which acts by antagonizing the effect of vitamin K, is one of the most commonly used oral anticoagulants. Its effect is measured by international normalized ratio (INR), which is a measure of a patient's prothrombin time divided by the laboratory control value of prothrombin time.Continuous oral anticoagulant therapy has been used to decrease the risk of thromboembolism for more than half a century, prolonging the lives of thousands of patients. Heparin is used in anticoagulation bridge therapy, as it has a faster onset and offset action compared with warfarin. Stopping warfarin can increase the risk of cerebrovascular accidents (CVA).

Aim :

The aim of this study is to evaluate the patients under anticoagulants reporting for dental extraction.

Materials and Methods:

Data was collected from DIAS(Dental Information Archiving Software) and management system records of patients under anticoagulants reporting for dental extraction in an outpatient population between September 2020 and February 2021 which was entered in the methodological manner. A total of 127 patients under anticoagulants reported for dental extraction were included in the study.

Statistical analysis:

Data analysis was carried out using SPSS software version 23. Chi square test was used for test associations between categorical variables. Variables were expressed in terms of frequency, percentage and bar graphs were plotted and the p value < 0.05 was considered as significant.

Results:
Among 127 patients under anticoagulants reported for dental extraction to saveetha dental college, 69 patients were males and 58 patients were females. 27 patients were in the age group between 20-30years, 29 patients were between 31-40years, 28 patients were between 41-50years, 27 patients were between 51-60years and 16 patients were between 61-70years were reported for dental extraction. Out of 127 patients, 52 patients took warfarin anticoagulants and 75 patients took heparin anticoagulants.
Conclusion:
Based on the results obtained from the present study it can be concluded that, postoperative bleeding events occur significantly more frequently in bridged patients (heparin) than in patients with un-paused vitamin K antagonist medication(warfarin). It therefore appears reasonable to continue vitamin K antagonist medication preoperatively for the investigated class of small-to-medium sized oral surgery cases.

Keywords: Anticoagulants, Bleeding, Blood clot, Heparin, Warfarin, Innovative study

INTRODUCTION:

Anticoagulants are medicines that help prevent blood clots. They're given to people at a high risk of getting clots, to reduce their chances of developing serious conditions such as strokes and heart attacks(1). A blood clot is a seal created by the blood to stop bleeding from wounds(2). While they're useful in stopping bleeding, they can block blood vessels and stop blood flowing to organs such as the brain, heart or lungs if they form in the wrong place(3). Anticoagulants work by interrupting the process involved in the formation of blood clots. They're sometimes called "blood-thinning" medicines, although they don't actually make the blood thinner(4). The most commonly prescribed anticoagulant is warfarin(5).

Warfarin, which acts by antagonizing the effect of vitamin K, is one of the most commonly used oral anticoagulants(6). The drug can be absorbed completely and reaches its peak in 1 hour after ingestion. Albumin is bound to circulating warfarin, and the half-life of warfarin is approximately 36 hours(7). Warfarin has been used to decrease thromboembolism in millions of patients worldwide(8). Its effect is measured by international normalized ratio (INR), which is a measure of a patient's prothrombin time divided by the laboratory control value of prothrombin time(9).

Continuous oral anticoagulant therapy has been used to decrease the risk of thromboembolism for more than half a century, prolonging the lives of thousands of patients. Many physicians recommend interrupting continuous anticoagulant therapy for dental surgery to prevent hemorrhage(10). Risk of bleeding has been found to be related to many factors, including the intensity of the anticoagulation and in some patients, related factors including age, hypertension, severe cardiac disease, and renal insufficiency and risk of postsurgical bleeding in patients taking warfarin was reported to be very low in cases of dental extractions, providing that the INR was within an acceptable range, when major bleeding does however occur, it can be uncontrollable with local measures(11)(12). These include stopping warfarin 2–3 days before the procedure, reducing warfarin dose, continuing warfarin, and measuring the INR and replacing warfarin with low molecular weight heparin(13). Heparin is used in anticoagulation bridge therapy, as it has a faster onset and offset action compared with warfarin. Stopping warfarin can increase the risk of cerebrovascular accidents (CVA)(14). Suspension of warfarin treatment may be responsible for the development of CVA in patients undergoing dental extractions(15).Innovative extraction techniques can help reduce the risk of bleeding.
Our team has extensive knowledge and research experience that has translate into high quality publications(16),(17),(18),(19),(20–29) (30),(31–33).(34,35)
The aim of this study is to evaluate the patients under anticoagulants reporting for dental extraction.

