

Critically Appraised Topic (CAT)

Project Team:
5B-5
Project Team Participants:
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Clinical Question:
What Precautions need to be taken when treatment planning for a patient on Warfarin?
PICO Format:
P:
Medically Compromised patients
I:
Withholding Warfarin/Coumadin prior to surgery
C:
Not- Withholding Warfarin/Coumadin prior to surgery
O:
Well controlled surgical outcome
PICO Formatted Question:
In medically Compromised patients requiring invasive dental surgeries, does withholding Coumadin prior to surgery lead to a more controlled surgical outcome compared to continuous Coumadin use.
Clinical Bottom Line:
<ol style="list-style-type: none"> 1. It is the dentist responsibility to communicate with the physician to create an individualized treatment plan for medically compromised patients taking anticoagulant medication. 2. To avoid post-operative complication and maintain surgical success, its recommended that patient stop anticoagulant medications five days prior to implant placement to surgery 3. It's essential to measure INR pre and post dental implant surgery and for patients taking anticoagulant medication to assess the clinical diagnosis and modify treatment and medication if need.
Date(s) of Search:
09/15/2020 and 09/16/2020
Database(s) Used:
Pubmed
Search Strategy/Keywords:
Warfarin,dental implant, invasive surgery
MESH terms used:
Anticoagulant, warfarin, medically compromised. Dental implant
Article(s) Cited:

Madrid, Carlos, and Mariano Sanz. "What Influence Do Anticoagulants Have on Oral Implant Therapy? A Systematic Review." *Clinical Oral Implants Research*, vol. 20, 2009, pp. 96–106., doi:10.1111/j.1600-0501.2009.01770.x.

Douketis, James D. "Perioperative Management of Patients Who Are Receiving Warfarin Therapy: an Evidence-Based and Practical Approach." *Blood*, vol. 117, no. 19, 2011, pp. 5044–5049., doi:10.1182/blood-2011-02-329979.

Bacci, Christian, et al. "Safety of Dental Implant Surgery in Patients Undergoing Anticoagulation Therapy: a Prospective Case-Control Study." *Clinical Oral Implants Research*, vol. 22, no. 2, 2010, pp. 151–156., doi:10.1111/j.1600-0501.2010.01963.x.

Study Design(s):

Systematic Reviews, Clinical Practice Guideline, and Case Reports

Reason for Article Selection:

Article one: High level evidence and directly related to the clinical and PICO question

Article two: high level of evidence based on clinical guidelines, case report and supporting PICO question

Article 3: High relevance to the case, case report study

Article(s) Synopsis:

Article 1

The main goal for the study is to examine the consequences of stopping oral anticoagulation verses continuing it in patients going under implant placement treatment. The authors searched different references cited from articles published investigating the effects of anticoagulants. Nineteen studies were found including controlled clinical trials, randomized control trails and case reports. According to the article, minimally invasive dental procedures including dental implant placement should not require interrupting anticoagulant medication. However, the study cited many clinical guidelines referencing the importance and vital role of testing patient's INR before any dental surgery. Based on the study, "patients with INR of 3.5 or lower do not have stop their anticoagulant therapy for single implant placement, however for patients who have INR of 3.5 or higher anticoagulant medication dosage should be modified based on the physician decision." (Madrid, 2009). Moreover, the article states that placing an implant while patients taking anticoagulant medication is a highly debatable issue. The article concludes that there is no significant difference of prolonged bleeding after implant surgery between patients withholding anticoagulant and not withholding it. The study specifically mentioned that all articles that were investigated included single implant therapy without bone graft treatment or performing any extensive surgical flap. As a result, the authors declaring that the dentist should communicate with

the physician to create an individualized plan that suits patient needs based on medical history and medications. This will help better treatment plan and avoiding the risk of thrombosis and prolonged bleeding.