MATERIALS AND METHOD:

The retrospective study was conducted in Saveetha dental college, Chennai, India. Ethical approval was obtained from the Institutional review board prior to the start of the study. Internal validity includes age, sex, study design and methodology. External validity includes study outcome, research outcome and conclusion.

Data was collected from DIAS(Dental Information Archiving Software) and management system records of patients under anticoagulants reporting for dental extraction in an outpatient population between September 2020 and February 2021 which was entered in the methodological manner. A total of 127 patients under anticoagulants

reported for dental extraction were included in the study. Data sheets were reviewed and analysed individually. Data collected with following parameters like age, gender, patients under anticoagulants. The tabulation of data was done in excel sheet and imported to SPSS.

The collected data was divided into 5 age groups as 20-30, 31-40, 41-50, 51-60 and 61-70 years and was analysed using SPSS statistical software V.23. Data analysis was done using the chi-square test. P value was set 0.05 as level of significance.

RESULTS :

Among 127 patients under anticoagulants reported for dental extraction to saveetha dental college, 69 patients of 55% were males and 58 patients of 45% were females. 27 patients of 21.3% were in the age group between 20-30years, 29 patients of 22.8% were between 31-40years, 28 patients of 22% were between 41-50years, 27 patients of 21.3% were between 51-60years and 16 patients of 12.6% were between 61-70years were reported for dental extraction. Out of 127 patients, 52 patients of 40% took warfarin anticoagulants and 75 patients of 60% took heparin anticoagulants. Among 69 males, 29 patients took warfarin and 40 patients took heparin and 23 females, 23 patients took warfarin and 35 patients took heparin. At age group between 20-30years, 23 patients took warfarin and 4 patients took heparin, between 31-40years, 8 patients took warfarin and 21 patients took heparin, between 41-50years, 14 patients took warfarin and 14 patients took heparin, between 51-60years, 7 patients took warfarin and 20 patients took heparin and between 61-70years, only 16 patients took heparin.

FIGURE 1 : Gender

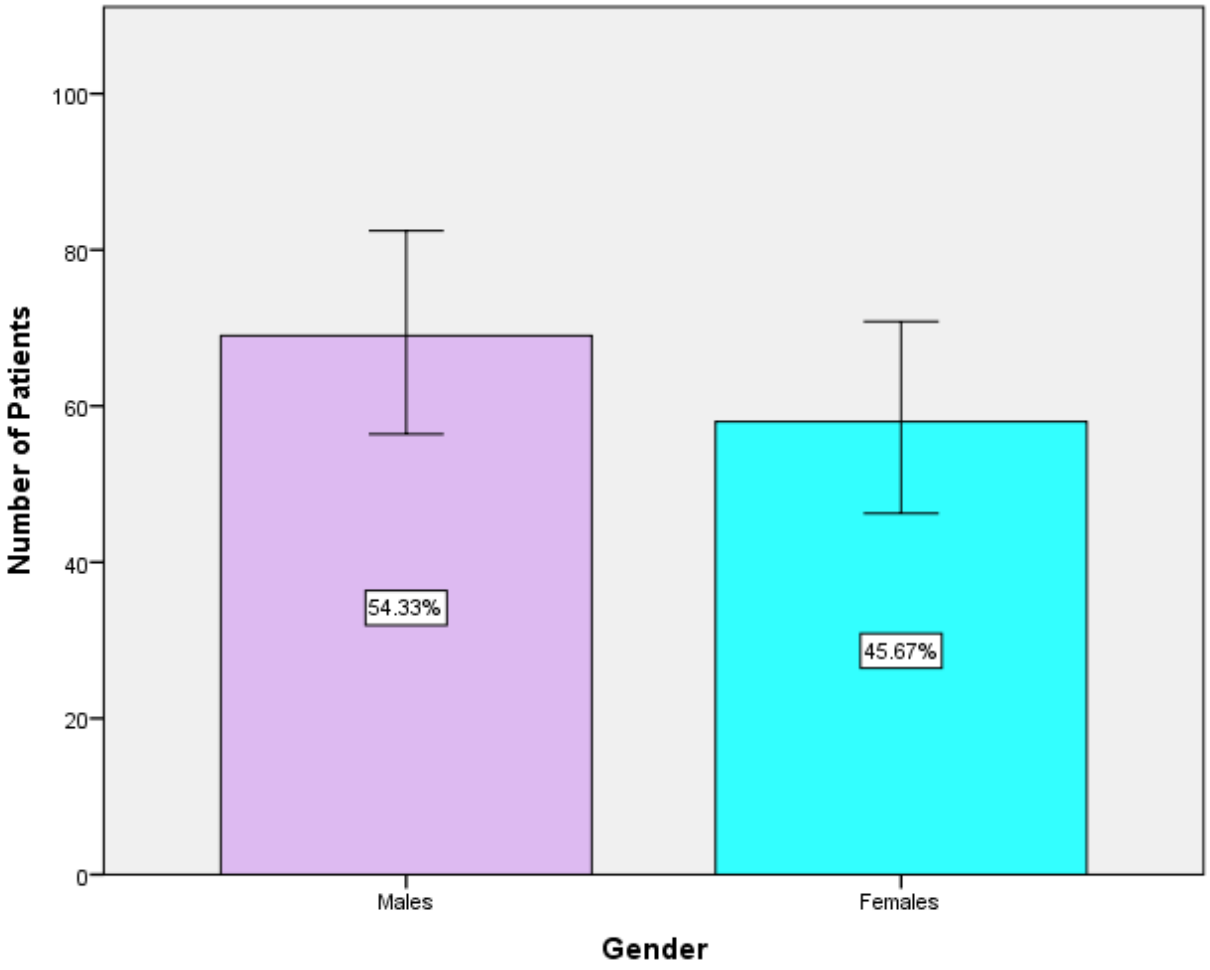

Figure 1: Bar graph represents the association between the gender and number of patients under anticoagulants reported for dental extraction. X- axis (gender) and the Y- axis (number of patients). Male patients (Purple) and

female patients(Skyblue). 69 male patients under anticoagulants were reported which is higher than 58 females patients. Chi square test was done and association was not significant (p value- 0.376; p>0.05) implying there is no major gender predilection in our study population.