Article 2

The main aim for the study is to find appropriate answers to questions the authors has formulated. Questions including patient thrombosis and bleeding risk assessment, when anticoagulant therapy should be withheld, and if withheld when it should resume after surgery. The study answered those questions directly referencing to many clinical guidelines and cohort studies. In addition the article presented two cases to be investigated where patients are medically compromised one patient is going through a dental restoration and the other is undergoing colon resection surgery. The study formulated a chart guiding dentists and physician when it's appropriate to stop warfarin medication. Based on the study, flow-chart, and clinical guidelines implant placement treatment is an elective surgery that might require interrupting warfarin for five days prior to surgery. However, the study indicates that one day before the therapy the INR should be measured. "If INR is higher than 1.5 vitamin k 1.0 to 2.0 mg should be administered orally" (Douketis, 2011). In addition, the study recommends resuming warfarin after surgery is complicated while patient consuming sufficient fluids. The study answered the proposed questions and related to the represented cases. For the patient who is going for a dental restorative procedure, patient is considered to have minimal thrombosis risk. As a result warfarin should not be interrupted and hemostatic agent could be used in case of bleeding. For the second case where patient is going for a colon surgery, patient is required to stop warfarin for 5 days proper to surgery due to high risk of thrombosis. Patient should be considered for "heparin bridging" (Douketis, 2011) treatment while warfarin in interrupted and resuming warfarin after surgery completed. Based on the article, the current guidelines is withholding warfarin 5 days prior to implant placement to achieve well controlled surgical outcome.

Article 3

The purpose of this study is to measuring the probability of bleeding as complication after implant placement surgery in patients who are on anticoagulant therapy. 50 who has been taken warfarin placed a single implant compared 109 healthy patients where have also went through implant placement. Both groups showed two patients who experience prolonged postoperative bleeding. Patients bleeding were managed by using gauze placed on the implant site. The study concluded that there's no significant different in determining bleeding risk for patient who are interrupting warfarin therapy versus continuing it during dental

implant placement. Based on the article, dental implant could be placed without withholding warfarin therapy in a dental office setting. However, the article did not mention the medical history of patients and how they were selected for the study. In addition, the article mentions that INR values were between “1.8-2.98” (Bacci, 2010) and no antibiotics were prescribed. The study indicated that anticoagulant group was more than 50 % smaller in size (50 patients Vs. 109) than the control group which might have been a limitation to this study.

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Levels of Evidence: (For Therapy/Prevention, Etiology/Harm)

See <http://www.cebm.net/index.aspx?o=1025>

- ☒ **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
- ☐ **1b** – Individual RCT
- ☐ **2a** – Systematic Review of Cohort Studies
- ☐ **2b** – Individual Cohort Study
- ☐ **3** – Cross-sectional Studies, Ecologic Studies, “Outcomes” Research
- ☐ **4a** – Systematic Review of Case Control Studies
- ☐ **4b** – Individual Case Control Study
- ☒ **5** – Case Series, Case Reports
- ☐ **6** – Expert Opinion without explicit critical appraisal, Narrative Review
- ☐ **7** – Animal Research
- ☐ **8** – In Vitro Research

Strength of Recommendation Taxonomy (SORT) For Guidelines and Systematic Reviews

See article **J Evid Base Dent Pract 2007;147-150**

- ☒ **A** – Consistent, good quality patient oriented evidence
- ☐ **B** – Inconsistent or limited quality patient oriented evidence
- ☐ **C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Conclusion(s):

Based on recent research articles, it shows that anticoagulant treatment does not have to interrupted prior to implant placement. However, none of the articles investigated bone graft treatment consequences on anticoagulant therapy patients. Bone graft is a common procedure many patients might need whether simultaneously or prior to implant placement, In addition, most of the studies only looked at single implant placement and considered as a “minimal invasive procedure”.

Moreover None of the studies examined multiple implant placement, immediate implant placement or extraction and bone graft surgery and its influence on patients who

are taking warfarin. As a result Communicating with the physician plays a vital role in making a decision whether to withhold warfarin or not. In addition, INR has to be measured to determine the complication risk assessment for patients prior to procedure. Further research considering different variables and clinical situation is needed. Meantime, dentist should adhere to the physician guidelines which in our case is withholding warfarin (anticoagulant) for 5 days prior to implant placement.