FIGURE 2 : Age groups

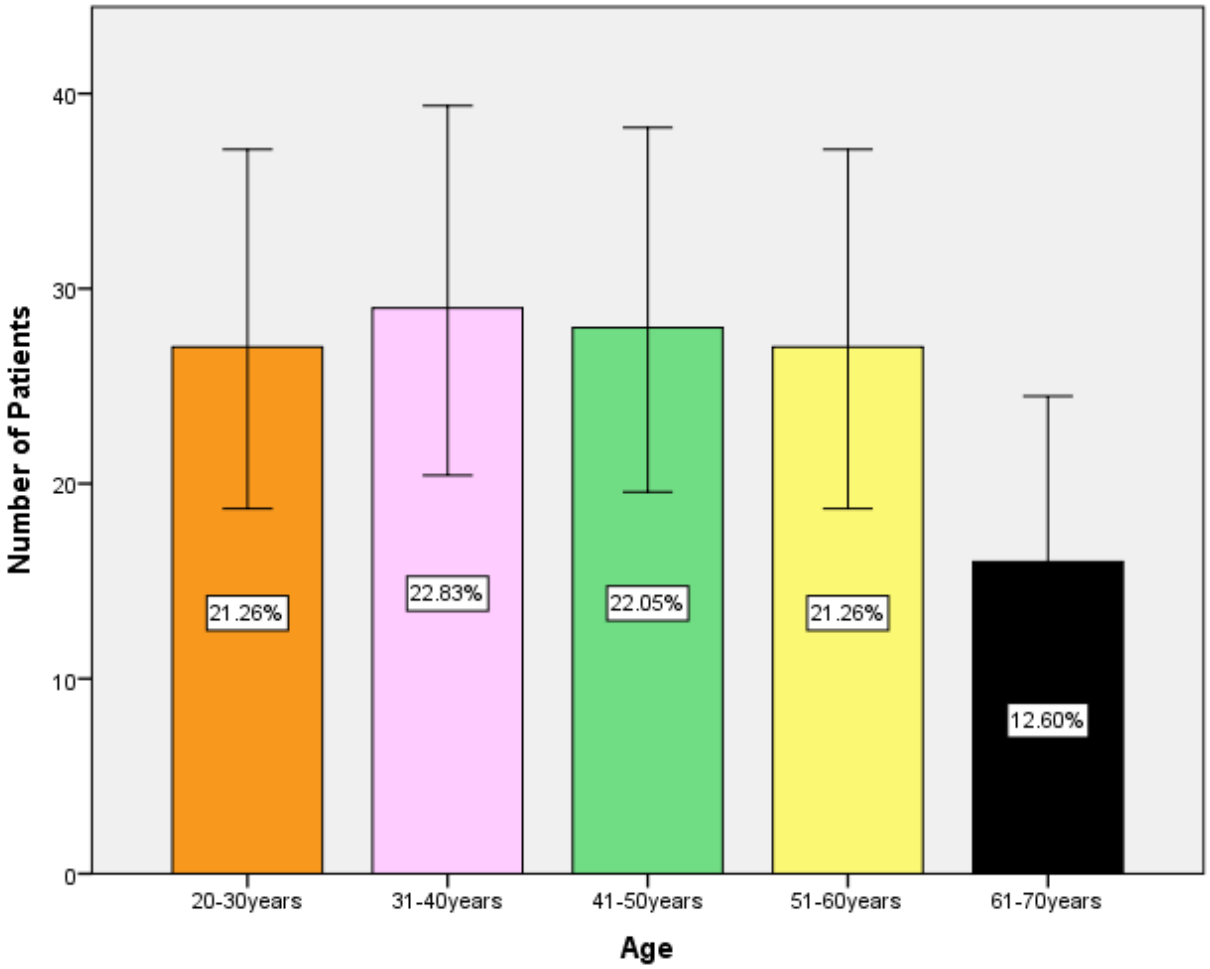

Figure 2: Bar graph represents the association between the age groups and number of patients under anticoagulants reported for dental extraction. X- axis (age groups) and the Y- axis (number of patients). 20-30years (Orange), 31-40years (Pink), 41-50years(green), 51-60years (Yellow) and 61-70years(Black). 27 patients were in the age group between 20-30years, 29 patients between 31-40years, 28 patients between 41-50years, 27 patients between 51-60years and 16 patients between 61-70years were reported for dental extraction. Chi square test was done and association was not significant (p value- 0.528; p>0.05) although more patients in the 31-40year age group.

FIGURE 3 : Anticoagulants

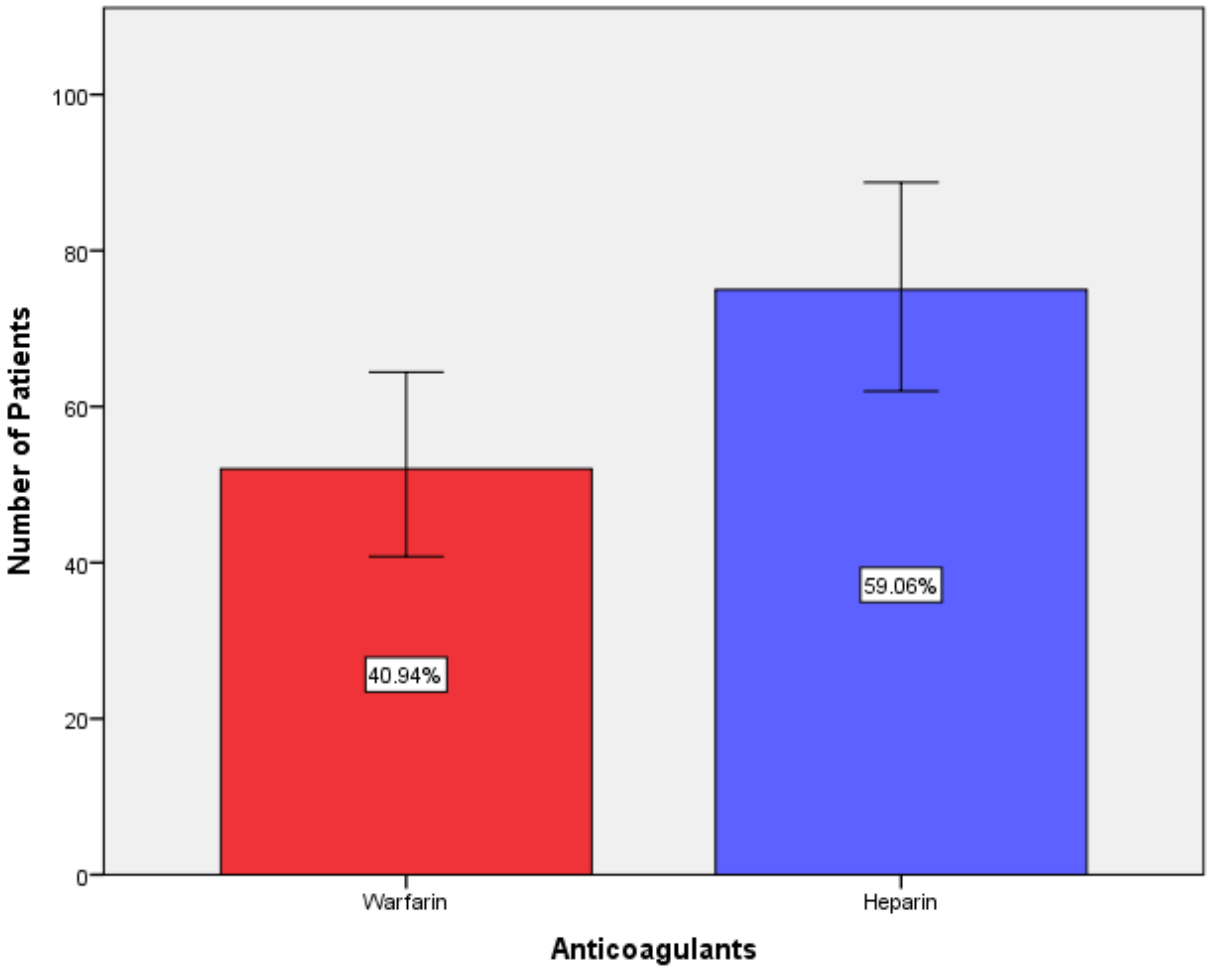

Figure 3: Bar graph represents the association between the type of anticoagulants and number of patients under anticoagulants reported for dental extraction. X- axis (anticoagulants) and the Y- axis (number of patients). Warfarin (Red) and Heparin (Blue). 52 patients took warfarin anticoagulants and 75 patients took heparin anticoagulants. Chi square test was done and association was not significant (p value- 0.528; p>0.05) although more patients took heparin.

FIGURE 4 : Gender and Anticoagulants

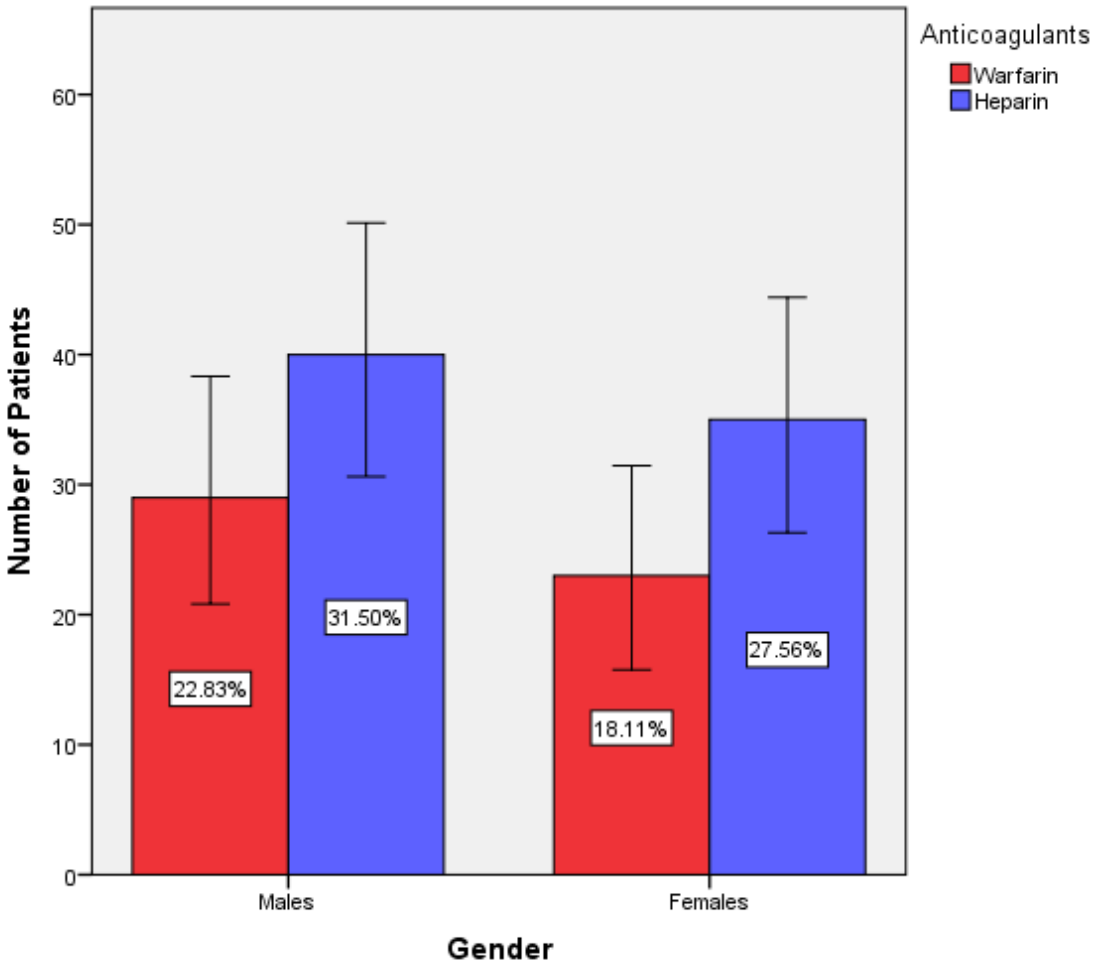

Figure 4: Bar graph represents the association between the gender and type of anticoagulants taken by patients. X-axis (gender) and the Y- axis (anticoagulants). Warfarin (Red) and Heparin (Blue). Out of 69 males, 29 patients took warfarin and 40 patients took heparin and 23 females, 23 patients took warfarin and 35 patients took heparin. Chi square test was done and association was not significant (p value- 0.376; p>0.05).

FIGURE 5 : Age group and Anticoagulants

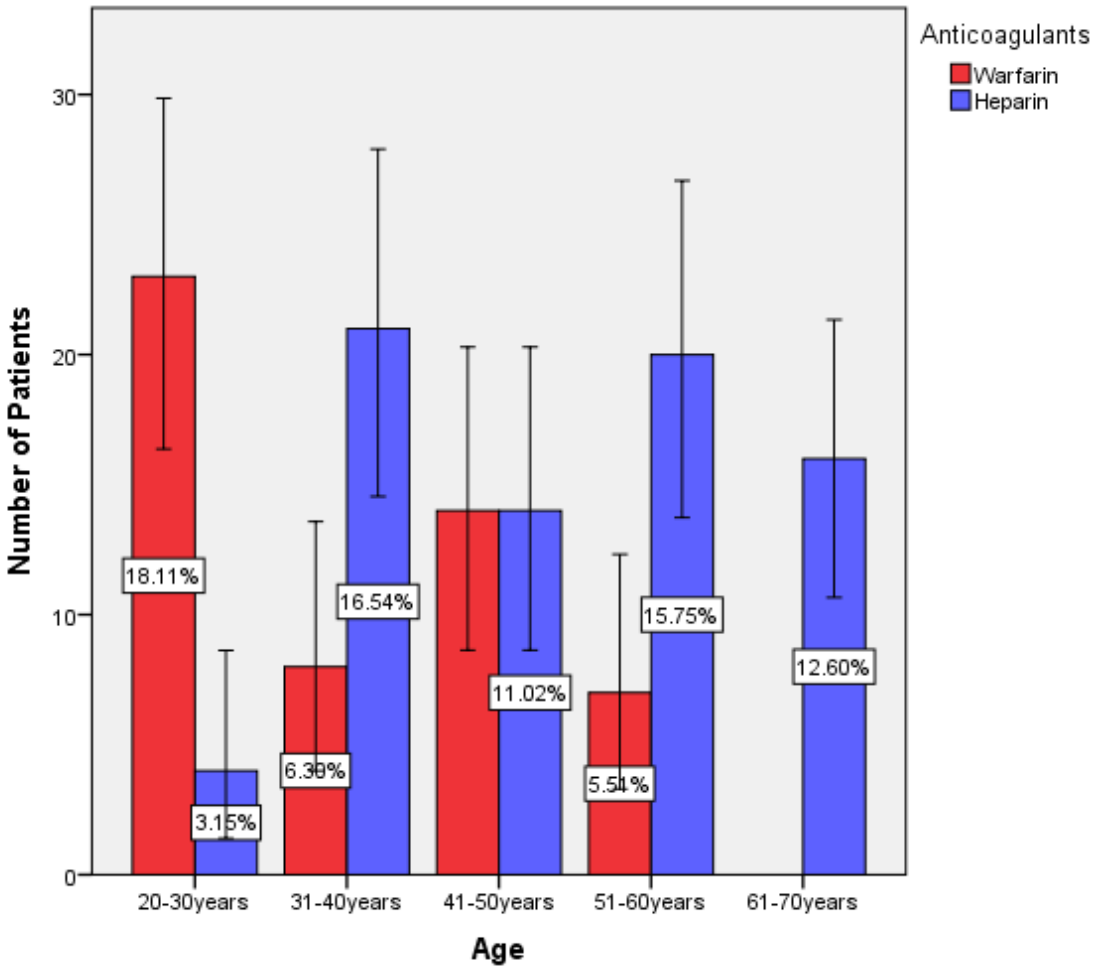

Figure 5: Bar graph represents the association between the age groups and type of anticoagulants taken by patients. X- axis (age groups) and the Y- axis (anticoagulants). Warfarin (Red) and Heparin (Blue). At 31-40years, 8 patients took warfarin and 21 patients took heparin. Chi square test was done and association was not significant (p value- 0.376; p>0.05).

DISCUSSION:

Anticoagulated patients continue to pose a challenge in everyday clinical practice. This is particularly true for surgical procedures, including oral surgery(36). On the one hand, discontinuation or Bridging of anticoagulation can lead to thromboembolic events with a potentially lethal outcome. On the other hand, intra- and postoperative bleeding can be burdensome for the patient and may complicate surgery and wound healing. Nevertheless it can be controlled sufficiently by local hemostatic measures in the majority of cases(37).

In patients who make continuous use of oral anticoagulant drugs, it is imperative to carry out careful recollection, as well as a multiprofessional clinical evaluation with regard to the risk and control of hemorrhagic or thromboembolic episodes(8). It is imperative to have the patient's degree of anticoagulation under medical control, and it must be checked periodically to verify whether the necessary hemostatic therapeutic level is being maintained(38,39). For this purpose, the prothrombin time is used, the result of which may be expressed in seconds, in prothrombin activity or in INR, which must be performed in a maximum interval of 4 weeks(40).

The INR should not be higher than 4.0, and preferably lower than 3.0, before the patient on an anticoagulant is submitted to dental procedures with high risk of bleeding(41). Dental surgical procedures indicate that for simple extractions, or when minimal bleeding is expected, an INR lower than 4.0 is acceptable. For cases of moderate bleeding, included and impacted third molar surgeries or multiple extractions, the INR should be reduced; in cases

where greater hemorrhage is expected, an INR lower than 3.0 is indicated; and when the INR is over 5.0, no surgeries should be performed(15).

Patients who receive warfarin management and undergo surgical procedure may be at risk of bleeding, and as a result, a range of guidelines exist relating to the management of such patients prior to surgical intervention(42). Patients should stop warfarin 5 days before any surgical intervention, and also that warfarin should be temporarily replaced with low molecular weight heparin as a bridge therapy(43). The probability for the occurrence of postoperative bleeding as well as the frequency of bleeding events were significantly higher in the Bridging group (Heparin) compared to the vitamin K antagonist group(Warfarin)(38). As expected, the INR was significantly lower in the vitamin K antagonist group than in the Bridging group, but surprisingly there were no significant differences found within the groups comparing bleeding and non-bleeding patients(13). The incidence of bleeding events in the heparin group was 59%, which is quite similar to our result. In contrast, the warfarin group, with an incidence of 41%. However, the bridging group consisted of 75 patients, and the vitamin-k-inhibitor group included 52 patients(44).

Oral anticoagulation should not be suspended during procedures with a low risk of bleeding. Patients at high thromboembolic risk without a high risk of bleeding should be bridged, while those at correspondingly low thromboembolic risk should not(45). In patients who are in the acute phase (3–6 months) after a thromboembolic event, all surgical procedures should be postponed if possible(46).

The retrospective study design led to discrepancies between the groups in terms of group size and composition. The extent and type of the surgical procedure varied between the groups and since operations were performed by different surgeons, the surgical techniques varied to a certain extent. Furthermore, a possible confounding factor of different platelet counts within the groups could not be included in the evaluation.

CONCLUSION:

Within the limitations of the current study, it can be concluded that postoperative bleeding events occur significantly more frequently in bridged patients (heparin) than in patients with un-paused vitamin K antagonist medication(warfarin). It therefore appears reasonable to continue vitamin K antagonist medication preoperatively for the investigated class of small-to-medium sized oral surgery cases. A close interdisciplinary collaboration between oral surgeons and other medicine specialists is essential to minimize perioperative risks for the patients. Continuing warfarin is associated with more blood loss compared with bridging therapy. Simple teeth extraction in patients on anticoagulant treatment can be performed safely without high risk of bleeding but providing that the INR is equal or less than 3.5 at the day of extraction. The INR value has a significant correlation with the amount of blood loss after extraction and presents a significant parameter for perioperative evaluation of patients on anticoagulation therapy.

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CONFLICTS OF INTEREST :

The authors declare no conflict of interest.

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